
elcometer®
inspection equipment

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Software



1

ElcoMaster® data management software

Surface Preparation



2

Cleanliness, comparators & surface profile

Dry Film Thickness



7

Digital, mechanical & destructive coating thickness

NDT Inspection



8

Corrosion & precision thickness, flaw detection and bolt tension

Appearance



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Gloss, haze, DOI & colour

Dispersion & Density



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Fineness of grind, density cups & balances

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Linear & rotary abraders

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Pencil hardness, clemen, shear & scratch testers

elcometer®

Moisture



Digital moisture measurement

Climatic Conditions



RH, dewpoint & temperature

Oven Temperature Profile



Oven temperature data loggers

Wet Film & Powder Thickness



Combs, wheels & pfund thickness

Adhesion



Cross hatch, pull off & push off adhesion

Pinhole & Porosity



Wet sponge, UV, DC & pulsed DC holiday detectors

Inspector's Accessories



Mirrors, microscopes & inspector's publications

Inspection Kits



Powder, protective, automotive & industrial kits

Viscosity Cups



Dip cups & flow cups

Flash Point



Setaflash 'Series 3' closed cup & open cup testers

Film Application & Test Charts



Manual & motorised film applicators & leneta charts

Drying Time



Permeability & linear drying time recorders

Elasticity & Deformation



Mandrel bend & variable impact testers

Concrete Inspection & Metal Detection

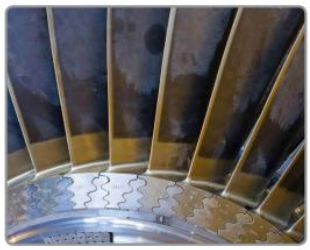


Covermeters, half-cell & rebar locators

elcometer®

With a range of products specifically developed to meet the needs of the coatings industry, **Elcometer** is well positioned to provide you with **the solution to your inspection requirements** - whatever and wherever they might be.




elcometer

Our Company

We will ensure that Elcometer is the leading manufacturer and supplier of quality control instrumentation within the Inspection, Monitoring & Control sector.

This will be achieved through the design, manufacture and supply of industry leading, innovative, high quality products; supported by a best-in-class customer experience and delivered by a highly capable and motivated team, within a culture of continuous improvement and in accordance with ISO 9001.


elcometer

Our Values

Our Values Shape Our Culture.

- Pride:
  We are proud of where we work and the work we do
- Ownership:
  We take responsibility for what we do and how we do it
- Ethics:
  We treat our customers, suppliers and colleagues fairly and with respect
- Achievement:
  We believe that just enough is not enough
- Focus:
  We know that if it is not acceptable to us it is not acceptable to our customers
- Initiative:
  We are encouraged to identify opportunities for improvement and offer solutions


elcometer

Environmental Policy

Protection of our environment is an integral part of Elcometer's activities. We take a responsible approach to environmental management throughout our Company, with our Board of Directors being responsible for our environmental performance.

We are committed to the achievement of the expectations of our customers and stakeholders through the alignment of our environmental objectives to our programme of continuous improvement in order to reduce our total impact on the environment.

- All relevant compliance obligation requirements are met
- Environmental performance is monitored and reviewed on a regular basis
- Any emissions to air, releases to water, energy usage or disposal of solid waste to landfill does not cause unacceptable environmental effects
- Our business is conducted in a way that respects our neighbours

For more than seventy years Elcometer has been a world leader in the design, manufacture and supply of inspection equipment to the coatings, concrete and metal detection industry.

Ever since the first Elcometer gauge was manufactured in 1947, our philosophy has been to provide industry leading, innovative, high quality products; supported by a best-in-class customer experience at a competitive price. By concentrating on these core values, Elcometer has grown into a global network with representation in over 70 countries.

Our Values

- Pride; We are proud of where we work and the work we do
- Ownership; We take responsibility for what we do and how we do it
- Ethics; We treat our customers, suppliers and colleagues fairly and with respect
- Achievement; We believe that just enough is not enough
- Focus; We know that if it is not acceptable to us it is not acceptable to our customers
- Initiative; We are encouraged to identify opportunities for improvement and offer solutions

Quality is part of our culture

Elcometer Limited's purpose is to ensure that we reflect our values and high standards for quality in the products we manufacture and the services we provide, as this is essential to our continued growth and success.

We are committed to meet or exceed the expectations of our customers and stakeholders by aligning our quality objectives for product, sales and service performance and delivery.

With focus on continually improving the effectiveness of the Quality Management System, Elcometer will maintain these high-quality standards as we design, manufacture and test our products by the most efficient means possible.

To view all our Company Policies, visit www.elcometer.com

Service and Support

Elcometer has over 150 Distributors around the world, all comprehensively trained on our products, providing a full after sales service and support within your region.

With the widest range of own manufactured products, Elcometer can provide a complete solution to all your inspection requirements.

Training

Elcometer offers first class training on all its products to all our customers either at your facility or at our state of the art training facility in Manchester, England. For more information please contact Elcometer.

Fit for Purpose

All Elcometer products are designed to comply with National and International Standards. We have a team of experts working with Standards bodies around the world, ensuring we have products fit for purpose, exceeding the demands of our customers.

In this catalogue, we have identified the latest National and International Standards - those in Orange are current and those in Grey have been superseded but are still recognised in some industries.

We continuously review our products against current and new Standards. For the most up to date list of Standards, visit our online catalogue which provides the latest information on all new, current and superseded Standards which our products can be used in accordance with.

Product Innovation

Elcometer continues to be a leader in product innovation for the Inspection Industries in both hardware and software design with a team of specialists dedicated to product development.

We are committed to continuously push the boundaries through our new product development programmes.







Product Index

elcometer®

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ElcoMaster®
Data Management



ElcoMaster® Data Management - Inspection Equipment

ElcoMaster® - as easy as 1, 2, 3!

From inspection to professional reports at the click of a button.

1

Take Readings

It's not all about taking readings, but what you do with the collected data that matters. ElcoMaster® Software is a fast, easy to use software and mobile app for all your data management, reporting and quality assurance needs.



2

Send to ElcoMaster®

ElcoMaster® Software transfers measurement data direct from Elcometer's Bluetooth or USB enabled inspection gauges direct to your PC, mobile or tablet.

USB

Bluetooth®

All your measurement data in one place



Coating Thickness



Salt Contamination



Material Thickness



Climatic Conditions

It's not all about taking readings, it's what you do next that counts. Save up to 30% of your working week by producing professional inspection reports in seconds by using ElcoMaster® Software.



3

Create Professional Inspection Report in Seconds

Inspectors can spend up to 30% of their working week producing reports, ElcoMaster® Software saves time and money by producing professional bespoke reports - even when out on site.



Gloss Measurement



Surface Profile



Oven Data Logging*



Adhesion Testing

*USB connection only

Professional reports in seconds even when out on site. The **ElcoMaster® Software App** puts the office in your pocket.



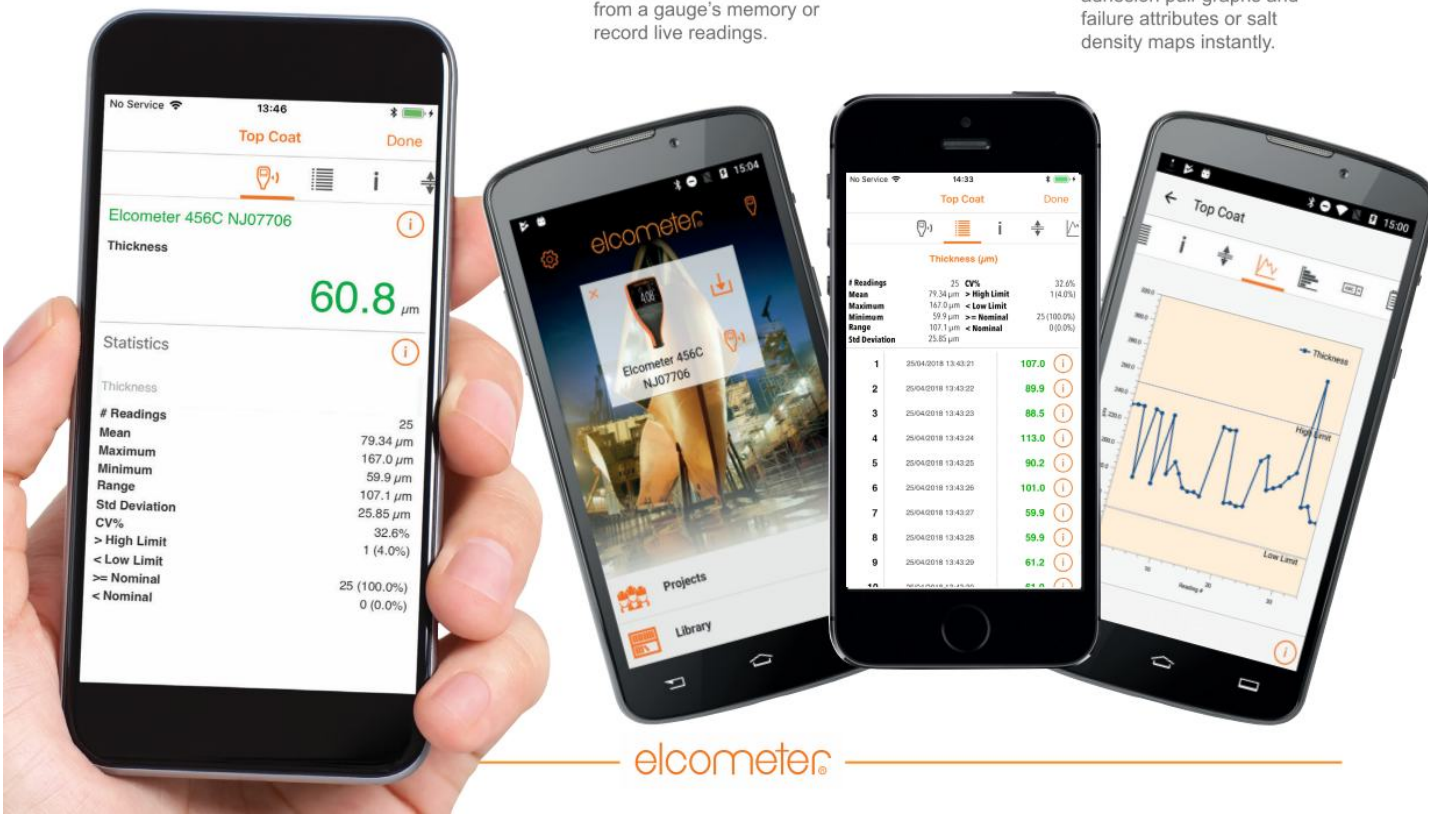
When out in the field or on site, you can review data instantly using our free ElcoMaster® Software Mobile App. Press 'Generate PDF' and watch the ElcoMaster® Software App produce a professional report instantly.

Email the report to your client seconds after you have finished inspecting or upload it via cloud technology so it can be accessed anywhere in the world.

Email, print or send
Export, print, .pdf or email directly from ElcoMaster® Software at the click of a button

Easy to connect
Connect multiple gauges at the same time using Bluetooth® to download data from a gauge's memory or record live readings.

Analyse
Anaylse data and statistics, complete with measurement paramenters such as adhesion pull-graphs and failure attributes or salt density maps instantly.



elcometer®

With data transferred to mobile communication devices, the Elcometer gauge does not have to be returned to the office for data download. Inspection work can continue without interruption.

ElcoMaster®

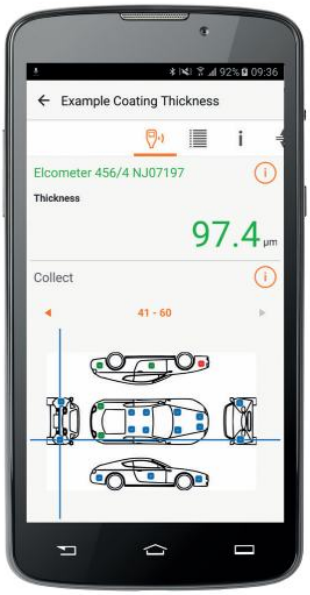
Download on the App Store

ANDROID APP ON Google play

Easy to use
Store all project data, documents and reports in easy to manage folders.

Live Readings & Statistics
Record each individual reading as it is taken and save it into batches. Ideal for gauges without an internal memory.

GPS
Store GPS locations in batches and view location on Google Maps.

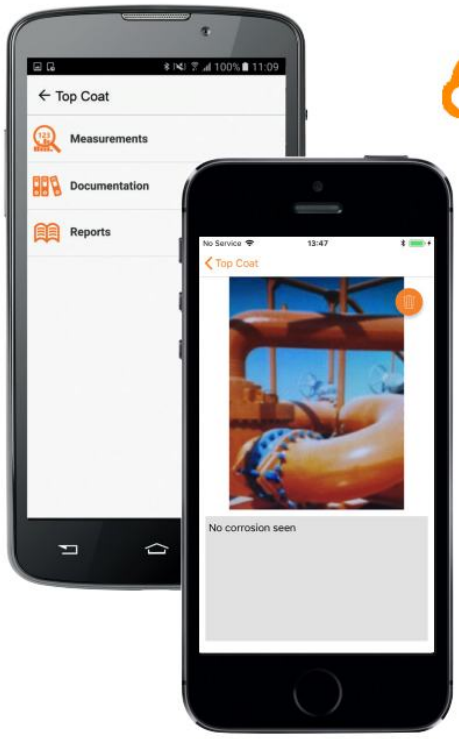


Collection Templates
Using measurement location points on images or photos to indicate the position for the next reading.

Add Photos & Notes
Take photos, add notes and comments.

Combine
Combine multiple inspection parameters (DFT, climate, profile, adhesion, gloss & salt contamination) into bespoke reports.





Cloud Email



ElcoMaster® Software is the easy to use PC and mobile app for all your data management, reporting and quality assurance needs.

- No need to learn different software for different gauges, all Elcometer products use the same expert platform.
- Store data in a simple file tree, by project or by inspection type.
- Easy on screen analysis with histograms, statistics, measurements, limits, notes, diagrams and photographs.
- Export data direct to Microsoft Excel. csv. txt. Cqatk formats etc to save time and prevent keying in errors.
- Generate reports instantly using standard or pre-designed templates in seconds.
- No need for data manipulation simply connect the gauge, download data and drag & drop.
- Combine multiple inspection parameters (such as DFT, profile, climate, adhesion and gloss)with images, notes and other project specific information in bespoke quality reports
- Combine different inspection parameters to approve the final product.
- Using Cloud technology ElcoMaster® Software gives you real time quality control monitoring inspection projects in any location.

Easy to connect multiple gauges
Connecting a gauge & downloading data (via Bluetooth® or USB) is fast and easy

Easy to use
Store data in a simple file tree, by project and by inspection type.

Combine
Combine multiple inspection parameters (DFT, climate, profile, adhesion, gloss & salt contamination) into bespoke reports.



Products ElcoMaster® Software is compatable with:

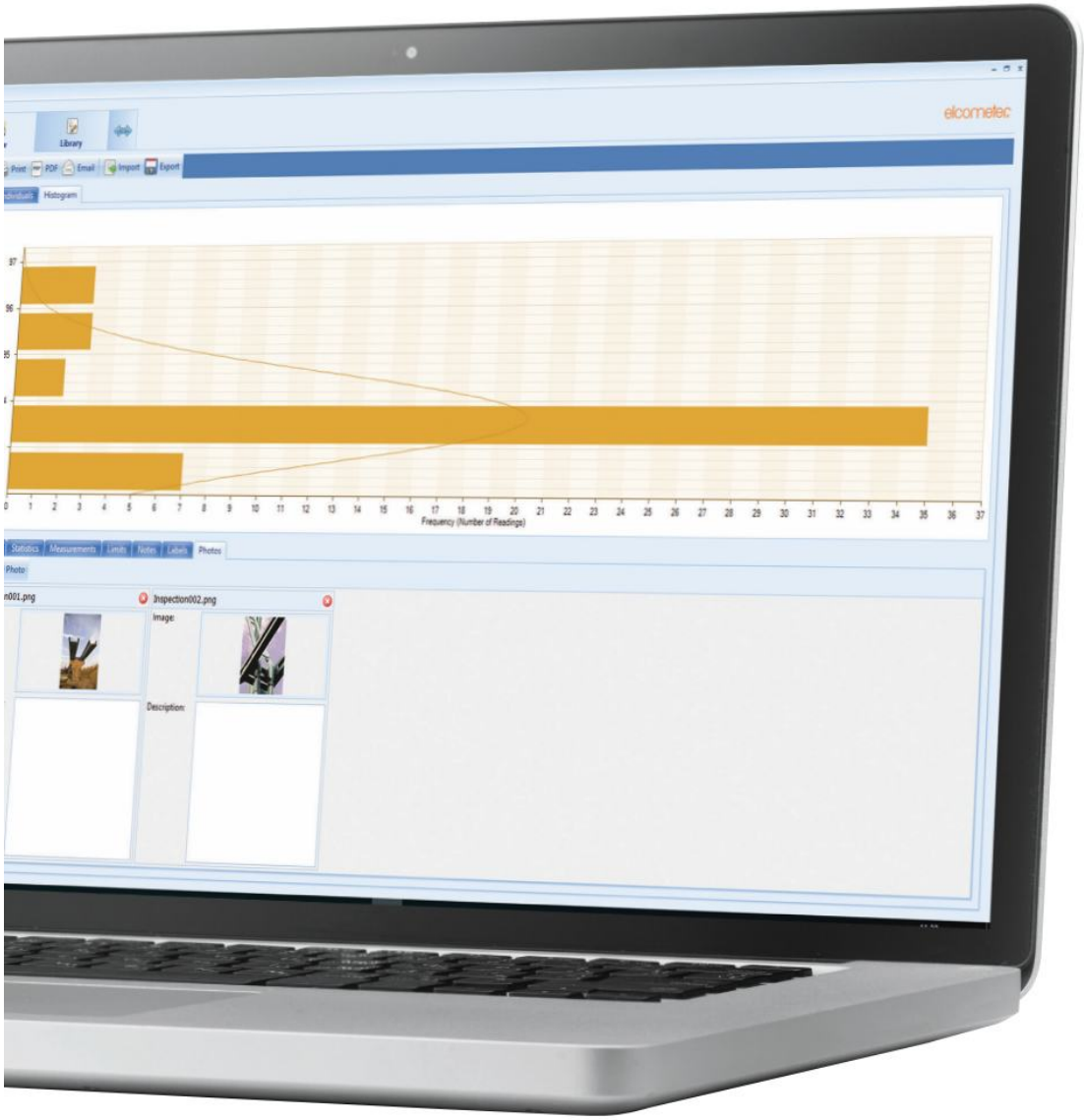
Create reports by importing and combining measurements using Bluetooth® or USB from a wide range of Elcometer gauges, including;

- Surface Profile
- Climatic Conditions
- Coating Thickness
- Adhesion Testing
- Salt Contamination
- Oven Data Logging
- Material Thickness
- Gloss Measurement

Email, print or send
Export, print, .pdf or email directly from ElcoMaster® Software at the click of a button

Import existing reports
Scan your existing report into ElcoMaster® Software and drag & drop all your data where you want it, then simply save and print

Built-In Template
ElcoMaster® Software Library with FREE Report, Collection, Limit & Standards Templates



Export direct
Export data direct to Microsoft Excel. csv, txt, cqatk formats etc. to save time and prevent keying in errors

Analyse
Analyse data using sequential readings, statistics, batches, charts, graphs, and histograms

Live Readings & Statistics
Record each individual reading as it is taken and save it into batches. Ideal for gauges with no internal memory.

Add Photos & Notes
Add photographs and notes to your reports

From inspection site, to Cloud and Client in real time - the different ways **ElcoMaster® Software** can help you.

1 Transfer your readings



Transfer your inspection data to Microsoft Excel or ElcoMaster® Software via Bluetooth® or USB to create professional reports at the click of a button.

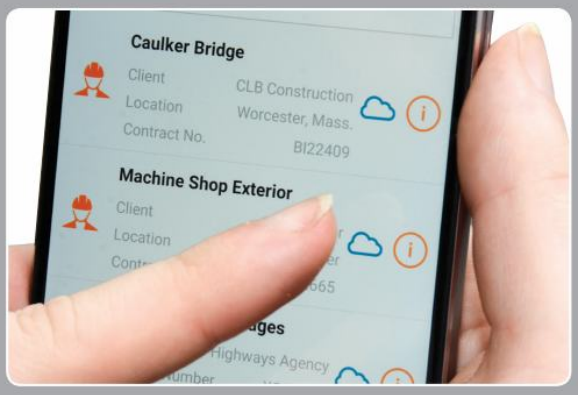
2 Transfer from site to office



Instantly transfer inspection data to your smartphone or tablet via Bluetooth®. Then send your data via email or convert to pdf and print.

3 Upload to a cloud

Using ElcoMaster® Software Mobile App, upload inspection data, photos, notes and GPS coordinates to a Cloud account of your choice via 3G/4G or WiFi.



All data is instantly visible to other approved users of the cloud account - through a secure log-in on any computer or mobile device anywhere in the world.



Compare and combine inspection data from different production lines or different locations, to produce specific Project Inspection Reports quickly and easily.

4 Real time collaboration for multi-site projects



When working with manufacturers of sub-assemblies across the globe ElcoMaster® Software can collate all inspection data from each site, assembly line and project into one shared location.

Contractors can then:

- Accept or reject parts before shipment from sub-assembly plants.
- Combine all data from sub assembly and final assembly inspection to generate Project Inspection Reports for quality management, both during the project and after completion of the project.
- Have real time in progress visibility across the whole project, no matter where the sub-assembly manufacturing is in the world.
- Improve efficiency and quality throughout the production process.

Real time communication

Add comments to inspection data, projects and files or instantly message your colleagues, managers or clients to immediately discuss key points, send work instructions and store messages within the project file.

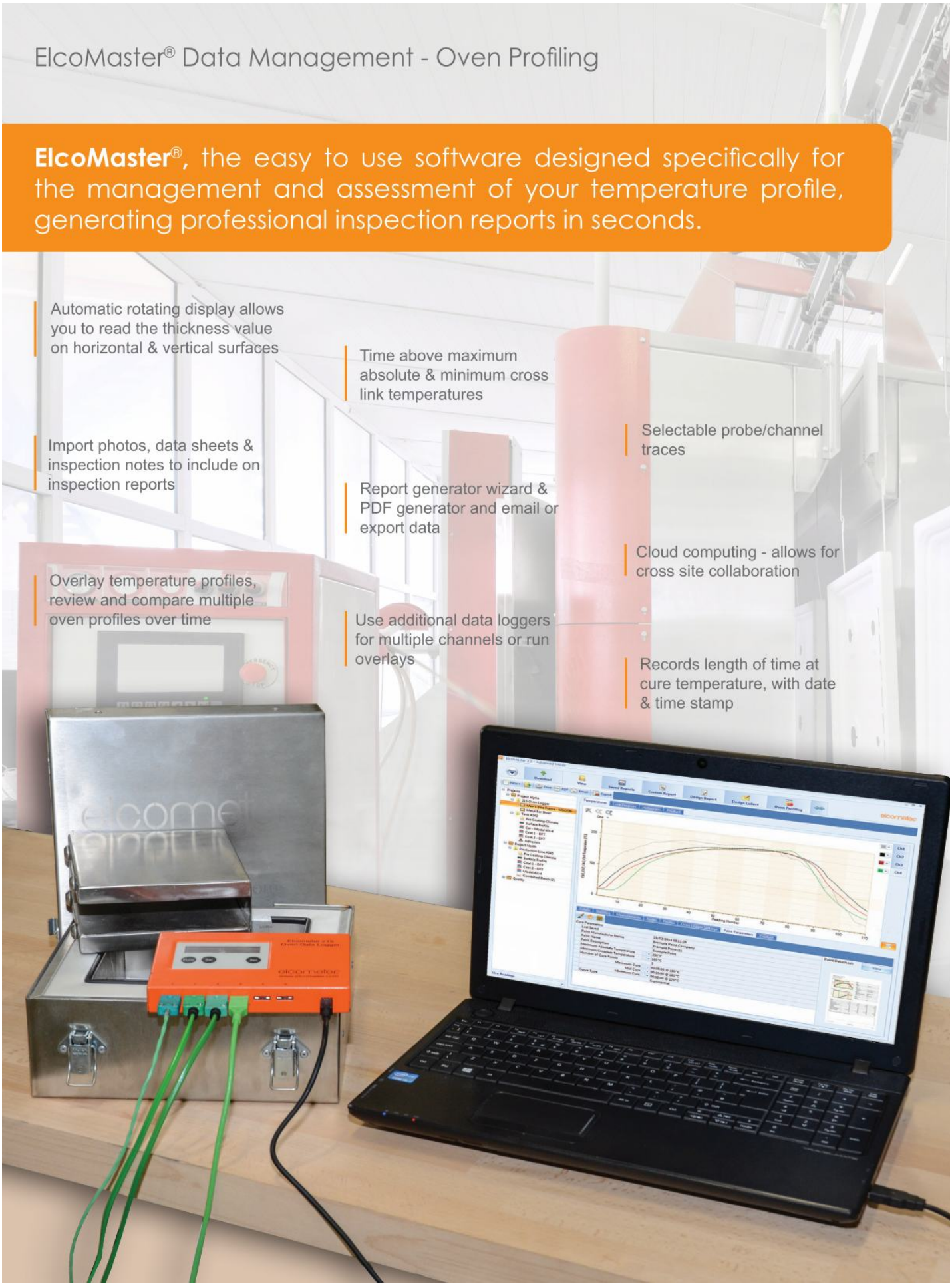
Your data - your choice - your control

Using your preferred Cloud service provider, make your data secure allowing only approved users to have access.ElcoMaster® Software Mobile App is compatible with a range of cloud service providers and FTP servers.

ElcoMaster® Data Management - Oven Profiling

ElcoMaster®, the easy to use software designed specifically for the management and assessment of your temperature profile, generating professional inspection reports in seconds.

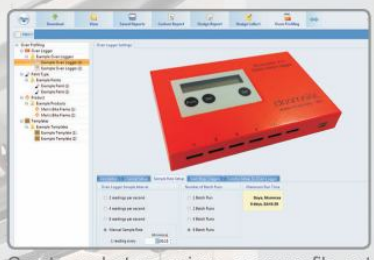
- Automatic rotating display allows you to read the thickness value on horizontal & vertical surfaces
- Import photos, data sheets & inspection notes to include on inspection reports
- Overlay temperature profiles, review and compare multiple oven profiles over time
- Time above maximum absolute & minimum cross link temperatures
- Report generator wizard & PDF generator and email or export data
- Use additional data loggers for multiple channels or run overlays
- Selectable probe/channel traces
- Cloud computing - allows for cross site collaboration
- Records length of time at cure temperature, with date & time stamp



ElcoMaster® Data Management - Oven Profiling

Oven Logger Set Up

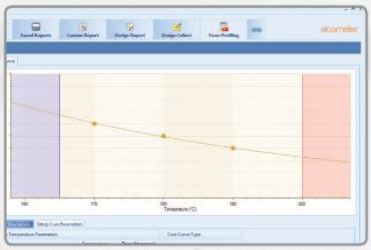
Create and store unique oven profile set ups and transfer them to the gauge.



Create and store unique oven profile set ups and transfer them to the gauge.

Graphical Reporting

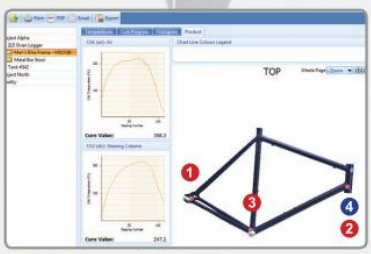
Standard temperature profile, cure process and product probe maps are available as standard.



Set up a library of individual paint parameters.

Product Probe Maps

Place probe ID markers on your product photo or drawing to record exact probe placement for each production run.



Individual product probe maps record the exact probe placement for each component.

Coating Parameters

Set up a library of individual paint types with min, mid and max cure temperatures.

Combined Reports

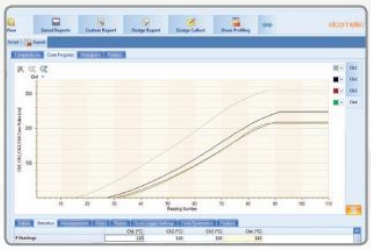
Oven profile reports can be combined with data from coating thickness, gloss & adhesion gauges.



Standard temperature profile and cure process graphs can be viewed at any time.

Elcometer Cure Value

Instant pass/fail information compares the production run temperature to the coating supplier's cure requirements.

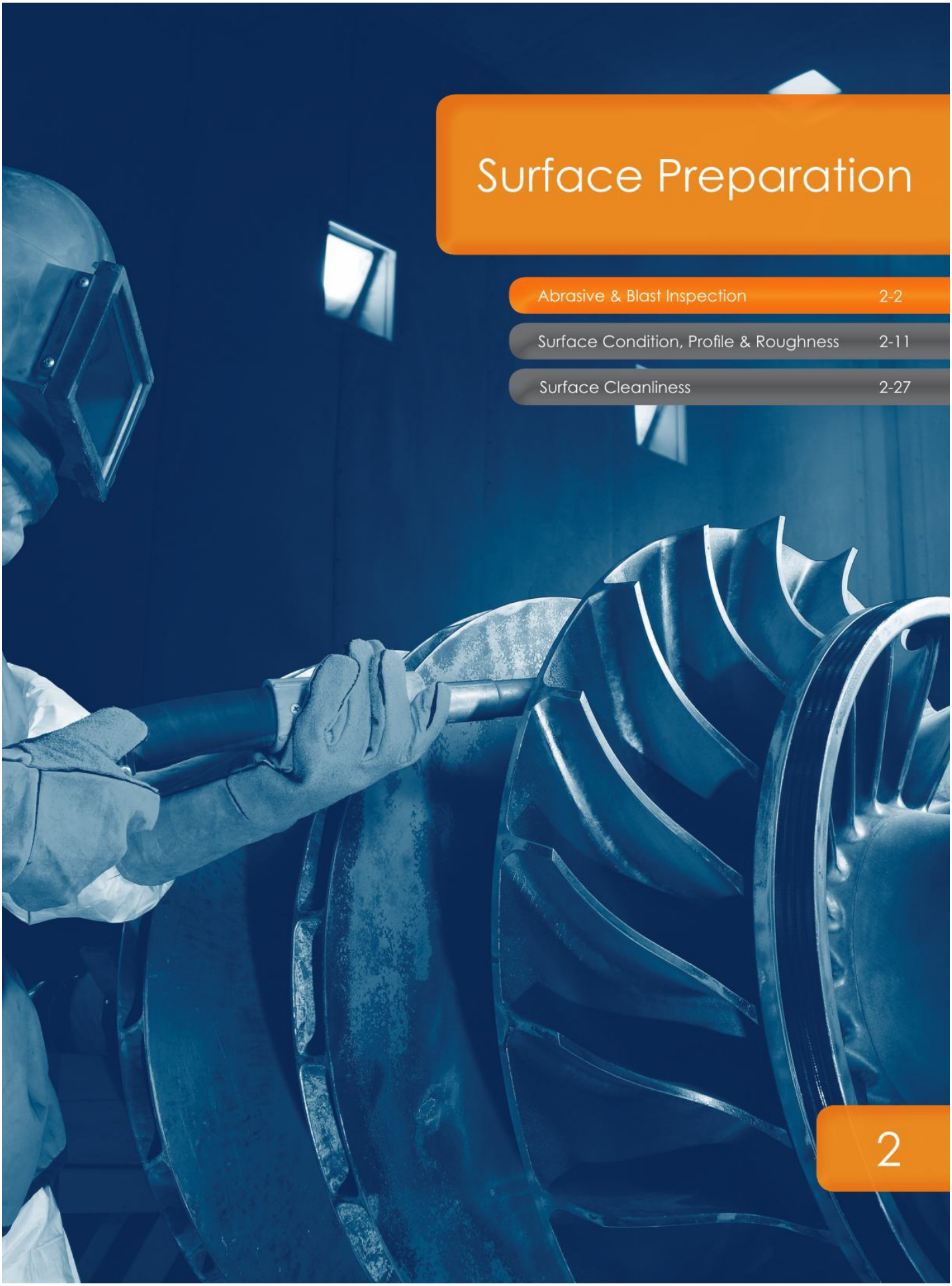


Statistical analysis by probe/channel.

For information on the Elcometer 215 Oven Data Logger, see page 5-1

Notes


elcometer
Measure
MATERIAL THICKNESS
FAST · REPEATABLE
ACCURATE · DURABLE
15.03
Measure material thickness quickly and accurately, using Elcometer's MTG range of ultrasonic thickness gauges.
See page 8-4



Surface Preparation

Abrasive & Blast Inspection 2-2

Surface Condition, Profile & Roughness 2-11

Surface Cleanliness 2-27

2

Surface Preparation - Abrasive & Blast Inspection



Surface preparation is one of the most important factors in the successful application of a coating or surface treatment and is critical to the effective lifetime of the coating. For any coating to perform successfully it is essential that the substrate is prepared properly.

Ensuring the correct surface preparation optimises the performance of the coating and material usage. Elcometer supply a range of products to meet each of the key industry standard surface preparation inspection methods, including;

Surface Condition: degree or percentage of rust, level of mill scale, etc, can be visibly assessed using Pictorial Surface Standards. Weld beads can be assessed using a weld comparator and weld gauges.

Blasting Parameters: a number of important parameters need to be monitored during the blasting or water jetting process, these include: air pressure (at the nozzle), nozzle diameter, blast media contamination & pH values in order to avoid recontamination of the substrate during blasting.

Surface Profile: the degree of profile on the surface affects a coating's overall performance and determines aspects such as adhesion, coverage and overall volume of coatings used.

If the profile is too large the amount of coating required increases, otherwise there is a danger that the peaks remain uncoated - allowing rust spots to occur. If the profile is too small there may be an insufficient key for adequate adhesion.

Surface Roughness: these consist of a stylus attached to an arm which moves over the surface to record and measure the roughness over a specified distance, recording peak-to-valley average.

Surface Cleanliness: soluble salts & ion specific contamination (sulphates, chlorides, nitrates etc.) which are often invisible to the eye, together with amine blush (for amine cured epoxy coatings) can result in premature coating failure, resulting in high re-coating and maintenance costs. Elcometer has a range of test equipment for assessing surface cleanliness prior to applying a coating.

Chloride Ion Test Kit for Abrasives

Elcometer 134A

Chlorides deposited on a surface by contaminated abrasives during blasting can cause a coating to fail prematurely.

Contamination can build up, particularly if the blast media is recycled several times. Using the Elcometer 134A Chloride Ion Test in the field will accurately identify contamination and prevent costly surface-related failures.



Technical Specification

Part Number	Description		
E134----2	Elcometer 134A Chloride Ion Test Kit for Abrasives (4 Tests per Kit)		
Measuring Range	1 - 60µg/cm² (1 - 60ppm)	Resolution	1µg/cm² (1ppm)
Sample Time	1.5 minutes (approx)		
Storage Conditions	Not exceeding 25°C (77°F)		
Dimensions	185 x 125 x 110mm (7 x 5 x 4.5")	Weight	367g (13oz)
Packing List	4 x test kits, containing: abrasive sample container, mixing container with a pre-measured quantity of solution, titration tube, titration tube snapper, strap and operating instructions		

Chloride Ion Test Kit for Water

Elcometer 134W

The Elcometer 134W is used to monitor recycled water (after it has been applied) to establish effectiveness of salt removal, this test is ideal for testing the salt contamination in wash water and blast water.

If the chloride levels in the wash water are too high, this will promote premature corrosion, shortening the life of both steel and concrete structures.

This test can also be used when mixing concrete.



Technical Specification

Part Number	Description		
E134----3	Elcometer 134W Chloride Ion Test Kit for Liquids (5 Tests per Kit)		
Measuring Range	10 - 2000µg/cm² (10 - 2000ppm)	Resolution	10µg/cm² (10ppm)
Sample Time	1.5 - 4 minutes (approx)		
Storage Conditions	Not exceeding 25°C (77°F)		
Dimensions	185 x 125 x 110mm (7 x 5 x 4.5")	Weight	208g (7oz)
Packing List	5 x test kits each containing: sample container bottle with dropper in lid, titration tube, titration tube snapper and operating instructions		

For Chloride Ion Test Kits for surfaces see page 2-45



Elcometer 138 Abrasive Soluble Salt Test Kit – ASTM D4940



STANDARDS:
ASTM D4940

Abrasives used for blast cleaning surfaces can be contaminated with soluble salts due to the source or the re-use of the blasting media. This contamination can be transferred to the blast cleaned surface and result in accelerated corrosion conditions and also cause premature coating failure if this contamination is not removed prior to applying the coating.

Testing abrasives on site for soluble salt contamination can be carried out quickly and easily using the Elcometer 138 Abrasive Soluble Salt Test Kit, according to the ASTM D4940 method. A measured volume of the abrasive is mixed with the same volume of water and agitated to allow any soluble salts to dissolve in the water. The resulting slurry is allowed to settle and the filtered water can then be tested using a conductivity meter. The Elcometer 138 Abrasive Soluble Salt Test Kit provides all that is needed to carry out the test in the field or in the laboratory.

Technical Specification

Part Number	Description
E138-A	Elcometer 138 Abrasive Soluble Salt Test Kit with Elcometer 138E Conductivity Meter
Measurement Range	0µS/cm to 200.0µS/cm, 0µS/cm to 2000µS/cm, 0mS/cm to 20.00mS/cm
Accuracy	±1% full scale (see Elcometer 138E for full specification)
Dimensions	456 x 384 x 127mm (18 x 15.1 x 5") Weight 2.2kg (4lb 14oz)
Packing List	Elcometer 138E Conductivity Meter, 1000ml (33.8fl oz) bottle of pure distilled water, 100ml & 600ml (3.4 & 20.3fl oz) glass beakers, 500ml (16.9fl oz) plastic measuring beaker, funnel, stirring rod, box of 100 filter papers (Grade 413), 1 x 20ml (0.74fl oz) standard 1413 µS/cm (1.413 mS/cm) calibration solution, 4 x LR44 batteries, transit case and operating instructions

Accessories

T13827355	Elcometer 138E Conductivity Meter
T13827455	Replacement Sensor for Conductivity Meter
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13827494	Pure Distilled Water 1000ml (33.8fl oz) Bottle
T13827495	Glass Beaker 100ml (3.4fl oz)
T13827496	Glass Beaker 600ml (20.3fl oz)
T13827498	Plastic Measuring Beaker 500ml (16.9fl oz)
T13827497	Funnel
T13827499	Stirring Rod
T13827500	Box of 100 Filter Papers (Grade 413)

Surface Co ntamination Kit

Elcometer 138/2

Measuring the level of contaminants on a surface prior to application of the coating is essential to ensure the quality of the coating and that its optimum lifetime is achieved.

If the coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly recoating and high maintenance costs.

The Elcometer 138/2 Surface Contamination Kit provides the user with a means for testing invisible surface contaminants including:

- pH
- chloride ions
- iron
- salts



STANDARDS:
AS 3894.6-A, AS 3894.6-D, SSPC Guide 15

Technical Specification

Part Number	Description		Certificate
E138----2	Elcometer 138/2 Surface Contamination Kit		•
Measuring Range	Iron: 3,10, 25, 50, 100, 250, 500mg/l Fe^2 Chloride: 30- 600µg/cm^2 (30 - 600ppm) Cl	pH: 0pH to 14pH	
Dimensions	300 x 220 x 75mm (11 x 8.6 x 3")	Weight 2.1kg (4.62lb)	
Packing List	100 x pH test strips, 100 x iron test strips, 40 x chloride test strips, 50 x Elcometer 135C Bresle test patches, 3 x 5ml (0.17fl oz) syringes, 3 x needles, 30ml (1fl oz) plastic beaker, carry case and operating instructions		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Pack of 25)	T13827259	Pure Distilled Water, 250ml (8.5fl oz) Bottle
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)	T13820562	100 x pH Test Strips
T13818517	3 x 5ml (0.17fl oz) Syringes	T13820563	100 x Iron Test Strips
T13818518	3 x Needles	T13820564	40 x Chloride Test Strips
T13818519	Plastic Beaker, 30ml (1fl oz)		

• Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

pH Test Strips

Elcometer 138/2

The Elcometer 138/2 pH Test Strips provide the user with a means for testing acidic or alkaline contaminants.

Day to day air particulate contaminants generated by modern industry generate particulates of hydrocarbons such as sulphur. Agricultural fertilizers generate nitrates. When they combine with moisture in the atmosphere they create sulphuric and nitrate acids, which if present on the substrate, breaks down the surface of any coating. Furthermore, any water used to clean the surface containing levels of pH will have a similar effect.



Technical Specification

Part Number	Description
T13820562	100 x pH Test Strips

Elcometer 148 pH Tester







STANDARDS:
ASTM E 70

In many industries, pH measurement is critical to the correct performance of processes. pH is the measure of acidity of a liquid.

The pH scale ranges from 0 to 14pH - where 0pH is acidic and 14pH is alkaline. pH is temperature dependent thus the temperature of the sample under test will affect the pH value recorded.

This simple, easy to use instrument measures both pH and temperature using a single sensor.

The Elcometer 148 sensor has automatic temperature compensation, ensuring like-for-like measurements can be taken for meaningful comparison of the results.

- Simultaneously displays pH and temperature
- Measurement hold / freeze function
- Record maximum and minimum readings over a series of tests
- °C / °F user switchable
- Waterproof to IP57 and floats on water
- Auto power off

The condition of the sensor is automatically monitored after each successive calibration and sensors can be easily replaced by the user as and when required.

Technical Specification

Part Number	Description	
H148----1	Elcometer 148 pH Tester	
	pH	Temperature
Range	0 to 14pH	0 to 89°C (32 to 192°F)
Resolution	0.01pH	0.1°C (0.1°F)
Accuracy	±0.03pH	±0.5°C (±1°F)
Battery	4 x AAA batteries	
Calibration	3 point at 7pH, 4pH and 10.01pH	
Dimensions	195 x 40 x 36mm (7.7 x 1.6 x 1.42")	
Weight	150g (5.3oz)	
Packing List	Elcometer 148 pH Tester, pH/Temperature sensor, 4 x AAA batteries, wrist strap, 4pH calibration sachet, 7pH calibration sachet and operating instructions.	

Accessories

T14821766	pH/Temperature Sensor
T14821768-1	4pH Buffer Solution for Calibration: Capsules, Pack of 10
T14821768-2	7pH Buffer Solution for Calibration: Capsules, Pack of 10
T14821768-3	9pH Buffer Solution for Calibration: Capsules, Pack of 10
T14821767-1	4.01pH Buffer Solution for Calibration: 100ml (3.38 fl oz) Bottle
T14821767-2	7pH Buffer Solution for Calibration: 100ml (3.38 fl oz) Bottle
T14821767-3	10.01pH Buffer Solution for Calibration: 100ml (3.38 fl oz) Bottle

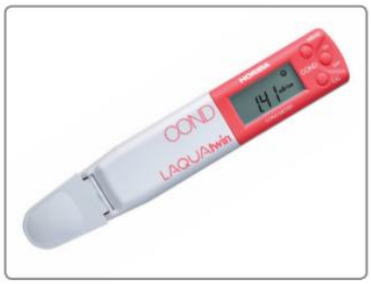
Conductivity Meter

Elcometer 138

Incorporating a flat sensor, the Elcometer 138 Conductivity Meter can measure the conductivity of a solution from a single drop of a sample.

Users can either place a sample on the meter's flat sensor or immerse the meter's sensor directly into the solution under test. The Elcometer 138 can be used for a broad range of applications, including: soluble salt concentrations, the electric conductivity (EC) of solutions used in agricultural operations and measuring rainwater pollution levels.

The Elcometer 138 Conductivity Meter includes a convenient salinity conversion indicator.







Features:

- Highly precise measurements can be obtained from a single drop
- Automatic range switching gives a wide measurement range of 1µs/cm to 19.9mS/cm
- Out of range and low battery alarms
- Visual indication when ambient temperature is outside the operating range

Technical Specification

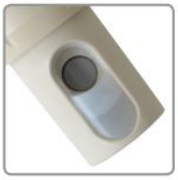
Part Number	Description		
T13823925	Elcometer 138 Conductivity Meter		
Units	S/cm, S/m, % Salinity, ppm (Total Dissolved Salts - TDS)		
Measuring Range	Conductivity: Salt: TDS:	0 mS/cm to 19.9 mS/cm, 0 S/m to 1.99 S/m 0% to 1.1% 0 ppm to 9900 ppm	
Resolution & Accuracy		Resolution	Accuracy
	0 µS/cm to 199 µS/cm:	1 µS/cm	± 5 µS/cm
	0.20 mS/cm to 1.99 mS/cm:	0.01 mS/cm	± 0.05 mS/cm
	2.0 mS/cm to 19.99 mS/cm:	0.1 mS/cm	± 0.5 mS/cm
	20 mS/cm to 199 mS/cm:	1 mS/cm	± 5 mS/cm
Operating Temperature	5°C to 40°C (41°F to 104°F)		
Power Supply	2 x CR2032 batteries	Battery Life	approx. 400 hours of continuous use
Dimensions	164 x 29 x 20mm (6.5 x 1.2 x 0.8")	Weight	47g (1.7oz)
Packing List	Elcometer 138, 14ml (0.47fl oz) bottle of standard 1.41mS/cm calibration solution, 14ml (0.47fl oz) bottle of moistening solution, syringe, 2 x CR2032 batteries and operating instructions		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)	T13823928	Replacement Conductivity Sensor
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)	T13818517	3 x 5ml (0.17fl oz) Syringes
T13818518	3 x Needles	T13818519	Plastic Beaker 30ml (1fl oz)
T13827352-1	Standard 447 µS/cm (0.447 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches		
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches		
T13827352-3	Standard 15000 µS/cm (15 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches		
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles		
T13824404	Standard 12.9 mS/cm (12900 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles		
T13827259	Pure Distilled Water 250ml (8.5fl oz) Bottle		

Elcometer 138E Conductivity Meter







Incorporating a cup-style sensor, the Elcometer 138E Conductivity Meter can measure the conductivity of a solution from a few drops of a sample.

Users can either place a sample on the meter's sensor or immerse the meter's sensor directly into the solution under test. The Elcometer 138E is suitable for a broad range of applications, including: soluble salt concentrations, the electric conductivity (EC) of solutions.

Features:

- Automatic range switching gives a wide measurement range of 0µs/cm to 20mS/cm
- Out of range and low battery indicators
- Automatic temperature compensation (ATC) and manual or automatic one or two-point calibration
- LCD screen with indicators and error messages, dual-line display
- User-replaceable integrated 2-pin, stainless steel electrode provides chemical resistance

Technical Specification

Part Number	Description		
T13827355	Elcometer 138E Conductivity Meter		
Measurement Principle	2 AC Bipolar Method		
Sensor Type	Cup		
Units	µS/cm, mS/cm		
Measuring Range & Resolution	PU: 0 - 200.0µS/cm LO: 0 - 2000µS/cm HI: 0 - 20mS/cm	0.1µS/cm 1µS/cm 0.01mS/cm	
Accuracy	± 1% of full scale		
LCD Display	Custom Dual Display; 27 x 21mm (1.06 x 0.83")		
Operating Temperature	0°C to 50°C (32°F to 122°F)		
Power Supply	4 x 1.5V LR44 batteries	Battery Life	>150 hours
Dimensions	165 x 38mm (6.5 x 1.5")	Weight	90g (3.2oz) - including batteries
Packing List	Elcometer 138E, 4 x 1.5V LR44 batteries and operating instructions		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Pack of 25)
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)
T13827352-1	Standard 447 µS/cm (0.447 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-3	Standard 15000 µS/cm (15 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles
T13824404	Standard 12.9 mS/cm (12900 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles
T13827259	Pure Distilled Water 250ml (8.5fl oz) Bottle

Needle Pressure Gauge

Elcometer 102

The Elcometer 102 Needle Pressure Gauge is designed to measure air pressure in blast and air hoses. Pressure drop is responsible for decreased production rates, increased abrasive consumption and reduced anchor profile in abrasive blasting systems.



Technical Specification

Part Number	Description		
E102-A	Elcometer 102 Needle Pressure Gauge		
Measuring Range	0-300psi (0-20 bar)		
Dimensions	133 x 58 x 28.5mm (5.24 x 2.28 x 1.12")	Weight	110g (3.88oz)
Packing List	Elcometer 102 Needle Pressure Gauge, pressure gauge guard, spare hypodermic needle, protective pouch and operating instructions		

Blast Nozzle Gauge

Elcometer 103

The Elcometer 103 Blast Nozzle Gauge has been designed to provide a quick and easy measurement of the orifice size of an abrasive blasting nozzle.

Proper use of this gauge can determine nozzle orifice wear which can cause low nozzle pressure and decreased efficiency in the performance of the nozzle's venturi.

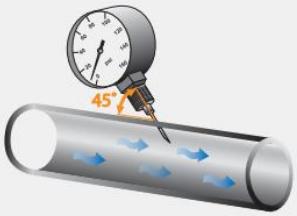
This wear results in decreased productivity, increased abrasive consumption and improper surface profile.



Technical Specification

Part Number	Description		
E103----A	Elcometer 103 Blast Nozzle Gauge		
T10329146	Black Wax Pencil (Pack of 12)		
Measuring Range	¼ - ⅝" (81 - 548 CFM)		
Dimensions	200 x 19mm (7.87 x 0.75")	Weight	150g (0.67oz)
Packing List	Elcometer 103 Blast Nozzle Gauge, black wax pencil (inside gauge), protective pouch and operating instructions		

Using a Needle Pressure Gauge



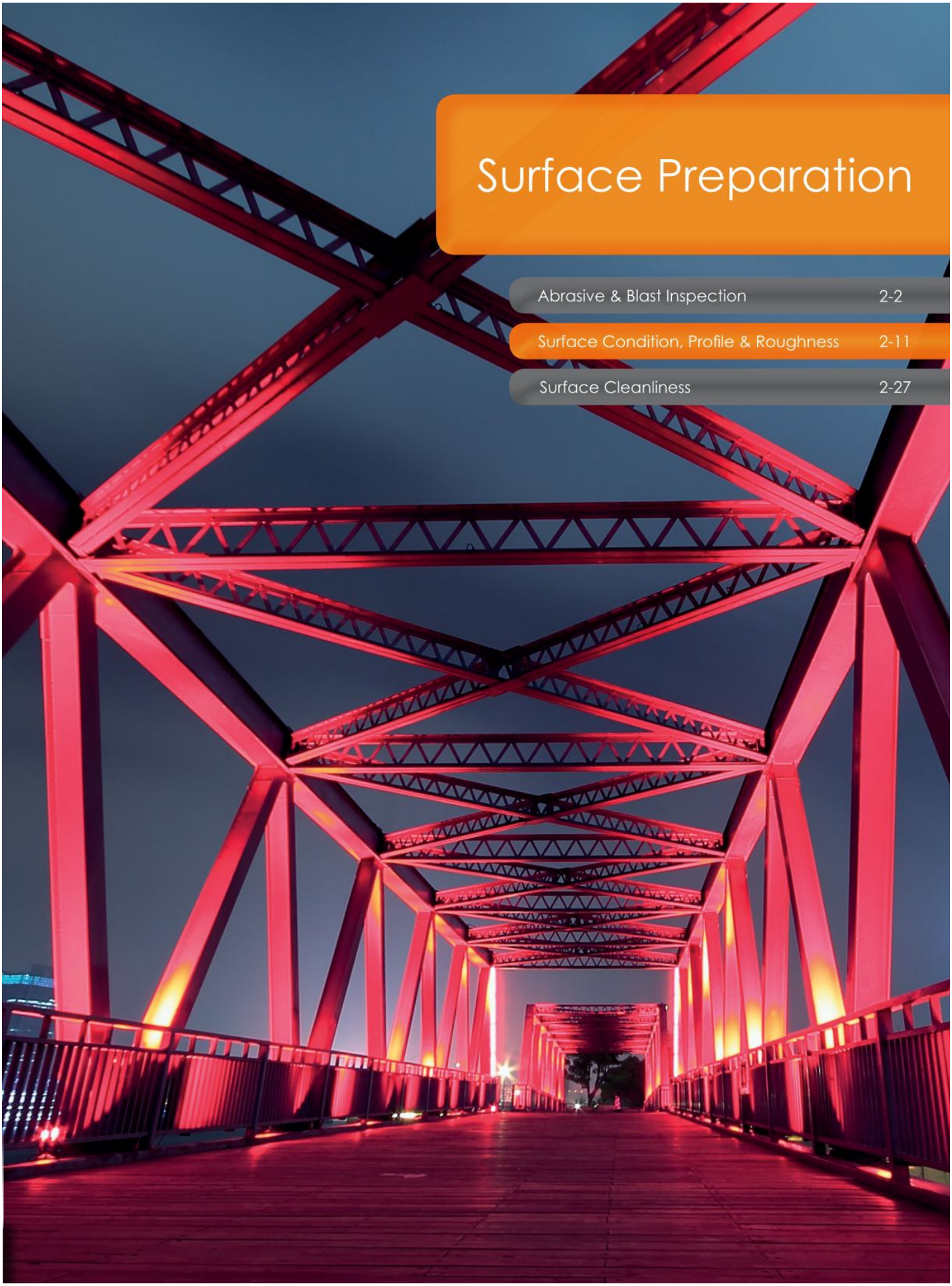
Using a Blast Nozzle Gauge



elcometer®



Introducing the new blasting equipment from Elcometer, for more information see **www.elcometer.com**



Surface Preparation

Abrasive & Blast Inspection 2-2

Surface Condition, Profile & Roughness 2-11

Surface Cleanliness 2-27

Elcometer 128 Pictorial Surface Standards

Pictorial Surface Standards are high quality photographs which are used for comparison purposes to assess the visual appearance of a steel surface. Elcometer's range of Surface Standards cover most of those required for surface cleanliness. These include:

	Part Number	Description
	E128----1	BS EN ISO 8501-1:2007/SIS 055900 - the original visual standard. It shows the degree of cleanliness of different levels of rusted steel cleaned by blasting, hand and power tools and flame, specified by ASTM D2200 Method A
	E128----3	SSPC (Steel Structures Painting Council) VIS 1 - similar to the Swedish and British standards, but the pictures of the required final appearances match the written descriptions in the USA standards. VIS 1-89 includes photographs of surfaces cleaned using metallic and non-metallic abrasives. Specified by ASTM D2200 Method B
	E128----5	SSPC - VIS 3 - contains 44 photographs to supplement the written SSPC specifications for hand and power tool cleaning
	E128----6	SSPC - VIS 2 Standard method of evaluating the degree of rusting on painted steel surfaces
	E128----7	SSPC - VIS 4 Guide and reference photographs for steel surfaces prepared by water jetting
	E128----8	SSPC - VIS 5 Guide and reference photographs for steel surfaces prepared by wet abrasive
	E128----9	BS EN ISO 8501-4:2006 - preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness. Initial surface conditions, preparation grades and flash rust grades in connection with high-pressure water jetting

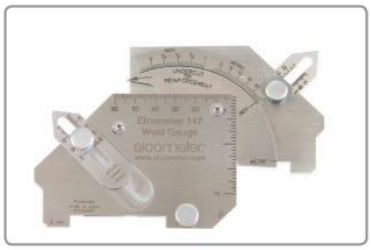
STANDARDS:
ASTM D 2200, IMO MSC.215(82), IMO MSC.244(83), ISO 8501-1, SS 55900, SSPC VIS 1, SSPC VIS 2, SSPC VIS 3, SSPC VIS 4, SSPC VIS 5, US Navy NSI 009-32, US Navy PPI 63101-000.

Weld Gauge

Elcometer 147

The Elcometer 147 Weld Gauge measures many aspects of welds in both Metric and Imperial units and includes:

- angle of preparation 0 to 60°
- misalignment (high - low)
- fillet weld throat size
- fillet weld length
- 2mm (0.79") edge roundness test
- excess weld metal (capping size)
- depth of undercut
- depth of pitting
- general linear measurements up to 60mm (2")



Technical Specification

Part Number	Description
H147----1	Elcometer 147 Weld Gauge
Angle of Preparation Scale	0 - 60° in 5° divisions
Misalignment Scale	0 - 25mm in 1mm divisions and 0 - 1" in 1/16" divisions
Fillet Leg & Excess Weld Scale	0 - 25mm in 1mm divisions and 0 - 1" in 1/16" divisions
Fillet Throat Scale	0 - 20mm in 1mm divisions and 0 - 3/4" in 1/16" divisions
Undercut Scale	0 - 4mm in 1mm divisions and 0 - 1/4" in 1/16" divisions
Dimensions	100 x 68mm (3.9 x 2.7")
Weight	154g (5.4oz)
Packing List	Elcometer 147 Weld Gauge and instruction card

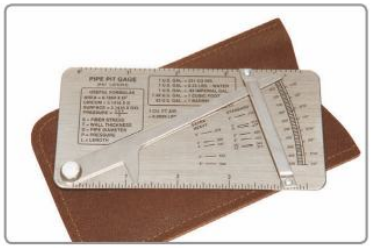
Pit Gauge

Elcometer 119

The Elcometer 119 Pipe Pit Gauge is a pocket size gauge designed to identify the condition of a pipe.

The gauge is placed horizontally on the surface of the pipe and the stylus is positioned into the base of the corrosion pit.

The gauge shows the pit depth compared to the nominal pipe wall thickness. Imperial units only.







Technical Specification

Part Number	Description
E119-----	Elcometer 119 Pipe Pit Gauge
Range	0 - 500mils (0 - 0.5")
Graduation	10mils and 1/16"
Dimensions	68 x 133 x 4mm (21 x 5.25 x 0.18")
Weight	227g (8oz)

Elcometer 999 Weld Comparator



STANDARDS:
SP0178-2007, RP0178

The Elcometer Surface Weld Comparator provides for the first time, a means of comparing the quality of welds.

Made from durable T Grade ABS plastic, the comparator comprises 14 different examples of actual welds, allowing a thorough evaluation to be completed.

Each Weld Gauge is supplied complete with a copy of the NACE SP0178-2007 Standard, providing detailed recommendations on design, fabrication and surface finish requirements. It includes generic and graphic descriptions of various degrees of surface finishing of welds that may be specified in preparation for the lining of tanks and vessels.

Technical Specification

Part Number	Description
H99921527	Elcometer Surface Weld Comparator

The difference between Surface Profile and Surface Roughness

Surface Profile; a measure of the depth of a blasted profile.

Surface Roughness; a combination of the depth of the profile and the peak count in a given linear direction.

For any coating to perform successfully, prior to its application, it is important that the required surface profile is created on the substrate.

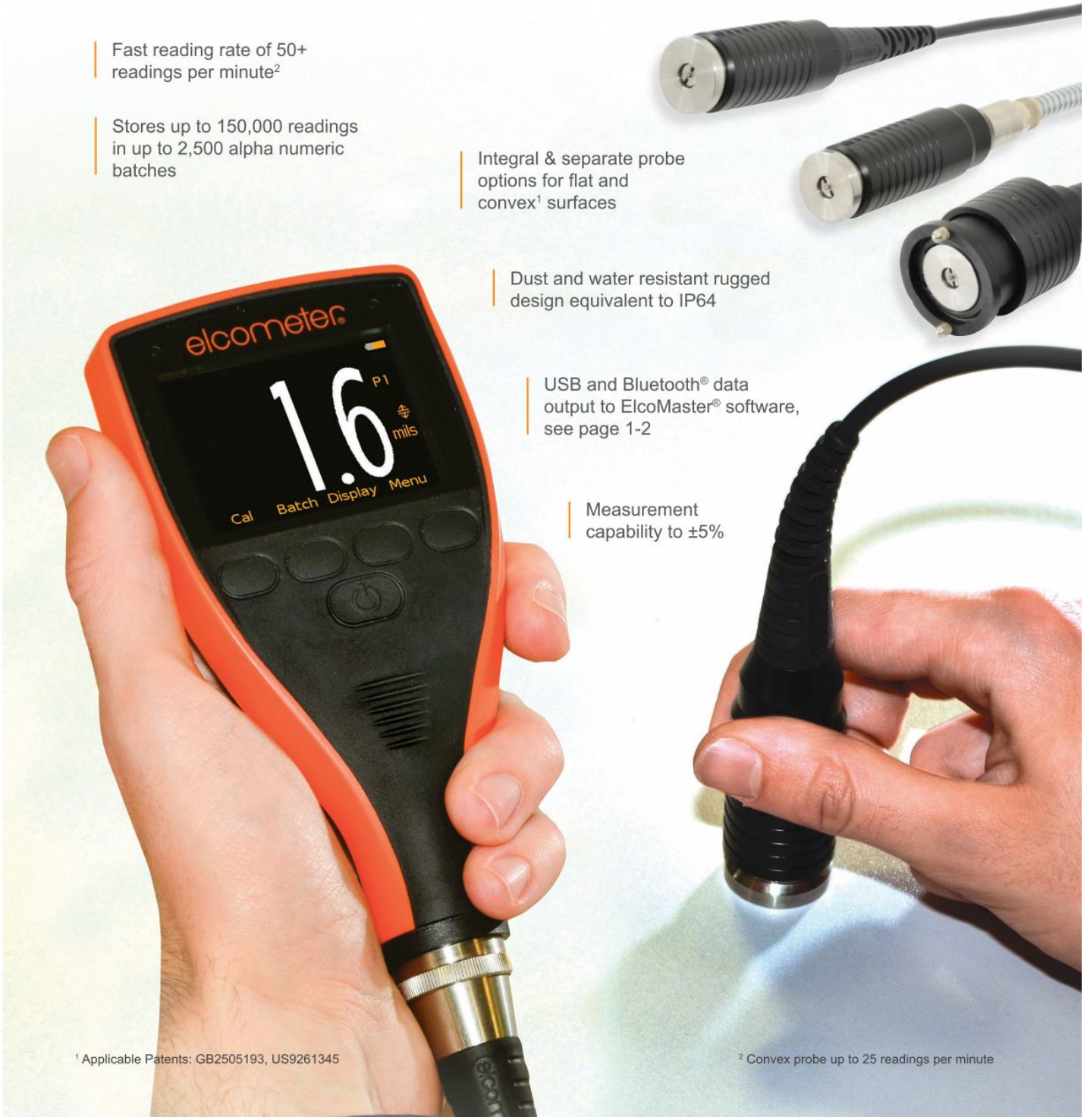
A digital surface profile gauge measures the peak-to-valley height in terms of the distance between the tip of the needle and the top of the profile (peaks) and the distance between the tip of the needle and the bottom of the profile (valleys). This method can accurately determine a value for average peak-to-valley profile.

Digital Surface Profile Gauge

Elcometer 224

The **Elcometer 224** provides the very latest in surface profile measuring technology for measuring profile on either flat or curved surfaces.

- Fast reading rate of 50+ readings per minute[2]
- Stores up to 150,000 readings in up to 2,500 alpha numeric batches
- Integral & separate probe options for flat and convex[1] surfaces
- Dust and water resistant rugged design equivalent to IP64
- USB and Bluetooth® data output to ElcoMaster® software, see page 1-2
- Measurement capability to ±5%



[1] Applicable Patents: GB2505193, US9261345

[2] Convex probe up to 25 readings per minute

Elcometer 224 Digital Surface Profile Gauge

Fast, accurate and very user friendly, the **Elcometer 224** is available with or without memory and Bluetooth®.



- Auto rotating display with tap awake feature
- Time and date stamped measurements
- Measurement capability to ±5%
- Accurate, immediate and repeatable results
- Review batch data or last 20 readings in a graph format
- User replaceable tough tungsten carbide tips
- Stores up to 150,000 readings in 2,500 batches

STANDARDS:
ASTM D 4417-B, SANS 5772, SSPC PA 17, US Navy NSI 009-32, US Navy PPI 63101-000

Digital Surface Profile Gauge

Elcometer 224

User Friendly

- Large buttons ideal for gloved hands
- Easy to use menus in multiple languages
- High contrast colour LCD with auto rotate
- High and low reading limit indicators
- Factory calibrated for immediate use

Tough

- Sealed, heavy duty and impact resistant
- Dust and waterproof equivalent to IP64
- Suitable for use in harsh environments
- Scratch and solvent resistant display
- Durable gauge and probe construction

Accurate

- Can be used in accordance with National and International Standards
- Temperature stable measurements
- Statistics are calculated and displayed in real time
- Live and batch readings graph format for instant analysis

Efficient

- Fast reading rate of 50+ per minute
- Integral and separate probe versions to suit your application
- Alpha numeric batch identification
- Compatible with ElcoMaster® and ElcoMaster® Mobile App
- Powersave Mode with tap awake

Reliability

- Repeatable and reproducible measurements
- 2 year gauge warranty[2]
- Supplied with fully traceable Test Certificates
- Batch & individual readings are date and time stamped

Powerful

- User replaceable tough tungsten carbide tip - can be used for up to 20,000 readings
- USB and Bluetooth® data output to iPhone[1] or Android™ devices
- Measures profiles up to 500µm (20mils)



Integral or separate probes measure profiles up to 500µm (20mils)



Ergonomic design for comfort during continuous use



2.4" colour screen provides enhanced reading visibility at all angles

[1] Compatible with iPod, iPhone and iPad.
[2] The Elcometer 224 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

Elcometer 224 Digital Surface Profile Gauge

Product Features	■ Standard	□ Optional
	Model B	Model T
Fast, accurate reading rate; *50+ readings per minute*[1]	■	■
Repeatable & reproducible measurements	■	■
Easy to use menu structure; *in 30+ languages*	■	■
Tough, impact, waterproof & dust resistant; *equivalent to IP64*	■	■
Bright colour screen; *with permanent back light*	■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*	■	■
Large positive feedback buttons	■	■
Flat & convex surfaces[2]	■	■
USB power supply; *via PC*	■	■
Test certificate	■	■
2 year gauge warranty[3]	■	■
Automatic rotating display; *0°, 90°, 180° & 270°*	■	■
Ambient light sensor; *with adjustable auto brightness*	■	■
Emergency Light Mode	■	■
Gauge software updates[4]; *via ElcoMaster® software*	■	■
Data output	■	■
USB; *to computer*	■	■
Bluetooth®: *to computer, Android™ & iOS[5] devices*		■
On screen statistics	■	■
Number of readings, *n;* Mean (average), $\bar{x}$*;* Standard deviation, σ; Highest reading, *Hi;* Lowest reading, *Lo;* Coefficient of variation, *CV%*	■	■
High & low limits; *definable audible & visual alarms*		■
Number above high limit;		■
Number below low limit;		■
ElcoMaster® software & USB cable		■
Date and time stamp *for each reading*		■
Replaceable screen protectors	■	■
Protective case	■	■
Plastic transit case	□	■
Measurement range	0-500µm (20 mils)	0-500µm (20 mils)
On-screen calibration instructions; *in 30+ languages*	■	■
Number of batches		2,500
Gauge memory; *number of readings*	Last 5	150,000
Delete last reading	■[6]	■
Limits; *user definable audible & visual pass/fail warnings*		■
Gauge (g) or gauge & batch specific (gb) limits		gb
Batch types; *normal, counted average*		■
Review, clear & delete batches		■
Copy batches and calibration settings		■
Alpha-numeric batch names; *user definable on the gauge*		■
Fixed Batch Size Mode; *with batch linking*		■
Trend graph; *last 20 readings*		■
Review batch graph		■

[1] Up to 25 readings per minute for the convex probe [2] Internet connection required [3] The Elcometer 224 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. Elcometer 224 probes are covered by a 1 year warranty.
[4] Applicable Patents: GB2505193, US9261345 [5] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.
[6] Up to the last 5 readings can be deleted

Digital Surface Profile Gauge

Elcometer 224

Model Options

Part Number		Description	Certificate
Integral Gauge	Separate Gauge[1]		
E224C-BI	E224C-BS	Elcometer 224 Model B Digital Surface Profile Gauge	•
E224C-TI	E224C-TS	Elcometer 224 Model T Digital Surface Profile Gauge	•

Technical Specification

Display Information	2.4" (6cm) QVGA colour TFT display, 320 x 240 pixels	
Battery Type	2 x AA batteries, rechargeable batteries can also be used	
Battery Life	Approximately 24 hours of continuous use at 1 reading per second[2]	
Minimum Headroom	Integral:	185mm (7.3")
	Separate:	See page 2-20
Gauge Dimensions (h x w x d)	Integral:	168 x 73 x 37mm (5.61 x 2.87 x 1.46")
	Separate:	141 x 73 x 37mm (5.55 x 2.87 x 1.46")
Gauge Weight (including batteries)	Integral:	218g (7.69oz)
	Separate:	161g (5.68oz)
Measurement Range	0-500µm (0-20mils)	
Probe Tip	Tungsten carbide tip 60° angle; Tip Radius: 50µm (2mil)	
Operating Temperature	-10 to 50°C (14 to 122°F)	Storage temperature -10 to 60°C (14 to 140°F)
Accuracy & Resolution	Accuracy[3]: ±5% or ±5µm (±0.2mil); Resolution: 1µm (0.1mil)	
Packing List[4]	Elcometer 224 gauge, glass zero tile[4], 2 x calibration foils[†], wrist harness, plastic transit case (T), protective case, screen protector, probe protection cap[4], 2 x AA batteries, test certificate, operating instructions, USB cable (T) & ElcoMaster® software (T)	

Digital Inspection Kits

Elcometer

These digital inspection kits have been specifically designed to undertake the three principal inspection requirements in the Protective and Industrial Coatings Industry – climate, surface profile and dry film thickness. Ideal for 'paperless' quality assurance systems the kits come complete with ElcoMaster® software for professional reporting and analysis.

For more information see page 12-3.

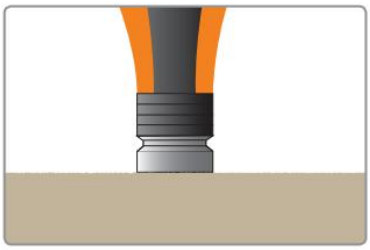


Technical Specification

Part Number	Description
YKIT-DIGITAL-B	Elcometer Basic Digital Inspection Kit (F)
YKIT-DIGITAL-T	Elcometer Top Digital Inspection Kit (F)
YKIT-DIGITALFNF-B	Elcometer Basic Digital Inspection Kit (FNF)
YKIT-DIGITALFNF-T	Elcometer Top Digital Inspection Kit (FNF)

[1] Probes are supplied separately, see page 2-20 for details. [2] Using default settings & lithium batteries, alkaline or rechargeable batteries may differ.
[3] Whichever is the greater. [4] For separate gauges, the test foils, glass zero tile and probe protection cap are supplied with the separate probe.
• Test Certificate supplied as standard.

Elcometer 224 Digital Surface Profile Probes



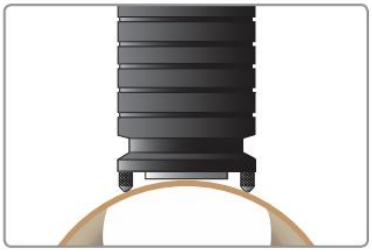
Flat Surface Profile Probes
Supplied with either standard cables or armoured metal reinforced heavy duty cables, Elcometer surface profile probes are supplied with a glass zero plate, calibration test foils; nominal values 125µm (5.0mils) & 508µm (20mils) and an Elcometer test certificate.



Technical Specification

Range: 0-500µm (0-20mils) | Resolution: 1µm (0.1mil) | Accuracy: ±5% or ±5µm (±0.2mil)

Probe Design	Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
Flat Surface: Standard	T224C500US	125mm (4.92")	25mm (1.0")	•
Flat Surface: Armoured	T224C500UARM	165mm (6.50")	25mm (1.0")	•



Convex Surface Profile Probes
Supplied with either standard cables or armoured metal reinforced heavy duty cables, Elcometer convex surface profile probes are supplied with a glass zero tile, calibration test foils (nominal values 125µm (5.0mils) & 508µm (20mils)) and an Elcometer test certificate.



Technical Specification

Range: 0-500µm (0-20mils) | Resolution: 1µm (0.1mil) | Accuracy: ±5% or ±5µm (±0.2mil)

Probe Design	Part Number	Minimum Headroom	Minimum Pipe Diameter	Certificate
Convex Surface: Standard*	T224C500UX	135mm (5.31")	75mm (3.0")	•
Convex Surface: Armoured*	T224C500UXARM	175mm (6.89")	75mm (3.0")	•

Accessories

Part Number		Description
Integral Gauge	Separate Gauge	
T22419793	T22419793	Probe Tip Protection Cap
T22420072	T22420072	Glass Zero Tile with Wallet
T22421882C	T22421882C	Certified Calibration Test Kit: 125µm & 500µm (5 & 20mils) Calibration Foils, Glass Zero Tile & Calibration Certificate
T99921325	T99921325	USB Cable
T99924797	T99924797	USB Bluetooth® Adapter (V2.0+) - for PC's without Bluetooth®
T99922341	T99922341	Self Adhesive Screen Protectors (Pack of 10)
T22420053	T22420053	Replacement Tip (Pack of 2) with Fixing Tool
T22420095	T22420095	Replacement Tip (Pack of 5)
-	T45622371	Benchtop Inspection Stand

• Test Certificate supplied as standard.
Elcometer 224 probes are covered by a 1 year warranty

* Applicable Patents: GB2505193, US9261345

Surface Profile Gauge

Elcometer 123

The Elcometer 123 Surface Profile Gauge is an easy to use analogue gauge which measures the peak-to-valley height of a blast cleaned surface in a similar way to the Elcometer 224.

- Metric and Imperial versions available

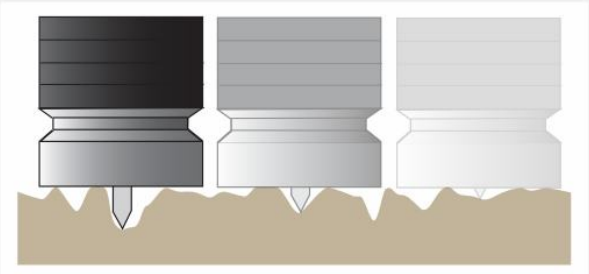


STANDARDS:
ASTM D 4417-B, SANS 5772, SSPC PA 17, US Navy NSI 009-32, US Navy PPI 63101-000

Technical Specification

Part Number	Description		Certificate
E123A--M-	Elcometer 123 Surface Profile Gauge, Metric		○
E123A--E-	Elcometer 123 Surface Profile Gauge, Imperial		○
Range	0 - 1000µm (0 - 40mils)	Scale	2µm (0.1mil)
Dimensions	105 x 55 x 25mm (4.1 x 2.2 x 1")	Weight	335g (8oz)
Packing List	Elcometer 123 Surface Profile Gauge, glass slide, 2mm Allen key, carry case and operating instructions		

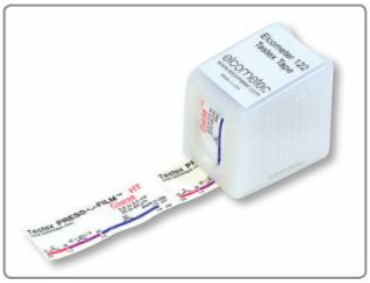
Measuring Surface Profile



1. Calibrate on a glass zero tile.
2. Ensure probe is 90° to substrate to ensure accurate readings.
3. Take a minimum of 10 readings over an area to establish the average surface profile.
4. Record the average or maximum readings depending on the standards.

○ Optional Calibration Certificate available.

Elcometer 122 Replica Tape



STANDARDS:
ASTM D 4417-C, BS 7079-C5, ISO 8503-5, NACE RP0287, SSPC PA 17, US Navy NSI 009-32, US Navy PPI 63101-000

Elcometer 122 Testex® Tape consists of foam with a non-compressible backing. The foam side is rubbed into the surface providing a permanent mould of the peak-to-valley profile, which can then be measured using the Elcometer 124 Thickness Gauge.

Elcometer 122 Testex® Tape is available in four profile ranges. It is important that the tape grade chosen is reflective of the profile being measured.

- For profiles between 12 & 25µm (0.5 & 1.0mils): Coarse Minus Tape
- For profiles between 20 & 38µm (0.8 & 1.5mils): Coarse Tape
- For profiles between 38 & 64µm (1.5 & 2.5mils): Average of Coarse and X-Coarse Tape
- For profiles between 64 & 115µm (2.5 & 4.5mils): X-Coarse Tape
- For profiles greater than 115µm (4.5mils): X-Coarse Plus Tape

There are 50 tests in each roll.

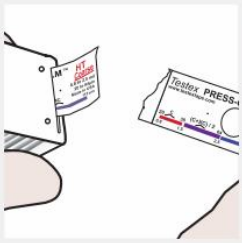
Technical Specification

Description	Profile Range		Part Number			
	Metric	Imperial	1 Roll	Pack of 10	Pack of 50	Pack of 100
Elcometer 122 Coarse Minus	12 - 25µm	0.5 - 1.0mils	E122----A1	E122----A10	E122----A50	E122----A100
Elcometer 122 Coarse	20 - 64µm	0.8 - 2.5mils	E122----B1	E122----B10	E122----B50	E122----B100
Elcometer 122 X-Coarse	38 - 115µm	1.5 - 4.5mils	E122----C1	E122----C10	E122----C50	E122----C100
Elcometer 122 X-Coarse Plus	116 - 127µm	4.6 - 5.0mils	E122----F1	E122----F10	E122----F50	E122----F100

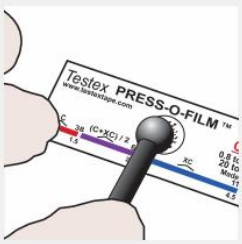
Accessories

T12222498	Swizzle Sticks (Pack of 5)

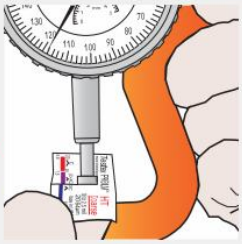
How to take a reading using the Testex® Replica Tape



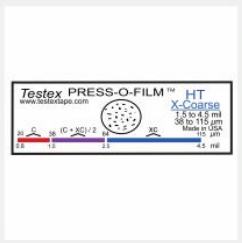
1.Tear off one section of the tape from the roll, peel off the backing tape and retain the back if required for future use.



2. Stick the tape on to the test surface, and rub the central portion using the swizzle stick provided, or the end of a pen, pencil or similar rounded object until dark spots appear. This gives a surface replica.



3. Using a micrometer such as the Elcometer 124 Thickness Gauge, measure the thickness of the central portion of the tape replica and subtract 50µm (2mils) from the reading. This result is the peak-to-valley profile height. Write the value on the tape.



4. If the value falls within the purple band on the coarse tape (38-64µm) then repeat the test as shown in step 2 using the extra coarse tape and then average the two values.



5. If the tape is required for future reference, replace the backing tape to preserve the imprinted profile.

Thickness Gauge

Elcometer 124

The Elcometer 124 Thickness Gauge is used to measure the peak-to-valley height of a surface profile moulded in the Elcometer 122 Testex® Replica Tape.

- Metric and Imperial versions available
- Quick and easy to use
- Anvil pressure as required in the Standards



STANDARDS:
ASTM D 4417-C, ISO 8503-5, NACE RP 0287, US Navy NSI 009-32, US Navy PPI 63101-000

Technical Specification

Part Number	Description	Range	Dimensions	Weight	Scale Resolution	Certificate
E124---3M	Elcometer 124 Metric	5mm	120 x 95 x 25mm	254g	2µm	○
E124---3E	Elcometer 124 Imperial	0.25”	4.7 x 3.7 x 1.0”	9oz	0.1mil	○

Surface Comparators

Elcometer 125

These extremely durable comparators allow the estimation of surface profile of either grit or shot blasted surfaces. Using the Elcometer 125 surface comparators as a reference the blasted profile can be compared to the four reference profile grades in each comparator. Profiles are recorded in microns.

- 4 Profile Values per Comparator



STANDARDS:
AS 3894.5, ASTM D 4417-A, IMO MSC.215(82), IMO MSC.244(83), ISO 8503-1, ISO 8503-2, SSPC PA 17

Technical Specification

Part Number	Description	Section Profiles
E125----1	Elcometer Grit Surface Comparator	25, 60, 100, 150µm
E125----2	Elcometer Shot Surface Comparator	25, 40, 70, 100µm

○ Optional Calibration Certificate available.

Elcometer 127 — Keane-Tator Surface Comparators & Magnifier



The Elcometer 127 range of Surface Comparators are available in sand, shot or grit surface profiles. Each comparator is supplied with 5 profile grades ranging from 0.5 - 5.5mils. Designed for use with the Elcometer 127 illuminated magnifier, each comparator has a hole in the centre allowing for clear visual comparisons to be made.

- 5 Profile Values per Comparator

STANDARDS:
AS 3894.5, ASTM D 4417-A, SSPC PA 17

Technical Specification

Part Number	Description	Section Profiles
E127----2	Elcometer 127 Sand Surface Comparator	0.5, 1, 2, 3, 4 mils
E127----3	Elcometer 127 Grit Surface Comparator	1.5, 2, 3, 4, 5 mils
E127----4	Elcometer 127 Shot Surface Comparator	2, 2.5, 3, 4, 5.5 mils
E127----1	Illuminated magnifier (x 5) with integrated surface comparator holder	

Elcometer 129 — Rubert & Rugotest Surface Comparators



The Elcometer 129 Surface Comparators are available in two models:

- Elcometer 129 Rubert - available in grit and shot versions
- Elcometer 129 Rugotest - shot and grit profiles on the same block

Roughness is displayed in both “classes” and “roughness averages” for easier identification. Available in Metric only.

- 6 Roughness Values per Comparator

STANDARDS:
AS 3894.5

Technical Specification

Part Number	Description	Section Profiles
E129----1	Elcometer 129/1 Rubert Grit Surface Comparator	0.4, 0.8, 1.6, 3.2, 6.3, and 12.5µm
E129----2	Elcometer 129/2 Rubert Shot Surface Comparator	0.4, 0.8, 1.6, 3.2, 6.3, and 12.5µm
E129----3	Elcometer 129/3 Rugotest Shot & Grit Surface Comparator	N6, N7, N8, N9, N10 and N11 equivalent to 0.8, 1.6, 3.2, 6.3, 12.5, and 25µm roughness averages respectively

MarSurf PS10 Surface Roughness Tester

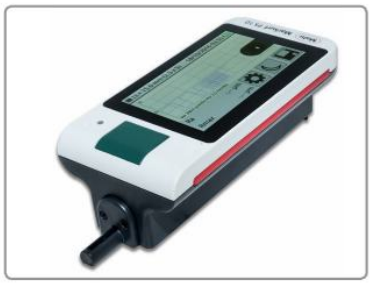
Elcometer 7062

The Elcometer 7062 is a lightweight and portable measuring solution for the range of surface roughness measurements required for compliance to International Standards.

The unit is also suitable for assessing surface roughness conditions in a wide range of general industrial applications; particularly where the sample is too large to bring to the laboratory.

With 31 surface parameter settings available the Elcometer 7062 surface roughness tester can display all parameters that comply to National & International Standards. These values include peak-to-valley profile measurement in combination with an assessment of the frequency of peaks within the sample area.

- Multilingual Display
- Integrated Calibration Standard







STANDARDS:
ASTM D7127, ASME B46, DIN 4768, EN 10049, ISO 4287, ISO 4287/1, JIS B 0601, SSPC PA 17

Technical Specification

Part Number	Description	Certificate
K7062M001	Elcometer 7062 MarSurf PS10 Surface Roughness Tester	●
Unit of Measurement	Metric, Imperial	
Stylus pick-up*	Inductive skidded stylus pick-up, 2µm (80µin) stylus tip, measuring force approx. 0.7 mN	
Parameters	DIN/ISO - Ra, Rq, Rz, Rmax, Rp, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr, RSm, Rsk, CR, CF, CL, R, AR, Rx JIS - Ra, Rq, Ry, RzJIS, tp, RSm, S ASME - Rp, Rpm, RPc, Rsk, tp MOTIF - R, AR, Rx, CR, CF, CL	
Measuring Range	0-350µm (0-13.78mils) Resolution 8nm (0.315µin)	
Filter	Phase-correct profile filter (Gaussian filter) according to DIN EN ISO 16610-21 (formerly ISO 11562), special filter according to DIN EN ISO 13565-1, Is filter according to DIN EN ISO 3274 (can be switched off)	
Cutoff (lc)	0.25mm, 0.8mm, 2.5mm; automatic (0.010", 0.030", 0.100")	
Traversing Length(Lt)	1.5mm, 4.8mm, 15mm; automatic (0.06", 0.192", 0.6")	
Traversing Length(acc. to MOTIF)	1mm, 2mm, 4mm, 8mm, 12mm, 16mm (0.040", 0.080", 0.160", 0.320", 0.480", 0.640")	
Evaluation Length (ln)	1.25mm, 4.0mm, 12.50mm (0.050", 0.15", 0.50")	
Number (n) of Sampling Lengths	Selectable: 1 to 16	
Memory Capacity	3,900 profiles, 500,000 results	
Battery	Rechargeable battery 100V to 264V power supply	
Dimensions	160mm × 77mm × 50mm (6.29" × 3.03" × 1.97") Weight 500g (1.10lbs)	
Packing List	Elcometer 7062 MarSurf PS10 base unit, drive unit, drive unit extension cable, 1 x standard stylus pick-up, built-in battery, roughness standard integrated into casing, height adjustment accessory, stylus pick-up protection, universal charger / mains adapter, USB cable, carry case with shoulder strap and belt loop, calibration certificate and operating instructions	

● Calibration Certificate supplied as standard.

MarSurf PS10 Surface Roughness Tester

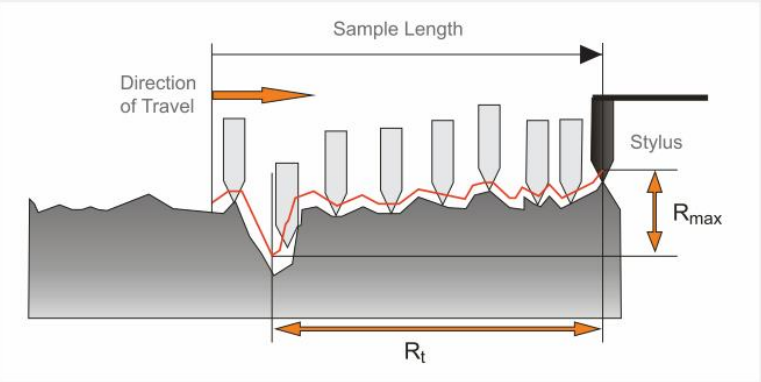
Elcometer 7062

Accessories

Part Number	Description
KT007061P001	**Stylus pick-up Extension; 80mm (3.15")**, ideal for measuring points located deep within cylinders
KT007061P002	**Stylus pick-up PHT 3-350**, for measurements in bores from 3mm (0.12") diameter
KT007061P003	**Stylus pick-up PHT 11-100,** for measurements at recessed measuring points, e.g. in grooves from 2.5mm (0.10") wide and up to 7.5mm (0.30") deep
KT007061P004	**Stylus pick-up PHTR 100,** for measurements on concave and convex surfaces
KT007061P005	**Stylus pick-up PHTF 0.5-100**, for measurements on tooth flanks
KT007061P006	**Stylus pick-up PT 150**, Dual-skid stylus pick-up for measurements on metal sheets and roller surfaces according to DIN EN 10049 (SEP)
KT007061P007	**Stylus pick-up PHT 6-350**
KT007061P008	**Stylus pick-up PHT 6-350, 5µm Probe Tip**, for measurements on flat planes, in bores from 6mm (0.24"), 17mm (0.67") deep and in grooves from 3mm (0.12") wide
KT007061P010	Measuring Stand ST-D
KT007061P012	Measuring Stand Mount - Required to fix the Elcometer 7062 to the measuring stand
KT007061P011	End Face Vee-Block - For measuring on flat faces of cylindrical and planar components
KT007061P013	Adaptor Set for Transverse Tracing; Comprising of Adaptor for Transverse Tracing and Vee-Block Holder with Vee-Block - For hand-held transverse tracing of cylindrical measuring objects

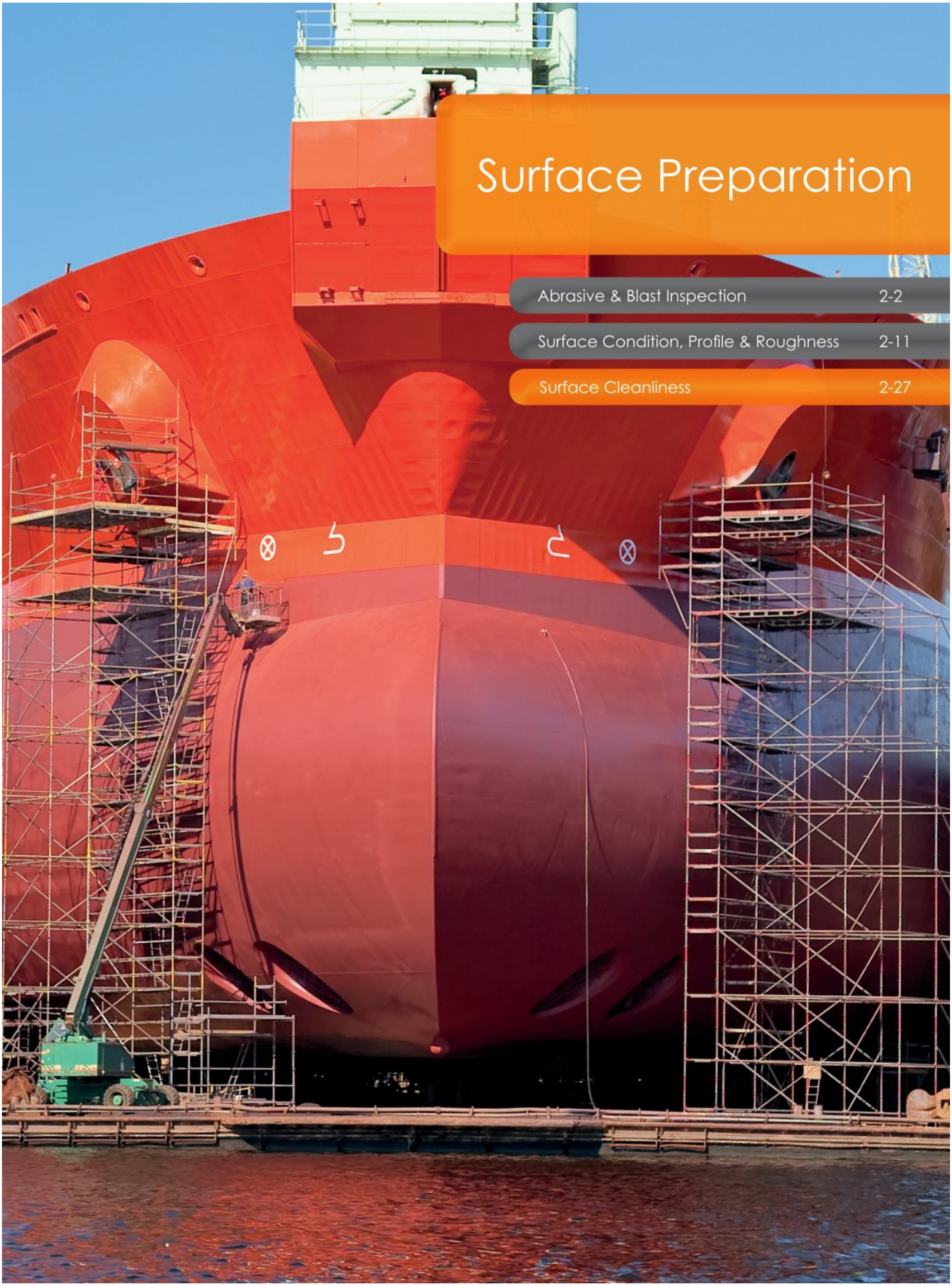
How to use a Surface Roughness Tester

Surface Roughness Testers consist of a stylus which is mechanically drawn across the surface recording an "image" of the surface roughness across a pre-defined sample length.



The measurement technique provides a number of measurement parameters including:

- **Rmax:** The greatest distance between the highest peak and lowest valley over the sampling length
- **Ra:** The average roughness over the sampling length
- **Rt:** The distance between the highest peak and the lowest valley within any given sampling length.
- **Rz:** The average distance between the highest peak and lowest valley over a number of sampling lengths



Surface Preparation

Abrasive & Blast Inspection 2-2

Surface Condition, Profile & Roughness 2-11

Surface Cleanliness 2-27

Elcometer 130 SSP Soluble Salt Profiler

The **Elcometer 130** soluble salt profiler provides fast and accurate measurement of the level and density of soluble salts - over 4 times faster than other Bresle equivalent methods.

BRESLE EQUIVALENT
ISO 8502-9 TEST METHOD

Large colour LCD screen displays readings in µg/cm², ppm, µS/cm, mS/cm, % salinity or mg/m²

Stores up to 3,500 sets of readings in 1,000 alpha numeric batches

Range of measurement modes:
- Cleanliness
  - Bresle Method Equivalency
  - Elcometer 130 Equivalency
- Conductivity



Multi-point conductivity sensor allows the trend in conductivity to be displayed as a density map

Non-oxidising gold plated contacts ensure lifetime performance

Automatic temperature compensation ensures accurate results

STANDARDS:
SSPC Guide 15, NSI 009-32

Soluble Salt Profiler

Elcometer 130 SSP

Four Bresle equivalent readings in 2½ minutes

Each filter paper is the size of four Bresle patches - the Elcometer 130 Soluble Salt Profiler not only displays the individual reading, but also provides four Bresle equivalent readings in just over two minutes.



Large Single Reading

Detailed analysis

In addition to soluble salt levels (cleanliness) or conductivity, the Elcometer 130 SSP carries out a detailed analysis of the test area - providing an accurate salt density profile map, pinpointing areas of high contamination outside user defined limits.



Four Bresle Patch Equivalent Readings

Accurate in all environments

The Elcometer 130 SSP has automatic temperature compensation ensuring accuracy in all climatic conditions. Impure water can be offset for accurate and repeatable readings.



Pass/Fail to User Defined Limits

Designed to last

Robust, durable & water resistant, the Elcometer 130 SSP is available with a 2 year manufacturer's warranty; giving you peace of mind.



2D Salt Density Map with High/Low Readings

Generate instant reports with ElcoMaster® software

The Elcometer 130 SSP wirelessly transmits readings, statistics and batches via Bluetooth® or via USB straight into an inspection application or into ElcoMaster® software, Elcometer's Mobile App, for instant report generation at your desk or, using your mobile, in the field.



3D Salt Density Profile & Peak Salt Concentration (Hi)

Elcometer 130 SSP **Soluble Salt Profiler**

How to use the Elcometer 130 Soluble Salt Profiler

Step 1



Wearing clean disposable gloves (supplied), fill a syringe with precisely 1.6ml of deionised water.

Step 2



Using tweezers, remove a filter paper from the pack and place it on the cleaned, non-labelled side of the magnetic disc supplied.

Step 3



Disperse the water from the syringe, evenly across the whole of the filter paper and remove any bubbles from under the paper.

Step 4



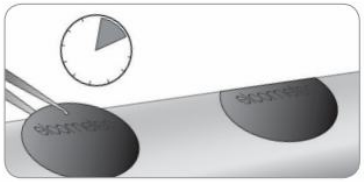
Place the magnetic disc, wetted face down, on to the area under test, pressing firmly into any contours or irregularities and start the 2 minute timer on the gauge.

Step 5



After two minutes, carefully remove the filter paper and magnetic disc from the test surface and place on to the measurement electrodes.

Step 6



As each filter paper remains on the surface for two minutes, multiple tests can be undertaken at the same time, reducing inspection times further.

Step 7



Close the lid, ensuring that the magnetic catch is fully engaged, the gauge will begin measuring.

Step 8



The reading will be displayed on screen in the chosen display mode.

Step 9



If required for further analysis, place the filter paper in a resealable bag (supplied).

Soluble Salt Profiler

Elcometer 130 SSP

Product Features

		Model SSP
Repeatable & reproducible measurements		■
Easy to use menu structure; *in 30+ languages*		■
Tough, impact, waterproof & dust resistant; *equivalent to IP64*		■
Bright colour screen; *with permanent backlight*		■
Scratch & solvent resistant display; *2.4" (6cm) TFT*		■
2 year gauge warranty[1]		■
USB power supply; *via PC*		■
Calibration certificate		■
Calibration Verification Mode *(with optional certified calibration tile)*		■
Ambient light sensor; *with adjustable auto brightness*		■
Emergency Light Mode		■
Magnetic & tripod mounting points		■
Data output, USB to PC & Bluetooth to PC, Android™ & iOS[2] devices		■
On screen statistics		
Number of readings *(n);* Mean/Average, *($\bar{x}$);* Standard deviation (σ); Highest reading/Peak salt concentration *(Hi;)* Lowest reading *(Lo);* Coefficient of variation *(CV%);* Number of readings above high limit ( )		■
Gauge memory		
Number of individual reading sets; *including salt density, pass/fail map & distribution graph*		3,500
Number of batches		1,000
Measurement units & range		
Surface Cleanliness - Elcometer 130 Mode	0-50µg/cm²	0-500mg/m²
Surface Cleanliness - Bresle Equivalent Method Mode	0-15µg/cm²	0-150mg/m²
Conductivity	0-6000µS/cm 0-3000ppm	0-6mS/cm 0-0.3% Salinity
Resolution		
Surface Cleanliness	0.1µg/cm²	1mg/m²
Conductivity	1µS/cm 1ppm	0.001mS/cm 0.0001% Salinity
Gauge Accuracy		±1% of reading
Measurement mode		
Surface Cleanliness		■
Conductivity		■
Calibration Offset Mode		■
Automatic temperature compensation		■
ElcoMaster® software & USB cable		■
Individual reading and profile map stored with time and date		■
Plastic transit case		■
Alpha-numeric batch names; *user definable on the gauge*		■
Fixed Batch Size Mode; *with batch linking*		■
Delete last reading		■
Limits; *(gauge & batch specific)*		■
Review, copy, clear & delete batches & calibration settings		■
Trend graph; *last 20 readings*		■
Batch review graph		■
Analogue bar graph		■

[1] The Elcometer 130 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. [2] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.

Elcometer 130 SSP Soluble Salt Profiler

Technical Specification

Model	Description	Certificate
E130-SP	Elcometer 130 Soluble Salt Profiler	
E130-SPC	Elcometer 130 Certified Soluble Salt Profiler	•
Operating Range	5°C - 40°C (41°F - 104°F)	
Power Supply	4 x AA batteries or via USB (rechargeable batteries can also be used)	
Battery Life	Alkaline: Approximately 30 hours Lithium: Approximately 45 hours	
Sample Time	2 minutes	
Sampling Size	110mm (4.3") circle	
Dimensions	250 x 145 x 50mm (9.8 x 5.7 x 1.9")	
Weight	780g (1.72lb)	
Standards	SSPC Guide 15 (Bresle Equivalent ISO 8502-9 Test Method), NSI 009-32	
Packing List	Elcometer 130 Soluble Salt Profiler, 3 x magnetic discs, 100 x high purity test papers, 250ml (8.5fl oz) pure distilled water, 20 x PVC storage bags, disposable gloves, sensor wipes, 3 x 3.0ml (0.1fl oz) syringes, 2 x plastic tweezers, 4 x AA batteries, shoulder strap, plastic transit case, test certificate and operating instructions, USB cable, ElcoMaster® software	

Accessories

		Certificate
T13027115	Calibration Verification Tile	•
T13025964	Magnetic Discs (x3)	
T13024091	3.0ml / 0.1fl oz Syringe (x3)	
T13024093	Self Seal Polythene Bags (x20)	
T99911344	Pure Distilled Water - 250ml (8.5fl oz) Bottle with 3ml syringe	
T13027596	Pure Distilled Water - 1000ml (33.8fl oz) Bottle with 3ml syringe	
T13024094	High Purity Test Papers (x100)	
T13024092	Disposable Vinyl Gloves (x20)	
T13024098	Plastic Tweezers (x2)	
T13024087	Box of 72 Sensor Wipes	
T99920130	USB Bluetooth® Adaptor V2.1+	

Calibration verification - peace of mind

A Calibration Verification Tile is available for verifying the accuracy of the gauge whilst out in the field and the verification date is recorded for use in reports.



• Calibration Certificate supplied as standard.

Soluble Salt Profiler

Elcometer 130 SSP

Bresle Patch Equivalence

Tested under laboratory conditions in accordance with ISO 8502-9, the Elcometer 130 SSP provides equivalent measurements to the Bresle Patch Method.

To show equivalency of measurement between the Bresle Method and the Elcometer 130 SSP it is essential that all parameters are identical except the gauges under test.

For equivalency to be established, both gauges should read a similar value, taking into account the accuracy and resolution of each test.

TEST METHOD

Working with the School of Materials at the University of Manchester (UK) an automated, repeatable and reproducible doping method was developed to apply a known salt concentration uniformly over a large panel.

Over 200 individual tests were undertaken across a range of concentrations and blast profiles.

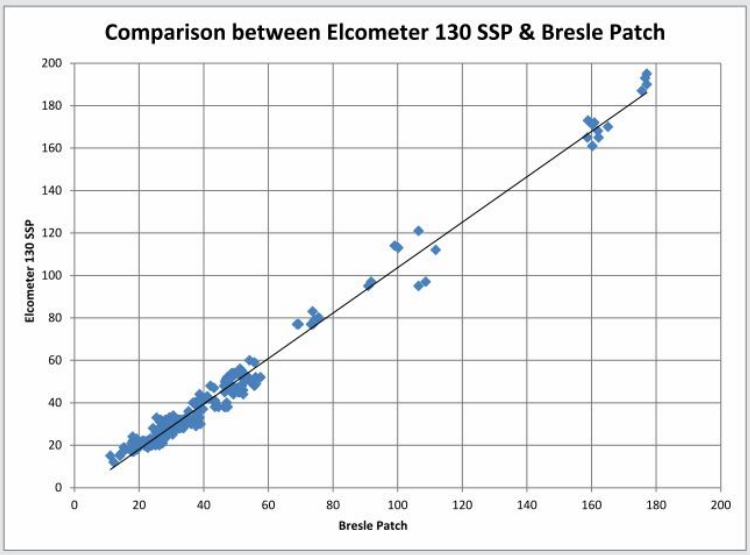
Nominal steel grit blast profiles

- Smooth <25µm (1.0mils)
- 25 to 50µm (1.0 to 2.0mils)
- 50 to 75µm (2.0 to 3.0mils)
- 75 to 150µm (3.0 to 6.0mils)

Surface salt concentration levels

- 15mg/m² to 25mg/m²
- 25mg/m² to 35mg/m²
- 35mg/m² to 45mg/m²
- 45mg/m² to 55mg/m²
- >55 mg/m²

Testing was undertaken under strict laboratory conditions, with each method tested in accordance with the manufacturer's instructions.



RESULTS

"The Elcometer 130 SSP measurement equivalency is less than 0.46µg/cm² across all concentrations on smooth and blasted substrates, almost half the background contamination of a Bresle Patch."

The Elcometer 130 SSP has undergone extensive side by side comparison testing against the Bresle Test Patch Method.

Background (inherent) contamination within the Bresle Test Patch has shown that the Bresle Test Patch has a background contamination range of 0.88µg/cm² (8.8mg/m²).

The variation in readings between the Elcometer 130 SSP and the Bresle Test Method are significantly within the background contamination range of the Bresle Patches (0.88µg/cm²); being less than 0.41µg/cm² for concentrations below 8.0µg/cm², and less than 0.46µg/cm² across concentrations below 16.5µg/cm².

For a copy of the full report and analysis visit www.elcometer.com

Elcometer 130 Salt Contamination Meter

The **Elcometer 130** quickly and accurately measures the level of soluble salts on surfaces over 4 times faster than Bresle equivalent test methods.



Non-oxidising gold plated contacts ensures lifetime accuracy

Fast reading rate allows multiple tests to be completed efficiently

Pressure plate ensures a constant and uniform pressure to paper

Automatic temperature compensation ensures accurate results

Stores up to 100,000 readings in 1,000 alpha numeric batches

Dust and water resistant rugged design equivalent to IP64

STANDARDS:
SSPC Guide 15

Measures on flat and convex surfaces

Suitable for use in Cloud Computing

2 YEAR[1] WARRANTY

Salt Contamination Meter

Elcometer 130

User Friendly

- Large buttons ideal for gloved hands
- Easy to use menus in multiple languages
- High reading limit indicator
- Factory calibrated for immediate use

Tough

- Heavy duty, impact resistant, dust and waterproof design equivalent to IP64
- Wipe clean sealed unit ideal for harsh environments
- Scratch and solvent resistant display

Accurate

- Conductivity measurement to ±1%
- Can be used in accordance with National and International Standards
- Automatic temperature compensation ensures repeatable, accurate results
- Calibration verification tiles
- Trend and batch readings graph formats for instant on-screen analysis

Efficient

- Instant readings allows multiple tests to be completed efficiently
- Alpha numeric batch identification
- Compatible with ElcoMaster® software and ElcoMaster® Mobile App
- Calibration offset allows the use of non-pure distilled water up to 2µg/cm²

Reliable

- Repeatable and reproducible measurements
- 2 year gauge warranty[1]
- Supplied with fully traceable Test Certificates
- Batch & individual readings are stored with date and time stamp

Powerful

- Measuring range up to 50µg/cm² (3000ppm)
- USB and Bluetooth® data output to iPhone[2] or Android™ devices
- Stores up to 100,000 readings in 1,000 batches
- Soluble salt and conductivity meter in one gauge



Calibration Verification Tiles available for verifying the accuracy of the gauge



[1] The Elcometer 130 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

[2]Compatible with iPod, iPhone and iPad.

Elcometer 130 Salt Contamination Meter

Product Features		■ Standard	□ Optional
		Model S	Model T
Repeatable & reproducible measurements		■	■
Easy to use menu structure; *in 30+ languages*		■	■
Tough, impact, waterproof & dust resistant; *equivalent to IP64*		■	■
Bright colour screen; *with permanent backlight*		■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*		■	■
2 year gauge warranty[1]		■	■
USB power supply; *via PC*		■	■
Calibration certificate		■	■
Calibration Verification Mode *(with optional certified calibration tiles)*		■	■
Ambient light sensor; *with adjustable auto brightness*		■	■
Emergency Light Mode		■	■
Magnetic & tripod mounting points		■	■
Gauge software updates; *via ElcoMaster® software*		■	■
Data output			
USB; *to computer*		■	■
Bluetooth®; *to computer, Android™ & iOS[2] devices*			■
ElcoMaster® software & USB cable		□	■
On screen statistics			■
Number of readings *(n);* Mean (average) *(x̄)* ; Standard deviation (σ); Highest reading *(Hi);* Lowest reading *(Lo);* Coefficient of variation*(CV%);* Number of readings above high limit ( )			■
Gauge memory			■
Number of readings			100,000
Number of batches			1,000
Measurement units & range	µg/cm² ppm µS/cm mS/cm % Salinity mg/m²	0-25	0-50 0-3000 0-6000 0-6 0-0.3 0-500
Measurement mode			
Surface cleanliness		■	■
Conductivity			■
Calibration Offset Mode		■	■
Automatic temperature compensation		■	■
Individual reading stored with date & time			■
Plastic transit case		■	■
Alpha-numeric batch names; *user definable on the gauge*			■
Fixed Batch Size Mode; *with batch linking*			■
Delete last reading			■
Limits; *user definable audible & visual pass/fail warnings*			■
Review, copy, clear & delete batches & calibration settings			■
Trend graph; *last 20 readings*			■
Batch review graph			■
Analogue bar graph			■

[1] The Elcometer xxx is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. [2] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.

Salt Contamination Meter

Elcometer 130

Technical Specification

Model S	Model T	Description		Certificate
E130-S	E130-T	Elcometer 130 Salt Contamination Meter		
E130-SC	E130-TC	Elcometer 130 Certified Salt Contamination Meter		•
		Model S	Model T	
Measurement Range		0-25µg/cm²	0-50µg/cm²; 0-500mg/m²; 0-6000µS/cm; 0-6mS/cm; 0-3000ppm; 0-0.3% Salinity	
Resolution		0.1µg/cm²	0.1µg/cm²; 1mg/m² 1µS/cm; 0.001mS/cm 1ppm; 0.0001% Salinity	
Measurement Accuracy	±1% of reading ±0.1µg/cm²	Operating Range	5°C - 40°C (41°F - 104°F)	
Power Supply	4 x AA batteries (rechargeable batteries can also be used), or power via USB			
Number of Tests	Approximately 4,000 measurements before battery replacement			
Sample Time	2 minutes	Sampling Size	110mm (4.3") diameter circle	
Dimensions	250 x 145 x 50mm (9.8 x 5.7 x 1.9")	Weight	780g (1.72lb)	
Packing List	Elcometer 130 Salt Contamination Meter, 100 x high purity test papers, 250ml (8.5fl oz) pure distilled water, 20 x PVC storage bags, disposable gloves, sensor wipes, 3 x 3ml (0.1fl oz) syringes, 2 x plastic tweezers, 4 x AA batteries, shoulder strap, plastic transit case, test certificate and operating instructions, USB cable (T), ElcoMaster® software (T)			

Accessories

		Certificate
T13023980	Calibration Verification Tiles, Set of 3	•
T13024091	3ml / 0.1fl oz Syringe (x3)	
T99922341	Pack of 10 Display Screen Protectors	
T13024093	Box of 20 Self Seal Polythene Bags	
T99911344	Pure Distilled Water - 250ml (8.5fl oz) Bottle with 3ml syringe	
T13027596	Pure Distilled Water - 1000ml (33.8fl oz) Bottle with 3ml syringe	
T13024094	Box of 100 High Purity Test Papers	
T13024092	Box of 20 Disposable Vinyl Gloves	
T13024098	Plastic Tweezers (x2)	
T13024087	Box of 72 Sensor Wipes	
T13025964	Magnetic Discs (x3)	
T99921325	USB Cable	

• Calibration certificate supplied as standard

Elcometer 135C — Elcometer Bresle Test Patches



The Elcometer 135C Bresle Test Patch determines the concentration of soluble salts on uncoated surfaces in accordance with the ISO 8502-6 test method.

Elcometer Bresle Test Patches are also available as part of the Elcometer 138 Bresle Salt Kit.

STANDARDS:
ISO 8502-6

Technical Specification

Part Number	Description			Certificate
E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)			•
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)			•
Test Area	1250mm², 12.5cm² (1.93sq inches)	Sample Volume	2.6ml ± 0.6ml	
Dimensions	50 x 50mm (1.97 x 1.97")			

Elcometer 135B — Bresle Patches



Elcometer 135B Original Bresle Patches are used to determine surface chloride contamination and are self-adhesive rubber film patches with a sealed compartment for sampling soluble impurities from steel surfaces with a suitable solvent.

Elcometer135B Bresle Patches can also be used with the Elcometer 138C Bresle Salt Kit.

STANDARDS:
ISO 8502-6

Technical Specification

Part Number	Description		
E135----B	Elcometer 135B Bresle Patches		
Tests per Kit	25	Test Area	1250mm², 12.5cm² (1.93sq inches)
Sample Volume	2.6ml ±0.6ml	Dimensions	52 x 52mm (2.0 x 2.0")

• Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

Bresle Patch is a Trade Mark of SP Sveriges Tekniska Forskningsinstitut AB

Bresle Salt Kit

Elcometer 138

It is essential that the level of contaminants on a surface is measured prior to application of the coating to ensure the quality of the coating and that its optimum lifetime is achieved.

If the coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly re-coating and high maintenance costs.

The Elcometer 138 Bresle Kit includes the Elcometer 138 Conductivity Meter. This lightweight, portable conductivity meter accurately measures the salinity of the test samples.

The sensor cartridge can be easily replaced when necessary and displays conductivity in a range of units including: S/cm, S/m, ppm and % salinity.



STANDARDS:
AS 3894.6-A, IMO MSC.215 (82), IMO MSC.244 (83), ISO 8502-6, ISO 8502-9, SSPC Guide 15, US Navy NSI 009-32, US Navy PPI 63101-000

Technical Specification

Part Number	Description			Certificate
E138-1C	Elcometer 138 Bresle Salt Kit with Elcometer 135C Bresle Test Patches			●
E138-1	Elcometer 138 Bresle Salt Kit with Elcometer 135B Bresle Patches			
Measurement Range	0 mS/cm to 19.9 mS/cm and 0 S/m to 1.99 S/m			
Accuracy*	2% full scale ±1 digit			
Dimensions	346 x 292 x 84mm (13.6 x 11.5 x 3.3")	Weight	1.1kg (2lb 7oz)	
Packing List	Box of 25 Elcometer 135C Bresle Test Patches (E138-1C) or Elcometer 135B Bresle Patches (E138-1), Elcometer 138 Conductivity Meter, 14ml (0.47fl oz) bottle of standard 1.41 mS/cm calibration solution, 14ml (0.5fl oz) bottle of moistening solution, 250ml (8.5fl oz) bottle of pure distilled water, 3 x 5ml (0.17fl oz) syringes, 3 x blunt needles, 30ml (1fl oz) plastic beaker, 2 x CR2032 batteries, carry case and operating instructions		

Accessories

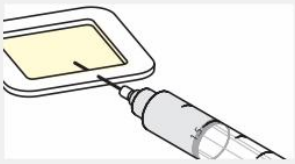
E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)	T13823928	Replacement Conductivity Sensor
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)	T13818517	3 x 5ml (0.17fl oz) Syringes
E135----B	Elcometer 135B Bresle Patches (Box of 25)	T13818518	3 x Needles
T13827259	Pure Distilled Water 250ml (8.5fl oz) Bottle	T13818519	Plastic Beaker 30ml (1fl oz)
T13823926	Standard 1.41mS/cm (1410µS/cm) Calibration Solution – 6 x 14ml (0.47fl oz) Bottles		

Measuring salt contamination using the Bresle method in accordance with ISO 8502-6/ISO 8502-9



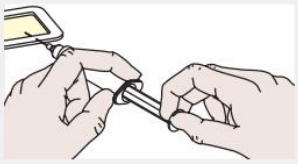
Remove protective backing and foam centre from the patch.

Apply the patch to surface and press firmly around perimeter to achieve a complete seal - ensuring that a minimum amount of air is trapped within the test compartment.



Fill the syringe with 3.0ml of pure distilled water.Insert the syringe into the patch through its foam perimeter, at a 30° angle, so that it passes through the foam into the test compartment.

Inject the water into the test compartment. If necessary remove the remaining air within the compartment.



During an agreed period of time, without removing the needle - withdraw and re-inject the solution back into the patch, at least four times.



At the end of the period extract as much solution as possible.

Remove the syringe from the patch and measure the conductivity of the solution using a suitable Conductivity Meter such as the Elcometer 138 on page 2-41.

● Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

* See Elcometer 138 Conductivity Meter for full specification

Elcometer 138B Basic Bresle Salt Kit



STANDARDS:
AS 3894.6-A, IMO MSC.215 (82), IMO MSC.244 (83), ISO 8502-6, ISO 8502-9, SSPC Guide 15, US Navy NSI 009-32, US Navy PPI 63101-000

If a coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly re-coating and high maintenance costs.

Therefore it is essential to measure the level of contaminants on a surface prior to coating application to ensure the quality of the coating and that its optimum lifetime is achieved.

The Elcometer 138 Basic Bresle Kit includes the Elcometer 138E Conductivity Meter and Elcometer 135C Bresle Test Patches. This lightweight, portable conductivity meter accurately measures the salinity of the test samples.

The sensor cartridge can be easily replaced when necessary and displays conductivity in a range of units including: S/cm & S/m.

Technical Specification

Part Number	Description		Certificate
E138-EC	Elcometer 138 Basic Bresle Salt Kit with Elcometer 135C Bresle Test Patches		•
Measurement Range	0 µS/cm to 200.0 µS/cm, 0 µS/cm to 2000 µS/cm, 0 mS/cm to 20.00 mS/cm		
Accuracy*	± 1% of full scale		
Dimensions	307 x 260 x 74mm (12.1 x 10.2 x 2.9")	Weight	952g (2lb 1oz)
Packing List	Box of 25 Elcometer 135C Bresle Test Patches, Elcometer 138E Conductivity Meter, 250ml (8.5fl oz) bottle of pure distilled water, 3 x 3ml (0.1fl oz) syringes, 3 x blunt needles, 1 x 20ml standard 1413µS/cm (1.413mS/cm) Calibration Solution, 30ml (1fl oz) plastic beaker, 4 x 1.5V batteries, transit case & operating instructions		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)
T13818517	3 x 5ml (0.17fl oz) Syringes
T13818518	3 x Needles
T13818519	Plastic Beaker 30ml (1fl oz)
T13827355	Elcometer 138E Conductivity Meter
T13827352-1	Standard 447 µS/cm (0.447 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-3	Standard 15000 µS/cm (15 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles
T13824404	Standard 12.9 mS/cm (12900 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles
T13827259	Pure Distilled Water - 250ml (8.5fl oz) Bottle

• Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

* See Elcometer 138E for full specification

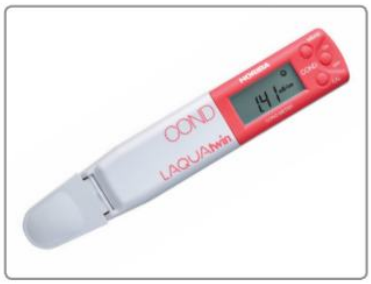
Conductivity Meter

Elcometer 138

Incorporating a flat sensor, the Elcometer 138 Conductivity Meter can measure the conductivity of a solution from a single drop of a sample.

Users can either place a sample on the meter's flat sensor or immerse the meter's sensor directly into the solution under test. The Elcometer 138 can be used for a broad range of applications, including: soluble salt concentrations, the electric conductivity (EC) of solutions used in agricultural operations and measuring rainwater pollution levels.

The Elcometer 138 Conductivity Meter includes a convenient salinity conversion indicator.







Features:

- Highly precise measurements can be obtained from a single drop
- Automatic range switching gives a wide measurement range of 1µs/cm to 19.9mS/cm
- Out of range and low battery alarms
- Visual indication when ambient temperature is outside the operating range

Technical Specification

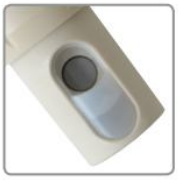
Part Number	Description		
T13823925	Elcometer 138 Conductivity Meter		
Units	S/cm, S/m, % Salinity, ppm (Total Dissolved Salts - TDS)		
Measuring Range	Conductivity: Salt: TDS:	0mS/cm to 19.9mS/cm, 0S/m to 1.99S/m 0% to 1.1% 0ppm to 9900ppm	
Resolution & Accuracy		Resolution	Accuracy
	0µS/cm to 199µS/cm: 0.20mS/cm to 1.99mS/cm: 2.0mS/cm to 19.99mS/cm: 20mS/cm to 199mS/cm:	1µS/cm 0.01mS/cm 0.1mS/cm 1mS/cm	± 5µS/cm ± 0.05mS/cm ± 0.5mS/cm ± 5mS/cm
Operating Temperature	5°C to 40°C (41°F to 104°F)		
Power Supply	2 x CR2032 batteries	Battery Life	approx. 400 hours of continuous use
Dimensions	164 x 29 x 20mm (6.5 x 1.2 x 0.8")	Weight	47g (1.7oz)
Packing List	Elcometer 138, 14ml (0.47fl oz) bottle of standard 1.41mS/cm calibration solution, 14ml (0.47fl oz) bottle of moistening solution, syringe, 2 x CR2032 batteries and operating instructions		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)	T13823928	Replacement Conductivity Sensor
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)	T13818517	3 x 5ml (0.17fl oz) Syringes
T13818518	3 x Needles	T13818519	Plastic Beaker 30ml (1fl oz)
T13827352-1	Standard 447 µS/cm (0.447 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches		
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches		
T13827352-3	Standard 15000 µS/cm (15 mS/cm) Calibration Solution - 4 x 20ml (0.74fl oz) Single Use Pouches		
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles		
T13824404	Standard 12.9 mS/cm (12900 µS/cm) Calibration Solution - 6 x 14ml (0.47fl oz) Bottles		
T13827259	Pure Distilled Water 250ml (8.5fl oz) Bottle		

Elcometer 138E Conductivity Meter







Incorporating a cup-style sensor, the Elcometer 138E Conductivity Meter can measure the conductivity of a solution from a few drops of a sample.

Users can either place a sample on the meter's sensor or immerse the meter's sensor directly into the solution under test. The Elcometer 138E is suitable for a broad range of applications, including: soluble salt concentrations, the electric conductivity (EC) of solutions.

Features:

- Automatic range switching gives a wide measurement range of 0µs/cm to 20mS/cm
- Out of range and low battery indicators
- Automatic temperature compensation (ATC) and manual or automatic one or two-point calibration
- LCD screen with indicators and error messages, dual-line display
- User-replaceable integrated 2-pin, stainless steel electrode provides chemical resistance

Technical Specification

Part Number	Description		
T13827355	Elcometer 138E Conductivity Meter		
Measurement Principle	2 AC Bipolar Method		
Sensor Type	Cup		
Units	µS/cm, mS/cm		
Measuring Range & Resolution	PU: 0 - 200.0µS/cm LO: 0 - 2000µS/cm HI: 0 - 20mS/cm	0.1µS/cm 1µS/cm 0.01mS/cm	
Accuracy	± 1% of full scale		
LCD Display	Custom Dual Display; 27 x 21mm (1.06 x 0.83")		
Operating Temperature	0°C to 50°C (32°F to 122°F)		
Power Supply	4 x 1.5V LR44 batteries	Battery Life	>150 hours
Dimensions	165 x 38mm (6.5 x 1.5")	Weight	90g (3.2oz) - including batteries
Packing List	Elcometer 138E, 4 x 1.5V LR44 batteries and operating instructions		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Pack of 25)
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)
T13827352-1	Standard 447 µS/cm (0.447 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-3	Standard 15000 µS/cm (15 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution – 6 x 14ml (0.47fl oz) Bottles
T13824404	Standard 12.9 mS/cm (12900 µS/cm) Calibration Solution – 6 x 14ml (0.47fl oz) Bottles
T13827259	Pure Distilled Water 250ml (8.5fl oz) Bottle

Surface Contamination Kit

Elcometer 138/2

Measuring the level of contaminants on a surface prior to application of the coating is essential to ensure the quality of the coating and that its optimum lifetime is achieved.

If the coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly recoating and high maintenance costs.

The Elcometer 138/2 Surface Contamination Kit provides the user with a means for testing invisible surface contaminants including:

- pH
- chloride ions
- iron
- salts







STANDARDS:
AS 3894.6-A, AS 3894.6-D, SSPC Guide 15

Technical Specification

Part Number	Description	Certificate
E138----2	Elcometer 138/2 Surface Contamination Kit	•
Measuring Range	pH: 0pH to 14pH Iron: 3,10, 25, 50, 100, 250, 500mg/l Fe^2 Chloride: 30- 600µg/cm^2 (30 - 600ppm) Cl	
Dimensions	300 x 220 x 75mm (11 x 8.6 x 3")	
Weight	2.1kg (4.62lb)	
Packing List	100 x pH test strips, 100 x iron test strips, 40 x chloride test strips, 50 x Elcometer 135C Bresle test patches, 3 x 5ml (0.17fl oz) syringes, 3 x needles, 30ml (1fl oz) plastic beaker, carry case and operating instructions	

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Pack of 25)
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)
T13818517	3 x 5ml (0.17fl oz) Syringes
T13818518	3 x Needles
T13818519	Plastic Beaker, 30ml (1fl oz)
T13827259	Pure Distilled Water, 250ml (8.5fl oz) Bottle
T13820562	100 x pH Test Strips
T13820563	100 x Iron Test Strips
T13820564	40 x Chloride Test Strips

• Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

Elcometer 138/2 Chloride Test Strips



Chloride ions on a steel surface increase the probability that corrosion of the steel will take place even if a protective coating is applied. Chloride ions trapped under a coating in the presence of steel and moisture will form a corrosion cell. This corrosion process will result in premature failure of the protective coating and may cause blistering of coatings in immersion service.

The chloride test strips will indicate the concentration of chloride ions in the sample solution and if the area of sample collection and the volume of water is known the concentration can be measured in parts per million or micrograms per millilitre.

Technical Specification

Part Number	Description
T13820564	40 x Chloride Test Strips

Elcometer 138/2 Iron Test Strips



Ferrous ions are an indicator of the corrosion of steel as they are formed when the iron oxidises as a result of a corrosion cell formed between the steel and oxygen in the presence of water. The ferrous ion test strips will also indicate the concentration of ferrous ions in a sample solution in the same way as the chloride strips.

Technical Specification

Part Number	Description
T13820563	100 x Iron Test Strips

Elcometer 138/2 pH Test Strips



These strips will determine if a solution or surface is acid or alkaline in nature. Acids form when certain gases are dissolved in water, for example, chlorine in water produces hydrochloric acid, carbon dioxide in water produces carbonic acid, sulphur dioxide in water produces sulphuric acid all of which are corrosive to steel.

The presence of these contaminants can either be detected in a solution washed from the surface or by putting a wet pH Test Strip on to the dry surface. pH does not measure the concentration but it does indicate how acidic or alkaline the surface is. Alkaline surfaces are normally associated with either concrete surfaces that are to be coated or steel re-enforcement bars buried in concrete.

Technical Specification

Part Number	Description
T13820562	100 x pH Test Strips

Chloride Ion Test Kit for Surfaces

Elcometer 134S

Chloride salts left on the surface before the first coat is applied can result in the coating system being forced off the surface by corrosion or blistering before the full life of the coating has been reached. To ensure that the chloride has been removed it is essential that the surface is tested before the coating is applied.

Elcometer 134S test method: a latex sleeve is filled with a Chlor*Rid extract solution and stuck to the test surface where the solution is worked against the surface to extract the salts. The titration tube is inserted and the results can be recorded.



STANDARDS:
ISO 8502-5, SSPC Guide 15

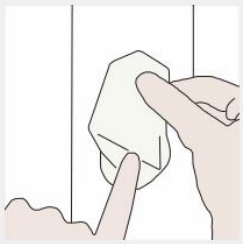
Technical Specification

Part Number	Description
E134----1	Elcometer 134S Salt Detection Kit for Blast Cleaned Surfaces
Measuring Range	1 - 60µg/cm² (1 - 60ppm)
Scale Resolution	1µg/cm² (1ppm)
Tests per Kit	5
Dimensions	185 x 125 x 110mm (7 x 5 x 4.5”)
Weight	250g (9oz)
Packing List	5 x test kits each containing: titration tube snapper, strap, clip, pre-measured bottle of Chlor*Rid extract solution, sleeve, titration tube and operating instructions

How to use a Chloride Ion Test Kit for Surfaces



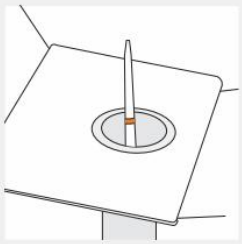
1. Remove cap from CHLOR*EXTRACT solution bottle and pour entire contents into the test sleeve.



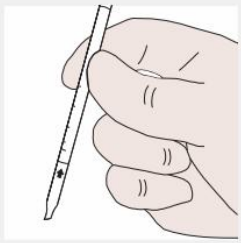
2. Firmly apply test sleeve to test surface, allowing extract solution to come into contact with test surface.



3. Insert the titration tube into the test sleeve.



4. Insert sleeve with extract solution and titration tube into the hole previously made in the box lid and wait 1½ minutes.



5. Immediately remove and read the number on the titration tube at the interface of the colour change. Pink is normal, white is the chloride level.

For Chloride Ion Test Kits for water and abrasives see page 2-3



Elcometer 134 CSN Chloride, Sulphate & Nitrate Kit







STANDARDS:
ISO 8502-5, ISO 8502-11, SSPC Guide 15

The Elcometer 134 CSN Salt Kit is designed to accurately measure surface chloride, sulphate and nitrate ions in minutes and offers a single kit solution for testing in the field.

All the components of the Elcometer CSN Test Kits are pre-measured and pre-dosed for trouble free testing.

Results are recorded in parts per million (ppm) requiring no complicated calculations. Elcometer 134 CSN tests are all designed to use a ratio of 1:1 for easy conversion to µg/cm².

Supplied in an ABS plastic carry case for easy portability around the site, each field kit is supplied with full instructions attached to the inside lid, together with:

- 5 x Chloride tests
- 5 x Sulphate tests, together with 1 x colorimeter, for sulphate testing
- 5 x Nitrate test strips
- 5 x Syringes (without needles)

Refill kits containing 5 x chloride, nitrate and sulphate tests are available.

Technical Specification

Part Number	Description
E134-CSN	Elcometer 134 CSN Chloride, Sulphate & Nitrate Test Kit
Measuring Range	0 - 100µg/cm² (0 - 100ppm)
Scale Resolution	1µg/cm² (1ppm)
Sample Time	1 - 5 minutes (approximately)
Storage Temperature	Not exceeding 25°C (77°F)
Dimensions	360 x 320 x 140mm (14.2 x 12.6 x 5.5”)
Weight	1.76kg (3.8lb)
Packing List	5 x tests (containing: 5 x chloride tests, 5 x nitrate test strips, 5 x sulphate tests, 5 x syringes), a colorimeter, carry case and operating instructions

Accessories

T134-KIT	Refill Kit for Elcometer 134 CSN

Amine Blush Swab Test Kit

Elcometer 139



When using amine cured epoxy resin coatings in a multi-layer system, if the original coating cures in a low ambient temperature and/or in a high humidity environment, problems - referred to in the industry as amine blush can develop. The presence of amine blush can lead to inter-coat adhesion failures if the film is re-coated.

The Elcometer 139 Amine Blush Swab Test Kit is a rapid colorimetric test designed solely for the use in the quick and immediate identification of amine blush (carbamates) on the surface of coatings using surface swabs. The presence of amine blush is indicated by a visual change of colour of the test solution when compared with a control sample.

Technical Specification

Part Number	Description
E139----A	Amine Blush Swab Test Kit
Dimensions	172 x 110 x 100mm (6.75 x 4.25 x 4.00") Weight 350g (12.3oz)
Packing List	20 x polystyrene sampler test tubes of 1.0ml (0.035fl oz) buffer solution, a test tube of diluent part A solution, a test tube of diluent part B solution, 2 x diluent transfer pipettes, 3 x test part A dropper bottles - containing ACh-E powder (freeze dried), 3 x test part B dropper bottles - containing ATC powder (freeze dried), a test part C dropper bottle - containing chromogen DTNB solution, a bottle of swab solution - containing 25ml (0.89fl oz) of rubbing alcohol (70% IPA), 20 x cotton swabs (q-tips), 2 x swab templates - 2.54 x 2.54cm (1 x 1"), a pair of tweezers, a re-sealable plastic bag for content disposal, a operating instructions

Amine Blush Chip Screen Test Kit

Elcometer 139



The Elcometer 139 Amine Blush Chip Screen Test Kit is a rapid colorimetric test designed solely for the use in the quick and immediate identification of amine blush (carbamates) on the surface of coatings using small chips or shavings.

The presence of amine blush is indicated by a visual change of colour of the test solution when compared with a control sample.

The Elcometer 139 determines whether amine blush is or is not present on the coating's surface.

Technical Specification

Part Number	Description
E139----C	Amine Blush Chip Screen Test Kit
Dimensions	172 x 110 x 100mm (6.75 x 4.25 x 4.00") Weight 310g (10.9oz)
Packing List	20 x polystyrene sampler test tubes of 1.0ml (0.035fl oz) buffer solution, 1 x test tube of diluent part A solution, 1 x test tube of diluent part B solution, 2 x diluent transfer pipettes, 3 x test part A dropper bottles - containing ACh-E powder (freeze dried), 3 x test part B dropper bottles - containing ATC powder (freeze dried), 1 x test part C dropper bottle - containing chromogen DTNB solution, 1 x scissors 1 x re-sealable plastic bag for content disposal, a operating instructions

Accessories

T13923546	Test Tube Stand

Elcometer 142 ISO 8502-3 Dust Tape Test Kit



The Elcometer 142 Dust Tape Test kit allows assessment of the quantity and size of dust particles on surfaces prepared for painting. Dust on blast cleaned surfaces can reduce coating adhesion, leading to premature coating failure and sub-standard coating finish.

Used in conjunction with the Elcometer 145 Dust Tape Roller the kit can be used in accordance with the recommendations of BS EN ISO 8502-3 either as a pass/fail test or as a permanent record of the presence of dust.

STANDARDS:
AS3894.6-C, IMO MSC.215 (82), IMO MSC.244 (83), ISO 8502-3, US Navy PPI 63101-000

Technical Specification

Part Number	Description		
E142----1	Elcometer 142 ISO 8502-3 Dust Tape Test Kit		
Measuring Range	Chart with dust classes ranging from 0 - 5 with descriptions for accurate class placement		
Dimensions	210 x 297mm (8.27 x 11.69")	Weight	250g (9oz)
Packing List	Microscope with 10 x magnifier, 2 batteries (LR14), graticule, adhesive tape to specification ISO 8502-3, comparator display board, dust assessment plate, test record sheets (pack of 25) and operating instructions		

Accessories

T14219451	Test Record Sheet
T14219454	Display Board
T14223003	Adhesive Tape 1 Roll Pack
T14219525	Dust Assessment Plate

Elcometer 145 Dust Tape Roller



The Elcometer 145 Dust Tape Roller is used in conjunction with the Elcometer 142 Dust Tape Test kit to assess the quantity and size of dust particles on surfaces prepared for painting.

The Dust Tape Roller presses the Elcometer 142 Dust Tape to the surface using a controlled constant force as required by BS EN ISO 8502-3 (BS 7079-B3:1993).

Technical Specification

Part Number	Description		
E145----1	Elcometer 145 Dust Tape Roller		
Load Exerted	39.2 to 49.0 N, (8.8 and 11.0 lbF) when spring fully depressed		
Dimensions	160 x 70 x 110mm (6.3 x 2.76 x 4.33")	Weight	615g (21.7oz)



Moisture

3

Moisture



The measurement of moisture within the protective coatings industry, is often vital to the successful application of a coating and critical to the resulting quality, performance and life span of the coated product.

Moisture: the presence of moisture within a material will result in poor adhesion, premature coating failure and poor appearance. For example, applying a powder coating to a damp wooden panel will cause steam to be created when the panel passes through the curing oven, thus causing damage to the coating.

Types of Moisture Meters

On porous materials such as concrete, plaster, brick, wood, the moisture content of the substrate should be measured, as the presence of moisture within a material will result in poor adhesion, premature coating failure and poor appearance.

It is not sufficient to simply ensure that the surface is dry as often the surface of the substrate is the driest point – due to evaporation. It is important to establish the moisture content within the substrate itself.

When powder coating wooden panels, for example, if the wood (or mdf) has too high a moisture content, as the panel passes through the oven, the moisture is heated, which generates steam – causing significant coating finish issues.

Applying a coating to a concrete floor which is too damp can cause premature adhesion failure. Moisture meters have been developed to specifically determine the level of moisture in a substrate and come in two forms:

Pin-type moisture meters: invasive pins are pushed firmly into the surface of the substrate being measured and by measuring the electrical resistance between the pin electrodes, provide the percentage moisture content (%MC) in the substrate.

Pinless, contact-type moisture meters: whilst pinless meters typically measure moisture content faster and are non-destructive they do require a relatively flat surface because the sensors are mounted on the base of the gauge making them suitable for concrete surfaces.

Digital Moisture Meters

Elcometer 7000

The Elcometer 7000 range offers accurate and easy to use moisture measurement.

Available in two versions, the Concrete Moisture Meter has a non-invasive probe that emits a radio frequency to penetrate the surface to detect moisture. Ideal for rapid surveys of solid wall, floors and ceramic tiles.

The Digital Moisture Meter has two pin probes that allows the gauge to be pressed on to a surface and take a measurement of the immediate area and also has a non-invasive probe on the back of the gauge for moisture detection.



- Calibrated ready for use
- Instant readings on a clear, easy to read scale
- Fully portable and battery operated

Technical Specification

Model	Elcometer 7000S Concrete Moisture Meter	Elcometer 7000PS Digital Moisture Meter	Certificate
Part Number	G7000S	G7000PS	○
Measuring Range	70 to 999 relative (non-invasive) Dry (green); 70 - 169 At risk (yellow); 170 - 199 Wet (red); 200 - 999	70 to 999 relative (non-invasive) Dry (green); 70 - 169 At risk (yellow); 170 - 199 Wet (red); 200 - 999 7.9% to 99% WME (pin measurement) Dry (green); 7 - 16.9 At Risk (yellow); 17 - 19.9 Wet (red); 20 - 99.9	
Measurement Depth	Non-invasive up to 19mm (¾")	Non-invasive up to 19mm (¾") Pin up to 12.7mm (½")	
Display	LCD Display with separate colour indicators		
Dimensions	175 x 48 x 50mm (7.0 x 1.9 x 2.0")	190 x 70 x 49mm (7.5 x 2.75 x 1.9")	
Weight	195g (7oz)	225g (8oz)	
Power Supply	9V battery (~ 20 hours continuous use)		
Packing list	Elcometer 7000 Moisture Meter, HD MC probe (Model PS), Deep Wall probe 127mm (5") (Model PS), pin calibration check (Model PS), wood calibration chart (Model PS), battery, carry case and operating instructions		

○ Optional Calibration Certificate available for Elcometer 7000PS Digital Moisture Meter only

Elcometer 7410 Concrete Moisture Meter



The Elcometer 7410 is an accurate and easy to use non-invasive instrument for non-destructive measurement of moisture content of concrete.

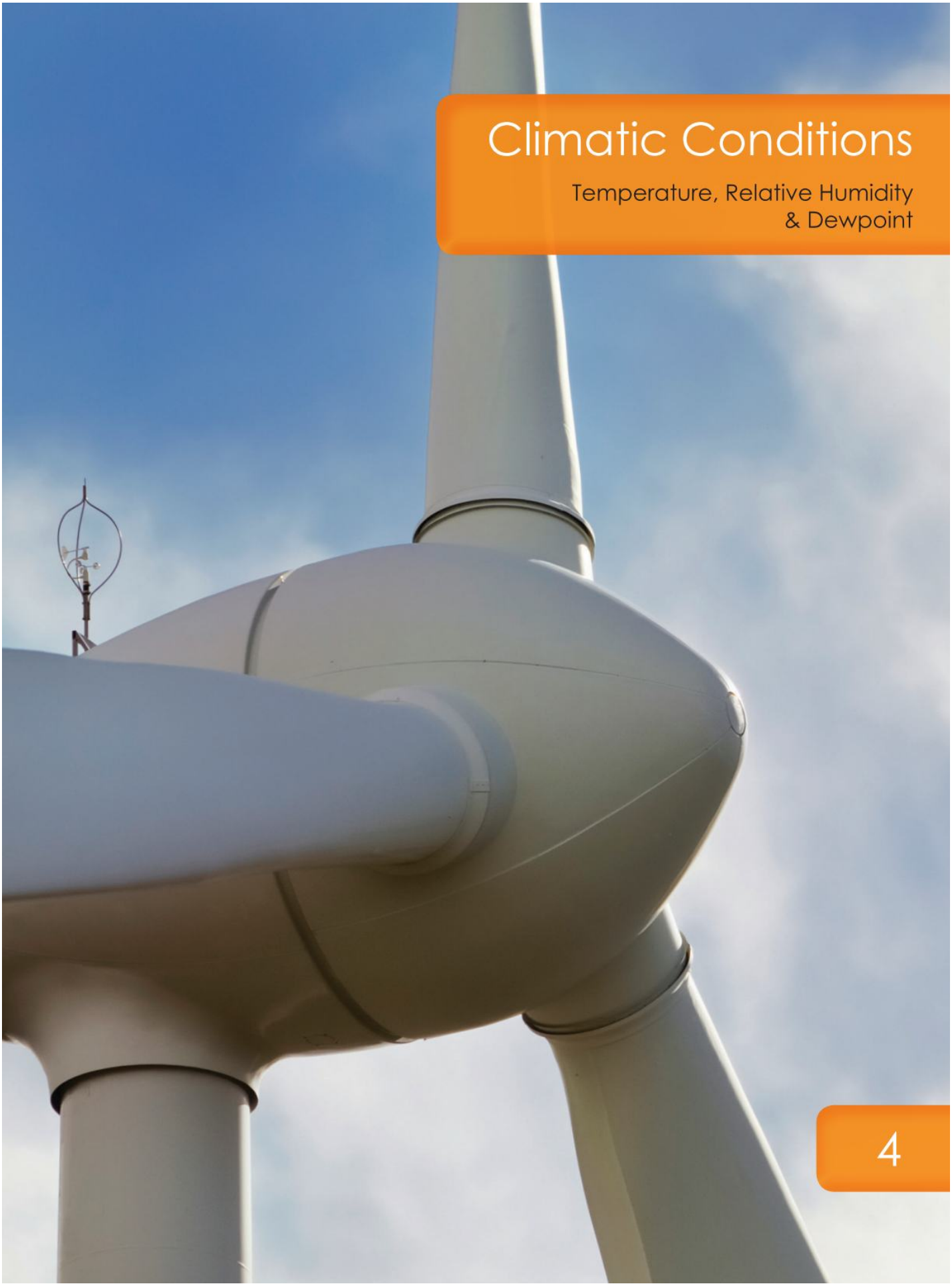
The electrodes transmit parallel low frequency signals, calibrated to give average moisture content by comparing the change in impedance between damp and acceptably dry concrete.

- Calibrated ready for use on concrete
- Instant readings on a clear, easy to read scale
- Fully portable, battery operated and non-destructive

Technical Specification

Part Number	Description			Certificate
K0007410M001	Elcometer 7410 Concrete Moisture Meter			•
Measuring Range	Concrete 0 - 6%, Floor screed 0-10%			
Substrate Type	Concrete, gypsum floor screed			
Measurement Depth	12.5mm (0.5")			
Dimensions	155 x 85 x 43mm (6.1 x 3.3 x 1.7")	Weight	298g (10.5oz)	
Power Supply	9V PP3 battery (6F22 (PP3) type)			
Packing list	Elcometer 7410 Concrete Moisture Meter, battery, carry case, calibration certificate and operating instructions			

• Certificate supplied as standard.



Climatic Conditions

Temperature, Relative Humidity & Dewpoint

4

Climatic Conditions



Monitoring climatic conditions, such as temperature, relative humidity, dewpoint and moisture, is often vital to the successful application of a coating and are critical to the resulting quality and performance of the coated product.

Climatic Conditions: Elcometer offer a complete range of dewpoint and relative humidity meters, thermometers, dataloggers, moisture meters and anemometers to monitor climatic conditions.

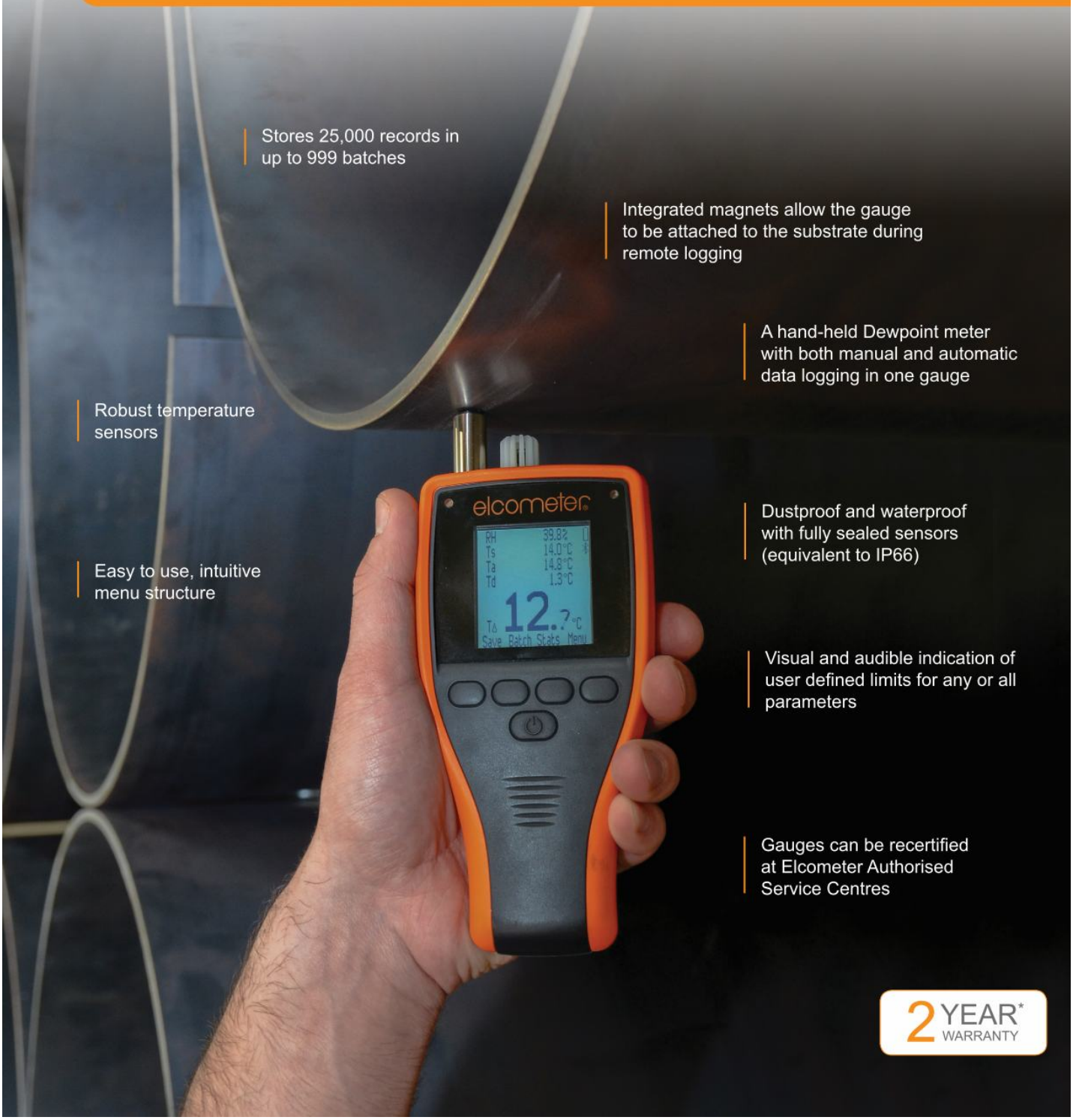
In the protective coatings industry, moisture can form on the surface when the surface temperature is low enough to cause condensation from the atmosphere. The Dewpoint temperature (Td) is the point at which this occurs.

Monitoring the surface temperature (Ts) relative to the air temperature (Ta) and its relative humidity (%RH) allows the dewpoint temperature to be calculated and compared to the surface temperature. This difference in temperature (TΔ) is the key parameter dictating when it is safe to apply the coating.

Dewpoint Meter

Elcometer 319

The rugged **Elcometer 319** Dewpoint Meter is designed to measure and record all relevant climatic parameters required to determine whether the conditions are suitable for painting.



- Stores 25,000 records in up to 999 batches
- Integrated magnets allow the gauge to be attached to the substrate during remote logging
- A hand-held Dewpoint meter with both manual and automatic data logging in one gauge
- Robust temperature sensors
- Dustproof and waterproof with fully sealed sensors (equivalent to IP66)
- Easy to use, intuitive menu structure
- Visual and audible indication of user defined limits for any or all parameters
- Gauges can be recertified at Elcometer Authorised Service Centres

2 YEAR* WARRANTY

Elcometer 319 Dewpoint Meter

STANDARDS:
BS 7079-B4, IMO MSC.215(82), IMO MSC.244(83), ISO 8502-4, US Navy NSI 009-32, US Navy PPI 63101-000



Large easy to read measurements in degrees °C or °F

Measure and record climatic parameters:

- RH Relative humidity
- Ta Air temperature
- Ts Surface temperature
- Td Dewpoint temperature
- TΔ TΔ (the difference between surface temperature and dewpoint)
- Tdb Dry Bulb temperature
- Twb Wet Bulb temperature
- Te External temperature correction (K-type)
- SH Specific Humidity



View up to 5 user selectable statistics on screen

Versatile

- Rapid response time
- Each gauge can be powered by either 2 x AA batteries (for up to 400 hours[1] use) or directly via the USB cable
- Adjustable limits can be set for each measurement parameter which trigger visual and audible alarms whenever a limit is exceeded
- Intelligent memory calculates total available logging time when using batches
- Gauges can be recertified at Elcometer Authorised Service Centres



Review individual readings

Easy to Use

The Elcometer 319 can be used as either a hand-held dewpoint meter or as a remote data logging monitor.[2]

[1] Based on 1 reading every 10 minutes in Logging Mode.
[2] Model T only

Dewpoint Meter

Elcometer 319

Accurate

- Meets ISO 8502-4
- Each instrument is supplied with a Calibration Certificate
- Readings are switchable between Celsius and Fahrenheit
- All readings are time & date stamped

Simple

- Easy menu-driven user interface in multiple languages
- Clear, illuminated display showing up to five user-defined parameters
- Arrow indicators show temperature trends

Flexible

- The gauge can be used as either a hand-held Dewpoint meter or as a remote data logging monitor*
- Integrated K-Type connector allows measurement of surface temperature during remote logging using a separate probe
- Using an external probe the "Te" mode transforms the gauge into a thermometer - ideal for measuring the temperature of paint prior to application
- Hold/freeze function allows manual readings to be reviewed before being added into the memory



Te - Ideal for use as a simple thermometer



Waterproof and rugged to IP66



Remote monitoring of climatic parameters

* Model T only

Elcometer 319 Dewpoint Meter



Easy to use with an intuitive menu structure

Durable

- Safe to use in climates between -20°C (-4°F) and +80°C (+176°F)
- Waterproof and dustproof rating equivalent to IP66
- Rugged and ergonomic design, re-engineered sensors have greater durability for an extended life

Designed to last

Robust, durable & weather resistant, the Elcometer 319 is available with a 2 year* manufacturer's warranty; giving you piece of mind.



Dustproof and waterproof with fully sealed sensors

Powerful

Connect the Elcometer 319 via Bluetooth® or USB to a PC, Android™ or iOS mobile device & download the data into an inspection application or into ElcoMaster® for instant report generation.



2 YEAR* WARRANTY

Bluetooth® wireless technology

compatible with ElcoMaster®

* The Elcometer 319 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

Dewpoint Meter

Elcometer 319

Technical Specification

Model	Model S	Model T	Certificate
Part Number	G319----S	G319----T	●
Reading Parameters - RH, Ta, Ts (Te[6]), Td, TΔ, Tdb, Twb[1], SH[1]	■	■	
Statistics - number of readings, standard deviation, mean, coefficient of variation, minimum, maximum	■	■	
Dustproof & Waterproof with Fully Sealed Sensors - equivalent to IP66	■	■	
Integral Magnets - secure the gauge during logging	■	■	
High/Low Limits - audible, visual, red/green LED alarms can be set against any or all parameters	■	■	
Multilingual Menus	■	■	
Backlight - user selectable	■	■	
K-Type Connector for External Measurement	■	■	
Memory - with reading and statistic review	Last 10 records	25,000 records in 999 batches	
Manual Logging	■	■	
Interval Logging[2]		Adjustable between 1 second and 1 hour	
Data Output			
USB		■	
Bluetooth® *to computer, Android™ & iOS[4] devices*		■	
ElcoMaster® software & USB cable		■	

	Temperature Range	Accuracy	Resolution
Gauge[5]	-20 to +80°C (-4 to +176°F)	±0.5°C (±1°F)	0.1°C (0.1°F)
Air Temperature (Ta)	-20 to +80°C (-4 to +176°F)	±0.5°C (±1°F)[7]	0.1°C (0.1°F)
Surface Temperature (TS)	-20 to +80°C (-4 to +176°F)	±0.5°C (±1°F)	0.1°C (0.1°F)
External K-Type Thermocouple (Te)	-40 to +200°C (-40 to+392°F)	±0.5°C (±1°F)[6]	0.1°C (0.1°F)
Relative Humidity (RH)	0 to 100%RH	±3%RH[3]	0.1%
Gauge & LCD Operating Range	-20°C to +80°C (-4°F to +176°F)		
Power Supply	2 x AA batteries or via USB Cable		
Battery Life	Manual Mode: Greater than 40 hours (Backlight Off) Interval Logging: up to 400 hours (1 reading every 10 minutes)		
Dimensions 180 x 75 x 35mm (7 x 3 x 1.4")	Weight	300g (0.66lb)	
Packing List	Elcometer 319 Dewpoint Meter, 2 x AA batteries, wrist strap, carry case, calibration certificate, USB cable[1], ElcoMaster®[8] and operating instructions		

Accessories

T31920162	Magnetic Surface Temperature Probe; -40 to +80°C (-40 to +176°F)
T9996390-	Liquid Temperature Probe; -200 to +1100°C (-328 to +2012°F)
T99921325	USB Cable
T99916063	Wrist Strap
T99923480	Protective Carry Case/Pouch

[1] Calculated Value [2] With Part Number T31920162 [3] at 1m/s
[4] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.
[5] Do not expose the gauge to temperatures outside the gauge and LCD operating range
[6] Accuracy ±2°C (4°F) with K Type probes supplied by Elcometer. Gauge tested with voltage input
[7] Accuracy ±0.75°C below 10°C (±1.35°F below 50°F) [8] Model T only.
● Certificate supplied as standard.

Elcometer 308 & 309 Digital Hygrometers





Elcometer 308



Elcometer 309

STANDARDS:
BS 7079-B4 (Elcometer 309),
ISO 8502-4 (Elcometer 309)

The **Elcometer 308 Hygrometer** has been specifically designed for use in very hot climates where the surface temperature of the substrate can exceed the paint manufacturer's recommended limits for successful painting.

Painting beyond recommended limits can have a detrimental effect on the performance and lifetime of the coating. The Elcometer 308 Hygrometer provides a simple and fast measurement of relative humidity and surface temperature.

The **Elcometer 309 Delta T Hygrometer** provides a simple and fast measurement of the two critical climate parameters within coatings:

- Delta T (TΔ): The difference between the surface temperature (Ts) and the dewpoint temperature (Td). When TΔ is less than 3ºC (5ºF) painting should not occur.
- Relative Humidity (RH): Expressed as a percentage, RH is the ratio of the amount of water vapour actually held by the air compared to the maximum amount of water vapour the air could hold at a given temperature. Typical maximum RH values specified by paint manufacturers are between 75% and 85%.

Technical Specification

Model	Elcometer 308 Hygrometer	Elcometer 309 Delta T Hygrometer	Certificate
Part Number	G308----1	G309----1	•
	Ts RH	TΔ RH	
Operating Range	-20ºC to +80ºC (-4ºF to +176ºF)	-20ºC to +80ºC (-4ºF to +176ºF)	
Surface Temperature (TS)	-20ºC to +80ºC (-4ºF to +176ºF)	-20ºC to +80ºC (-4ºF to +176ºF)	
Relative Humidity (RH) & Accuracy[1]	0% to 100% RH (±3%)	0% to 100% RH (±3%) (Default upper limit 75%, user adjustable)	
Resolution	0.1ºC (0.1ºF) / 0.1%	0.1ºC (0.1ºF) / 0.1%	
Power Supply	2 x AA batteries or via USB Cable	2 x AA batteries or via USB Cable	
Battery Life	Greater than 40 hours (Backlight off)	Greater than 40 hours (Backlight off)	
Dimensions & Weight	180 x 75 x 35mm (7 x 3 x 1.4") 300g (10.6oz)	180 x 75 x 35mm (7 x 3 x 1.4") 300g (10.6oz)	
Packing List	Elcometer 308 Hygrometer, wrist strap, 2 x AA batteries, protective carry case/pouch with belt clip, RH & surface probe calibration certificate and operating instructions.	Elcometer 309 Delta T Hygrometer, wrist strap, 2 x AA batteries, protective carry case/pouch with belt clip, RH probe calibration certificate and operating instructions.	

[1] at 1m/s



Climatic conditions, surface profile and coating thickness in one easy to use inspection kit - see page 13-2

• Basic Calibration Certificate supplied as standard.

Whirling & Sling Hygrometers

Elcometer 116

These instruments are designed to determine the dewpoint and relative humidity at any given time.

The Elcometer 116A Whirling Hygrometer is available in Celsius scale only. A guide for relative humidity (RH) determination is supplied with each instrument and the dewpoint can accurately be obtained using the Elcometer 114 Dewpoint Calculator.

The Elcometer 116C Sling Hygrometer, shown as the black unit in the photograph, is a convenient, self contained instrument with an inbuilt slide rule for the calculation of %RH and dewpoint. It has spirit filled thermometers and is available in °C or °F scales.

- Manual operation
- Spirit filled thermometers

Tdb Twb



STANDARDS:
ASTM E 337-B, BS 2842

Technical Specification

Part Number	Description		
G116A---1	Elcometer 116A Whirling Hygrometer - Metric °C		
G116C---1	Elcometer 116C Sling Hygrometer - Metric °C		
G116C---2	Elcometer 116C Sling Hygrometer - Imperial °F		
Measuring Range	-5°C to 50°C (23°F to 122°F)		
Dimensions	17 x 22mm (6.9 x 10")	Weight	300g (0.6lb)
Packing list	Elcometer 116 Whirling Hygrometer, slide rule table, carry case and operating instructions Elcometer 116 Sling Hygrometer, slide rule table and operating instructions		

Accessories

T1164441-	Elcometer 116A Spare Thermometer (°C)	T1164480-	Elcometer 116C Wicks (Pack of 4)
T1164478-	Elcometer 116C Spare Thermometer (°C)	T11600212	Elcometer 116A Replacement Slide Rule
T1164487-	Elcometer 116A Wicks (Pack of 5)		

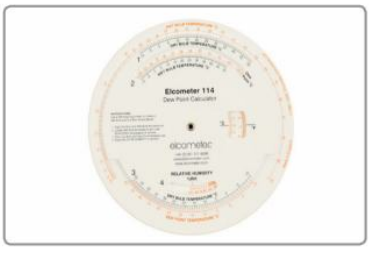
Dewpoint Calculator

Elcometer 114

This provides accurate values of dewpoint and relative humidity (RH) from the wet and dry bulb temperatures measured by a Whirling or Sling Hygrometer.

The range of the Elcometer 114 is -10°C to 50°C (14°F to 122°F) and has an accuracy of ±1% with respect to standard tables.

Td RH TΔ



Technical Specification

Part Number	Description
G114----2	Elcometer 114 Dewpoint Calculator

Elcometer 113 Magnetic Thermometers



The Elcometer 113 Magnetic Thermometer continuously indicates the surface temperature of steel and other magnetic material.

The thermometers are based on a bimetallic strip and therefore do not require batteries but do require time to adjust to the temperature.

The Elcometer 113 is available in a number of scale ranges and as an economy version.

Ts

Technical Specification

Part Number	Description	Scale Range
G113----1	Elcometer 113 Magnetic Thermometer	-35°C to 55°C
G113----2	Elcometer 113 Magnetic Thermometer	0°C to 120°C
G113----3	Elcometer 113 Magnetic Thermometer	-20°C to 250°C
G113----4	Elcometer 113 Imperial Magnetic Thermometer	0°F to 500°F
G113----2B	Elcometer 113 Economy Magnetic Thermometer	0°C to 120°C
Dimensions	15 x 19 mm (0.5 x 0.7")	
Weight	56g (1.9oz)	
Packing List	Elcometer 113 Magnetic Thermometer and protective pouch	

Elcometer 210 Paint Thermometer



It is often important to ensure the temperature of the paint to be applied is at a temperature which will ensure correct application.

The Elcometer 210 Paint Thermometer is supplied with a clip which enables the thermometer to be hooked on to the edge of a paint can allowing accurate temperature measurement of the paint.

Technical Specification

Part Number	Description
G210----1	Elcometer 210 Paint Thermometer
Scale Range	-20°C to 60°C (-4°F to 140°F)
Dimensions	300mm (12") length with a 50mm (1.97") dial
Weight	67g (2.4oz)
Packing List	Elcometer 210 Paint Thermometer

Digital Pocket Thermometer

Elcometer 212

The Elcometer 212 is a digital, pocket size thermometer ideal for day to day use.

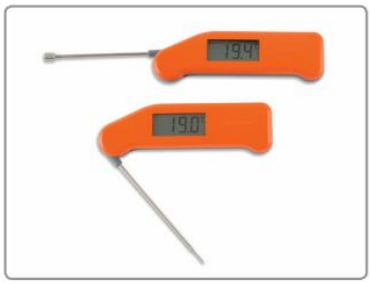
Incorporating a fast response stainless steel liquid or surface probe, the Elcometer 212 provides temperature readings in under four seconds.

Housed in a water resistant case with integrated rubber seals and a moulded flush window, preventing dirt and leaks damaging the LCD display, the Elcometer 212 is ideal for use in the harshest of environments.

The probe when not in use, conveniently folds back into the side of the instrument, preventing damage.

- Liquid or surface probe options available
- User switchable between °C and °F
- Resolution can be set to 0.1°C (0.1°F) or 1°C (1°F)

Ts







Technical Specification

Part Number	Description
G212----1A	Elcometer 212 Digital Pocket Thermometer with Liquid Probe
G212----2A	Elcometer 212 Digital Pocket Thermometer with Surface Probe
Measuring Range	-49.9°C to +299.9°C (-58°F to +572°F) user selectable
Operating Temperature	-20 to 50°C (-4 to 58°F)
Resolution	0.1°C (0.1°F) or 1°C (1°F) user selectable
Accuracy	±0.4°C (±0.7°F) up to 199.9°C (392°F), ±1°C (±1.8°F) above 199.9°C (392°F)
Probe	K-type Thermocouple
Display	14mm LCD
Battery Type	2 x CR2032 batteries
Battery Life	Approximately 1500 hours
Auto Switch Off Time	10 minutes
Case Dimensions	19mm x 47mm x 153mm (0.7” x 1.9” x 0.7”)
Weight	97g (3.4oz)
Packing List	Elcometer 212 Digital Pocket Thermometer with batteries fitted and operating instructions

Elcometer 213/2 Digital Waterproof Thermometer







The Elcometer 213/2 is a simple, easy-to-use digital thermometer for quick and easy measurements of surface, air and liquid temperature plus the temperature of soft materials.

Features:

- Rubber bumper seals for impact resistance
- Waterproof case (IP66 & IP67 protection)
- Extruded aluminium case for superior durability
- °C/°F switchable
- Easy to read LCD display

Probes are available to purchase separately.

Ts Te

Technical Specification

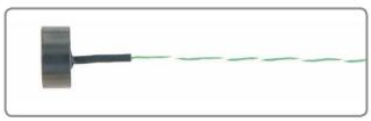
Part Number	Description	Certificate
G213----2	Elcometer 213/2 Digital Thermometer[1]	○
Operating Range[2]	-49°C to +1372°C (-56°F to 2500°F)	
Accuracy	±1% of the reading ±1 digit	
Resolution	0.1°C (0.1°F) up to 299.9°C (572°F), 1°C (1°F) above 299.9°C (599.9°F)	
Battery Life	5,000 hours	
Power Supply	1 x MN1604/PP3 (9V) battery	
Dimensions	35 x 60 x 115mm (1.4 x 2.4 x 4.5”)	
Weight	194g (0.42lb)	
Packing List	Elcometer 213/2 Digital Waterproof Thermometer, battery, carry case and operating instructions	

[1] Probes are not supplied as standard with the Elcometer 213/2; please select from the list below
[2] Operating range is dependent on probe used

Accessories

T99911728	Magnetic Surface Probe,13mm Diameter (0.51)	Range: -50°C to 150°C (-58°F to 302°F)
T2136069-	Surface Probe,130 x 4.2mm Diameter (5.11 x 0.17”)	Range: -50°C to 600°C (-58°F to 1112°F)
T9996390-	Liquid Probe,130 x 3mm Diameter (5.11 x 0.12”)	Range: -200°C to 1100°C (-328°F to 2012°F)
T2136391-	Needle Probe, 130 x 3mm Diameter (5.11 x 0.12”)	Range: -50°C to 400°C (-58°F to 752°F)

Other probes available on request. Contact Elcometer for further information.



Magnetic
T99911728



Liquid
T9996390-



Surface
T2136069-



Needle
T2136391-

○ Optional Calibration Certificate available.

IR Digital Laser Thermometer

Elcometer 214L

The Elcometer 214 is a simple, easy to use, non-contact thermometer which safely and accurately measures surface temperature of non-reflective materials using infrared technology.

With a user switchable measuring range of -35°C to 365°C or -31°F to 689°F, a digital display of the temperature is produced in less than one second.

- Non-contact technology with laser spot indicator
- °C / °F user switchable
- Fast, 1 second scanning of any surface
- Measure objects as small as 25mm (1")
- Distance-to-Target Ratio of 8:1
- Easy to read LCD display







The Elcometer 214 IR Digital Laser Thermometer has a D/T ratio (Distance-to-Target) of 8:1 and measures the emitted energy from a target spot one-eighth the size of the working distance.

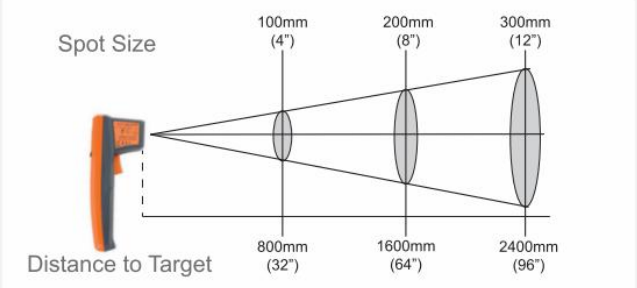
As can be seen in the diagram below, if the distance from the sensor optics to the target is 200mm (8") for example, the diameter of the measured area is 25mm (1").

Ts

Technical Specification

Part Number	Description		
G214L----3	Elcometer 214 Infrared Digital Laser Thermometer		
Measuring Range	-35°C to 365°C (-31°F to 689°F)		
Ambient Temperature	0 to 50°C (32 to 122°F)		
Resolution	0.2°C (0.5°F)		
Accuracy	±1.5°C (2.7°F)		
Distance-To-Target	8:1, 25mm (1") spot size		
Emissivity	Fixed at 0.95		
Response Time	1 second		
Battery Type	2 x AAA batteries	Battery Life	14+ hours continuous use
Dimensions	166 x 34 x 64 (6.5 x 1.3 x 2.5")	Weight	113g (3.98oz)
Packing List	Elcometer 214 Infrared Digital Laser Thermometer, 2 x AAA batteries (fitted), wrist strap and operating instructions		

Digital Laser Thermometer



Elcometer 410 Anemometer







The Elcometer 410 Anemometer is a portable, pocket size instrument for taking accurate readings of wind speed.

The lightweight impeller with high precision jewel bearings provides very accurate airflow measurements at low speeds. The impeller can easily be replaced without the need to return the unit to Elcometer.

The wind speed can be displayed in various measurement units; indicating current speed, maximum speed or average speed.

Technical Specification

Part Number	Description	
G410-1	Elcometer 410 Anemometer	
Functions	Current wind speed Average 3 second wind speed Maximum wind gust Data Hold	
Measurement Units	Knots (kt), metres per second (m/s), kilometres per hour (km/h), miles per hour (mph), feet per minute (ft/min) and Beaufort Force (B)	
Operating Range	0.4m/s to 60m/s (0.8 to 135.0mph)	
Specification Range	0.4m/s to 40m/s (0.8 to 89.0mph)	
On-axis Accuracy	±3% of reading or least significant digit, whichever is the greater	
Off-axis Response	-1% at 5º, -2% at 10º, -3% at 15º	
Calibration Drift	<1% after 100 hours operation at 7m/s	
Resolution	0.1 kt, m/s, km/h, mph. 1 ft/min below 1999 ft/min, 10 ft/min above 2000 ft/min. 1 Beaufort (0 to 12)	
Operating Temperature	-10ºC to +55ºC (14ºF to 131ºF)	
Storage Temperature	-30ºC to +60ºC (-22ºF to 140ºF)	
Power Supply	1 x CR2032 battery	
Battery Life	Approximately 300 hours	
Auto Switch Off	45 minutes after last key press	
Dimensions	Instrument Only: Instrument and Protective Cover:	122 x 42 x 20mm (4.8 x 1.6 x 0.8”) 122 x 46 x 26mm (4.8 x 1.8 x 1”)
Weight	Instrument Only: Instrument and Protective Cover:	65g (2.3oz) 102g (3.6oz)
Packing List	Elcometer 410 Anemometer, protective cover, lanyard, 1 x CR2032 battery and operating instructions.	

Accessories

T41021406 Replacement Impeller



Oven Temperature Profiling

5

Oven Temperature Profiling



Temperature profiling provides an effective method for measuring the actual environmental and product temperature during the cure process - essential for ensuring a quality finish and a successful cure of a powder coating.

Not all components are alike and are rarely of a uniform thickness, density or thermal capacity. This means that the oven temperature settings have to be adjusted to suit the coated product.

Monitoring and making adjustments to the oven temperature ensures that the product is brought to and held at, the specified temperature to ensure consistent quality of cure and visual properties at all times.

Incorrect oven temperature settings can lead to some or all of a product being too hot or too cold leading to under cure, coating burn, poor adhesion, discolouration, loss of gloss and other visible defects.

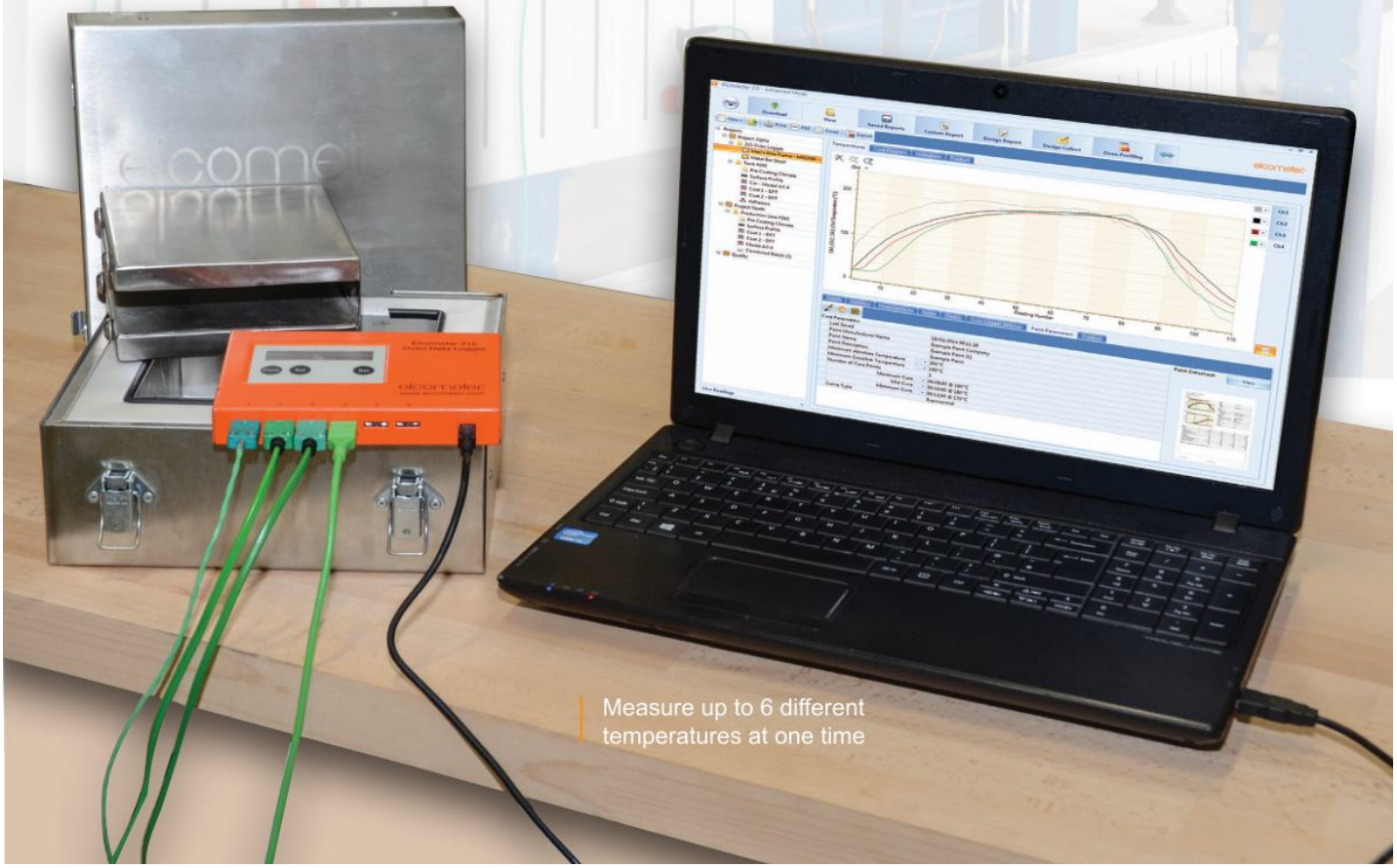
With a selection of magnetic or clamp type air & surface temperature probes, temperatures can be monitored both on or around the product and recorded by a data logger during the cure process. Once completed the measurement data can be transferred to the ElcoMaster® software to provide instant oven profile reports, process validation and much more.

Oven Data Logger

Elcometer 215

The **Elcometer 215** is the easy to use oven temperature profile solution, used to measure and store the temperature profiles of both the sample and the oven during the cure process.

- Large menu-driven display for easy operation
- Memory stores up to 260,000 readings
- Start and stop logging at a pre-set temperature
- Print full colour reports directly from the ElcoMaster® software
- Ideal in situations where powder coating thickness is inconsistent
- Ideal for testing powder or liquid coatings in batch or conveyor ovens
- Quick display shows maximum temperature, Cure-Index figure and pass/fail for each probe
- Variable measurement interval, date, time, °C / °F
- High temperature resistant teflon coated probe cables are easy to clean after each run
- Measure up to 6 different temperatures at one time



Elcometer 215 Oven Data Logger

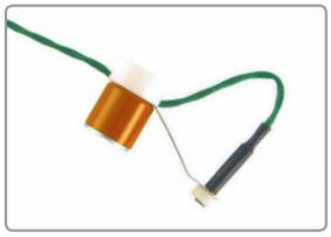
Probes



Clamp air probe



Clamp surface probe



Magnetic surface probe



Combined clamp & magnetic surface probe



Probe ID Tags

The logger display shows maximum temperature and Cure-Index figure, percentage and pass/fail sign, as a value or graphic representation for each probe.

Powerful

- Stores up to 260,000 readings
- USB data output to ElcoMaster® software, combines with other key inspection measurements

Efficient

- Measure up to 6 different temperatures at one time
- Quick display shows maximum temperature, Cure-Index figure and pass/fail for each probe
- Start and stop logging at a pre-set temperature

Rugged

- Standard thermal barrier kits - ideal for single runs
- High temperature barrier and heat sinks available for longer times at high temperature
- Wide range of K-type temperature probes with strong, highly flexible and easy to clean Teflon® coated cables

Flexible

- Ideal for testing powder or liquid coatings in batch or conveyor ovens
- Variable measurement intervals, date, time, °C/°F



Standard Thermal Barrier Kit



High Temperature Barrier Kit

Oven Data Logger

Elcometer 215

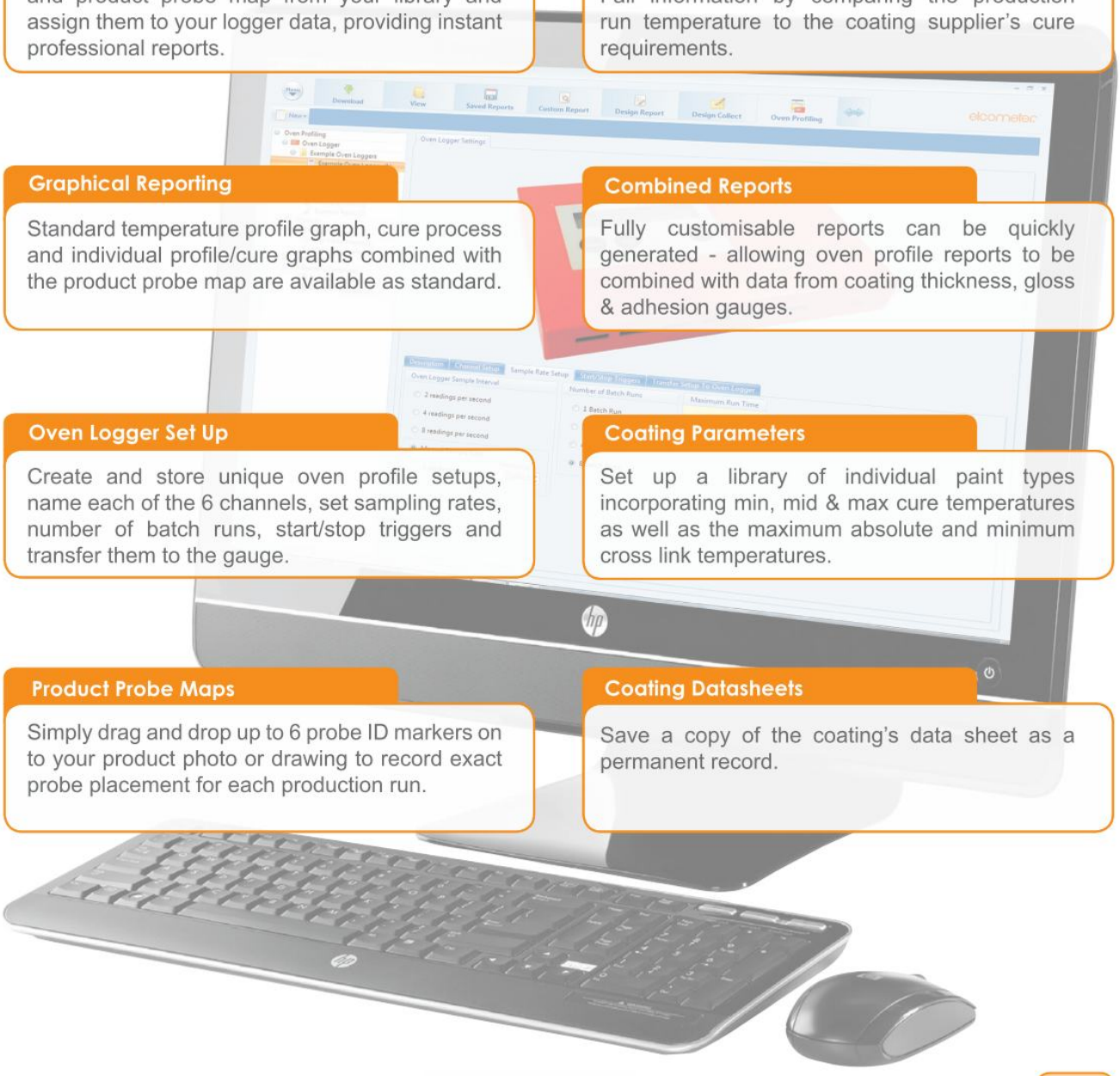
ElcoMaster® is the easy to use software solution designed specifically for the management and assessment of your temperature profile, allowing you to generate professional inspection reports in seconds. Features include:

Customisable Templates

Create your own comprehensive inspection profile - choose a gauge setup, paint parameter and product probe map from your library and assign them to your logger data, providing instant professional reports.

Elcometer Cure Value

Using the industry accepted cure value calculation the ElcoMaster® Software provides instant Pass/Fail information by comparing the production run temperature to the coating supplier's cure requirements.



Graphical Reporting

Standard temperature profile graph, cure process and individual profile/cure graphs combined with the product probe map are available as standard.

Combined Reports

Fully customisable reports can be quickly generated - allowing oven profile reports to be combined with data from coating thickness, gloss & adhesion gauges.

Oven Logger Set Up

Create and store unique oven profile setups, name each of the 6 channels, set sampling rates, number of batch runs, start/stop triggers and transfer them to the gauge.

Coating Parameters

Set up a library of individual paint types incorporating min, mid & max cure temperatures as well as the maximum absolute and minimum cross link temperatures.

Product Probe Maps

Simply drag and drop up to 6 probe ID markers on to your product photo or drawing to record exact probe placement for each production run.

Coating Datasheets

Save a copy of the coating's data sheet as a permanent record.

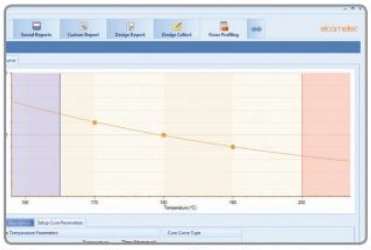
Elcometer 215 Oven Data Logger



Create and store unique oven profile setups and transfer them to the gauge

Oven Logger Setup

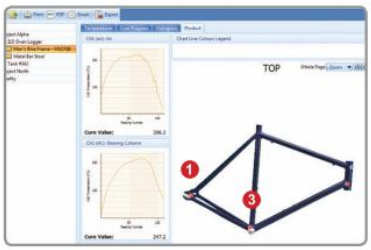
Create and store unique oven profile setups and transfer them to the gauge.



Setup a library of individual paint parameters

Graphical Reporting

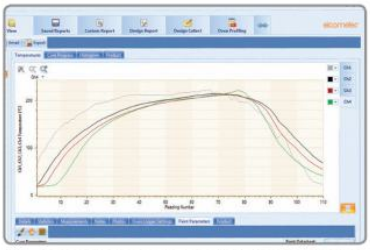
Standard temperature profile, cure process and product probe maps are available as standard.



Individual product probe maps record the exact probe placement for each component

Product Probe Maps

Place probe ID markers on your product photo or drawing to record exact probe placement for each production run.



Standard temperature profile and cure process graphs

Coating Parameters

Setup a library of individual paint types with min, mid and max cure temperatures.



Statistical analysis by probe/channel

Combined Reports

Oven profile reports can be combined with data from coating thickness, gloss & adhesion gauges.

Elcometer Cure Value

Instant pass/fail information compares the production run temperature to the coating supplier's cure requirements.

For more information on ElcoMaster® Software see page 1-2

Oven Data Logger

Elcometer 215

Technical Specification

Part Number	Description		Certificate
G215----2S	Elcometer 215 Oven Data Logger - Standard Thermal Barrier Kit		○
G215----2T	Elcometer 215 Oven Data Logger - High Temperature Thermal Barrier Kit*		○
Gauge Measurement Range	-200°C to 1300°C (-328°F to 2372°F)		
Gauge Operating Temperature	-30°C to 65°C (-22°F to 149°F) without thermal barriers		
Accuracy	5°C to 500°C: ±0.5°C (41°F to 932°F: ±1.0°F) >500°C: ±1.0°C (> 932°F: ±2.0°F)		
Resolution	0.1°C (0.2°F)		
Number of Channels	6		
Measuring Intervals	Adjustable from 8 per second to 1 per hour		
Memory	260,000 readings or 8 production runs		
Data Output	USB		
Power Supply	2 x AA batteries		
Gauge Dimensions	153 x 101 x 23mm (6 x 4 x 0.9")		
Gauge Weight	450g (15.8oz)		
Thermal Characteristics	Standard Thermal Barrier Kit	High Temperature Thermal Barrier Kit[1]	
	100°C (212°F) for 140 minutes 150°C (302°F) for 80 minutes 200°C (392°F) for 60 minutes 250°C (482°F) for 50 minutes	100°C (212°F) for 340 minutes 150°C (302°F) for 195 minutes 200°C (392°F) for 130 minutes 250°C (482°F) for 100 minutes 300°C (572°F) for 30 minutes	
Dimensions (in thermal barrier)	245 x 245 x 115mm (9.65 x 9.65 x 4.5")		
Weight (in thermal barrier)	4kg (8.8lb)	6kg (13.2lb)	
Packing List	Elcometer 215 Oven Data Logger, thermal barrier (Model S), thermal barrier with heat sink block (Model T), ElcoMaster® software, USB cable, carry case, 2 x AA batteries and operating instructions		

Probes & Accessories

	1.5m (4'9")	3m (9'8")	6m (19'7")
Clamp Air Probe	T21521275	T21521276	T21521277
Magnetic Air Probe	T21521287	T21521288	T21521569
Clamp Surface Probe	T21521278	T21521279	T21521280
Magnetic Surface Probe	T99921281	T99921282	T99921283
Combined Magnetic Clamp Air & Surface Probe	T21521284	T21521285	T21521286
Probe Identification Tags (Pack of 6)			T21521241
Standard Thermal Barrier			T21521222
High Temperature Thermal Barrier for Elcometer 215 Model T (Heat Sink Block not included)			T21521217
Heat Sink Block for High Temperature Thermal Barrier			T21521219
Data Logger to PC USB Cable			T21521220

All probes have a continuous maximum temperature of 250°C (428°F).

○ Optional Calibration Certificate available.

* Includes Heat Sink

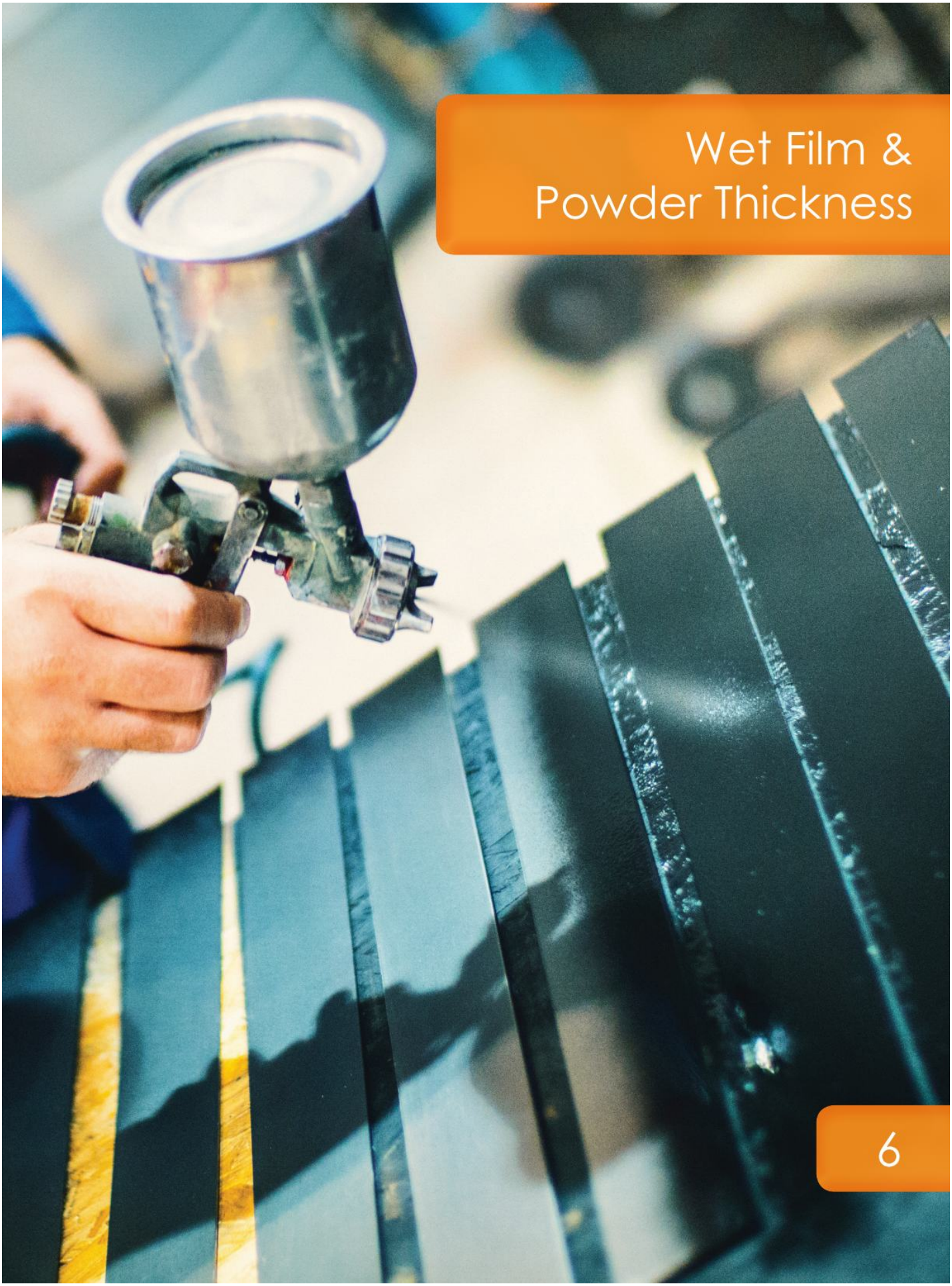
Notes

elcometer



Halve your DFT inspection times using the Elcometer 456 Coating Thickness Gauge with the Ultra/Scan Probe.

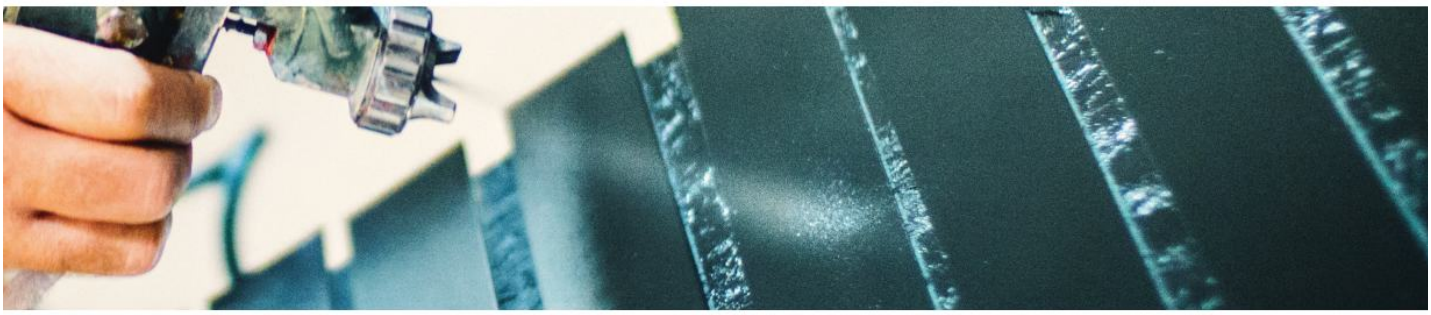
See page 7-10



Wet Film & Powder Thickness

6

Wet Film Thickness



When applying a liquid coating, by measuring the uncured film thickness, it is possible to determine the eventual dry film thickness. Applying too much coating wastes time and materials. It can also affect the performance and finish of the product.

Too much wet film can cause the coating to crack as it cures; too little coating increases the risk that the substrate will not be sufficiently protected, leading to rust spots.

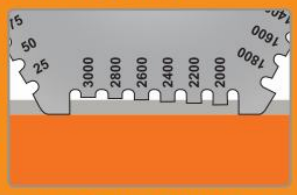
The three methods for measuring wet film thickness are:

- Wet Film Combs
- Pfund Thickness Gauges
- Wet Film Wheels

In each case, the thickness of the coating is measured and the dry film thickness can be estimated using the coating's solid : wet ratio.

Using a Wet Film Comb

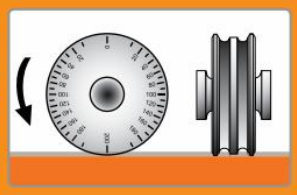
Place a comb perpendicular to and touching the substrate. Hold the comb in position and wait a few seconds until the teeth are wet. Remove the comb from the film.



The wet film thickness lies between the highest value 'coated' or 'wet' tooth and the lowest value 'uncoated' or 'dry' tooth.

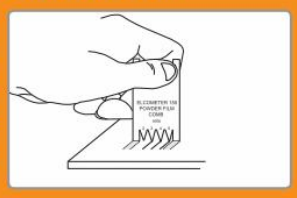
Using a Wet Film Wheel

Roll the wheel through a wet coating, the centre wheel eventually touches the film. This point on the scale indicates the thickness. When the volume to solids ratio of the coating is known, generally found on a product data sheet, the wet film thickness can be used to predict the dry film thickness. Roll from maximum to minimum to avoid a false reading caused by surface tension.



Using a Powder Comb

Place the comb into the powder and slide the comb along the surface. The measurement points (or teeth) are pointed and allow the powder to flow around them.



The thickness of the powder lies between the highest value where a drag mark is visible and the lowest value where a drag mark has not been produced.

When applying a powder coating, by measuring the uncured film thickness, it is possible to predict the eventual dry film thickness.

Powder coating is an efficient system producing a high quality finish with minimal waste – where excess or over-sprayed powder may be recycled and reused.

Ensuring that the end product has the correct levels of adhesion, gloss and colour - is dependent upon both the thickness of the powder prior to the curing process and the temperature profile within the oven.

The cured dry film thickness is determined by the level of shrinkage, which in turn is influenced by factors such as particle size and density of the uncured powder.

As all manufacturers' coatings are different, it is not generally possible to predict the dry film thickness post cure unless the level of shrinkage is known or the pre cure powder density is measured. Measuring the thickness of the uncured powder is difficult.

Whereas wet film measurement is non-destructive, the measurement of powder thickness using any form of contact with the uncured coating, disturbs the powder - altering its thickness.

Hexagonal Wet Film Combs (Stainless Steel)

Elcometer 112 & 3236

These hexagonal precision formed stainless steel wet film combs are long lasting, reusable and supplied in a range of thicknesses measuring up to 3,000µm (120mils).

These six sided combs vary in size, giving either 24 or 36 measurement steps, depending upon the comb, thus providing increased accuracy.



STANDARDS:

ASTM D 4414-A, AS/NZS 1580.107.3, BS 3900-C5-7B, ISO 2808-1A, ISO 2808-7B, JIS K 5600-1-7, NF T30-125, US Navy PPI 63101-000, US Navy NSI 009-32

Technical Specification

Part Number	Range	Values	Certificate
K0003236M201	20 - 370µm	20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 150, 170, 190, 210, 230, 250, 270, 290, 310, 330, 350, 370µm	○
K0003236M202	25 - 2,000µm	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1,000, 1,100, 1,200, 1,300, 1,400, 1,500, 1,600, 1,700, 1,800, 1,900, 2,000µm	○
B112----1B	25 - 3,000µm	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 1,000, 1,100, 1,200, 1,400, 1,600, 1,800, 2,000, 2,200, 2,400, 2,600, 2,800, 3,000µm	○
K0US3236M203	0.5 - 15mils	0.5, 0.75, 1.0, 1.25, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 8, 9, 10, 11, 12, 13, 14, 15mils	○
K0US3236M204	1 - 80mils	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 22, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 55, 60, 65, 70, 75, 80mils	○
B112----2B	1 - 120mils	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 26, 28, 30, 32, 34, 36, 38, 40, 45, 50, 55, 60, 70, 80, 90, 100, 110, 120mils	○
Dimensions and Weight	Elcometer 3236 M201 / M203	53 x 50 x 1mm (2.09 x 1.97 x 0.04”), 10g (0.35oz)	
	Elcometer 3236 M202 / M204	77 x 90 x 1mm (2.95 x 3.54 x 0.04”), 22g (0.77oz)	
	Elcometer 112	75 x 65 x 1mm (2.95 x 2.54 x 0.04”), 20g (0.7oz)	
Packing List	Wet Film Comb, storage case and operating instructions		

○ Optional Calibration Certificate available.

Elcometer 115 — Wet Film Combs (Stainless Steel)



STANDARDS:
ASTM D 4414-A, AS/NZS 1580.107.3, BS 3900-C5-7B, ISO 2808-1A, ISO 2808-7B, JIS K 5600-1-7, NF T30-125, US Navy PPI 63101-000, US Navy NSI 009-32

These reusable precision stainless steel combs are made to be long lasting and are supplied with either Metric or Imperial measurements.

Four separate thickness ranges are available up to a maximum of 1,250µm or 50mils and are manufactured to an accuracy of ±5% of marked value or ±3µm (0.12mil), whichever is greater.

Each comb has 10 measurement steps (teeth).

Technical Specification

Metric Combs

Part Number	Range	Measurement Steps	Certificate
B11529455M	20 - 325µm	20, 35, 50, 75, 100, 125, 175, 225, 275, 325µm	○
B11529456M	50 - 450µm	50, 75, 100, 150, 200, 250, 300, 350, 400, 450µm	○
B11529457M	50 - 750µm	50, 100, 150, 200, 250, 350, 450, 550, 650, 750µm	○
B11529458M	125 - 1,250µm	125, 250, 375, 500, 625, 750, 875, 1,000, 1125, 1,250µm	○
B1152959WM	-	Set of 4 Combs	○

Imperial Combs

Part Number	Range	Measurement Steps	Certificate
B11529451E	1 - 13mils	1, 1.5, 2, 3, 4, 5, 7, 9, 11, 13mils	○
B11529452E	2 - 18mils	2, 3, 4, 6, 8, 10, 12, 14, 16, 18mils	○
B11529453E	2 - 30mils	2, 4, 6, 8, 10†, 10†, 15, 20, 25, 30mils	○
B11529454E	5 - 50mils	5, 10, 15, 20, 25, 30, 35, 40, 45, 50mils	○
B1152959WE	-	Set of 4 Combs	○

† Two 10mil values, one on each edge of the comb

Elcometer 3238 — Long Edge Wet Film Combs (Stainless Steel)



STANDARDS:
ASTM D 4414-A, AS/NZS 1580.107.3, BS 3900-C5-7B, ISO 2808-1A, ISO 2808-7B, JIS K 5600-1-7, NF T30-125, US Navy PPI 63101-000, US Navy NSI 009-32

These stainless steel combs are wire eroded to provide an accuracy ±5% of marked value or ±3µm (0.12mil), whichever is greater, and are supplied with either Metric or Imperial measurements.

Each comb has 24 measurement steps (teeth) providing a more accurate wet film thickness value.

Technical Specification

Metric Combs

Part Number	Range	Measurement Steps	Certificate
K0003238M201	5 - 120µm	5µm	○
K0003238M202	25 - 600µm	25µm	○
K0003238M203	50 - 1,200µm	50µm	○
K0003238M204	-	Set of 3 Combs	○

○ Optional Calibration Certificate available.

Punched Wet Film Combs (Aluminium)

Elcometer 112AL

These punched aluminium combs offer the user a low cost method of measuring the wet film thickness.

The Elcometer 112AL, being punched from aluminium, is not as accurate as precision formed stainless steel wet film combs and has a shorter lifespan.

Supplied in a pack of 10 combs, each comb has Metric (25 - 3,000µm) on one side and Imperial (1 - 118mils) on the other.

The Elcometer 112AL can be customised with your logo. Please contact Elcometer for further details.



STANDARDS:
ASTM D 4414-A, AS/NZS 1580.107.3, BS 3900-C5-7B, ISO 2808-1A, ISO 2808-7B, JIS K 5600-1-7, NF T30-125, US Navy PPI 63101-000, US Navy NSI 009-32

Technical Specification

Part Number	Description		
B112AL12473-3	Elcometer 112AL Aluminium Wet Film Comb (Pack of 10)		
Dimensions	75 x 65 x 1mm (2.95 x 2.56 x 0.04")	Weight	90g (3.17oz)
Packing List	Elcometer 112AL (Pack of 10) and operating instructions		

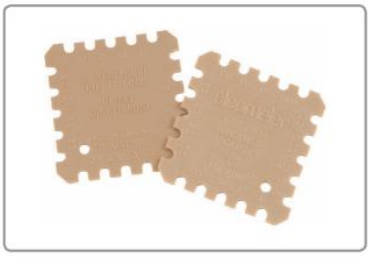
Plastic Wet Film Combs

Elcometer 154

The Elcometer 154 Wet Film Combs are made from ABS plastic and are designed to be used once and kept as a record of wet film thickness measurement for quality assurance or customer requirements.

Metric and Imperial values are on the same comb, 50 to 800µm on one side, 2 to 32mils on the other.

Supplied in a pack containing 500 combs. Each comb has 16 measurement steps.



STANDARDS:
BS 3900-C5-7B, ISO 2808-1A, ISO 2808-7B, JIS K 5600-1-7, NF T30-125

Technical Specification

Part Number	Description
B154----1	Elcometer 154 Plastic Wet Film Combs (Pack of 500)
Dimensions	40 x 40mm (1.57 x 1.57")
Weight	900g (2lb)
Packing List	Elcometer 154 Wet Film Combs (Pack of 500) and operating instructions

Elcometer 3230 Wet Film Wheels







STANDARDS:
ASTM D 1212-A, AS/NZS 1580.107.3, BS 3900-C5-7A, ISO 2808-1B, ISO 2808-7A, JIS K 5600-1-7, NF T30-125

The Elcometer 3230 Wet Film Wheel is a high precision, accurate and easy to use instrument which consists of a set of three wheels. The central wheel is of a smaller diameter and is eccentric relative to the two outer wheels. By rolling the gauge through a wet coating, the centre wheel eventually touches the film. This point on the scale indicates the thickness.

A convenient mounting handle for the wheel is available in two lengths; 15cm (6") or 50cm (19"); please order separately.

When the volume to solids ratio of the coating is known (generally found on the product data sheet supplied by the manufacturer), the wet film thickness can be used to predict the dry film thickness.

Several measurement ranges between 0 to 25µm and 0 to 1,000µm (0 to 1mil and 0 to 40mils) are available.

- Continuous scale produces measurement accuracy of ±5% of marked value or ±3µm (0.12mil), whichever is greater
- Suitable for flat and curved surfaces

Technical Specification

	Metric Film Wheels				Imperial Film Wheels		
Part Number	Range	Graduations	Certificate	Part Number	Range	Graduations	Certificate
K0003230M001	0 - 25µm	1.25µm	○	-	0 - 1mil	0.05mil	○
K0003230M016	0 - 40µm	2.0µm	○	-	-	-	○
K0003230M002	0 - 50µm	2.5µm	○	-	0 - 2mils	0.10mil	○
K0003230M003	0 - 100µm	5.0µm	○	-	0 - 4mils	0.20mil	○
K0003230M005	0 - 200µm	10.0µm	○	-	-	-	○
K0003230M007	0 - 300µm	15.0µm	○	K0US3230M005	0 - 12mils	0.50mil	○
K0003230M009	0 - 500µm	25.0µm	○	-	0 - 20mils	1.0mil	○
K0003230M010	0 - 1,000µm	50.0µm	○	K0US3230M007	0 - 40mils	2.0mils	○
Dimensions	50 x 30mm (1.97 x 1.18")			Weight	220g (7.76oz)		
Packing List	Wet Film Wheel, storage case and operating instructions						

Accessories

KT003230N003	15cm (6") Wet Film Wheel Handle
KT003230N002	50cm (19") Wet Film Wheel Handle

○ Optional Calibration Certificate available.

Coil Coating Wet Film Wheels

Elcometer 3230

This instrument is similar to the Elcometer 3230 Wet Film Wheel, but is designed for use in the coil coating process. The outer wheels are knurled to allow measurements to be taken on slippery coatings or on fast moving substrates.

By rolling the gauge through a wet coating, the centre wheel eventually touches the film. This point on the scale indicates the thickness.

When the volume to solids ratio of the coating is known (generally found on the product data sheet supplied by the manufacturer), the wet film thickness can be used to predict the dry film thickness.



STANDARDS:
ASTM D 1212-A, AS/NZS 1580.107.3, BS 3900-C5-7A, ISO 2808-1B, ISO 2808-7A, JIS K 5600-1-7, NF T30-125

Technical Specification

	Metric			Imperial	
Part Number	Range	Graduations	Part Number	Range	Graduations
K0003230M017	0 - 50µm	2.5µm			
K0003230M018	0 - 100µm	5.0µm	K0US3230M018	0 - 4mils	0.2mil
Dimensions	50 x 30mm (1.97 x 1.18")		Weight	220g (7.76oz)	
Packing List	Coil Coating Wet Film Wheel, storage case and operating instructions				

Pfund Thickness Gauge

Elcometer 3233

Available in aluminium or stainless steel this instrument consists of two concentric cylinders, one sliding inside the other. A spherical glass lens is fitted to the end of the central cylinder and when pressed into the wet film, leaves a circular trace.

The diameter of the mark on the lens is measured and, using the supplied conversion table, the thickness of the coating can be easily assessed.

- Ideal for measuring the thickness of wet translucent products such as varnishes, oils etc.
- Measurement range of 2.25 - 360µm (0.09 - 14.17mils)

How to use a Pfund thickness gauge - see www.elcometer.com

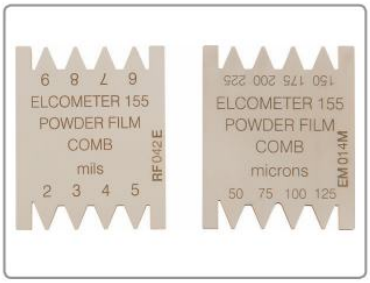


STANDARDS:
ASTM D 1212-B, NF T30-125

Technical Specification

Part Number	Description		
K0003233M001	Elcometer 3233 Aluminium Pfund Thickness Gauge		
K0003233M002	Elcometer 3233 Stainless Steel Pfund Thickness Gauge		
Dimensions	60 x 80mm (2.36 x 3.15")	Weight	195g (6.88oz)
Packing List	Pfund Thickness Gauge, stainless steel rule, conversion table, storage case and operating instructions		

Elcometer 155 Uncured Powder Film Comb



Available in four scale ranges, the Elcometer 155 is designed to measure uncured powder coating film thickness. This enables the application system to be set up and fine tuned prior to the curing process. In turn, this will reduce the amount of scrap and over-spray.

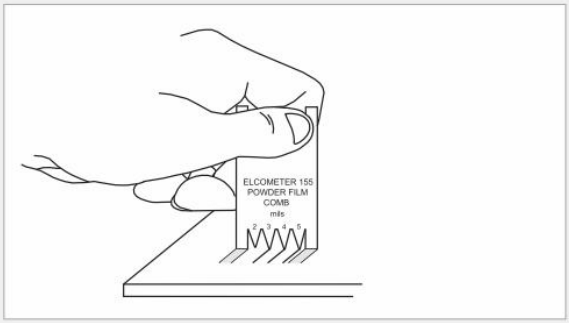
Note: the thickness of a coating prior to cure is not the same value after curing but there is a correlation. The powder comb should be used as a guide only.

STANDARDS:
ASTM D7378-A

Technical Specification

Part Number*	Description	Range	Certificate
B15513573-5	Elcometer 155 Metric Powder Film Comb	50 - 255µm	○
B15513573-6	Elcometer 155 Metric Powder Film Comb	225 - 1250µm	○
B15513573-1	Elcometer 155 Imperial Powder Film Comb	2 - 9mils	○
B15513573-2	Elcometer 155 Imperial Powder Film Comb	9 - 50mils	○
B15513573-10	Metric Comb Set (2 combs)	50 - 225µm and 225 - 1250µm	○
B15513573-9	Imperial Comb Set (2 combs)	2 - 9mils and 9 - 50mils	○
Accuracy	±5µm (±0.2mil)		
Dimensions	38mm x 46mm (1.5” x 1.8”)		
Weight	18g (0.6oz)		
Packing List	Elcometer 155 Powder Comb and powder comb wallet for two combs		

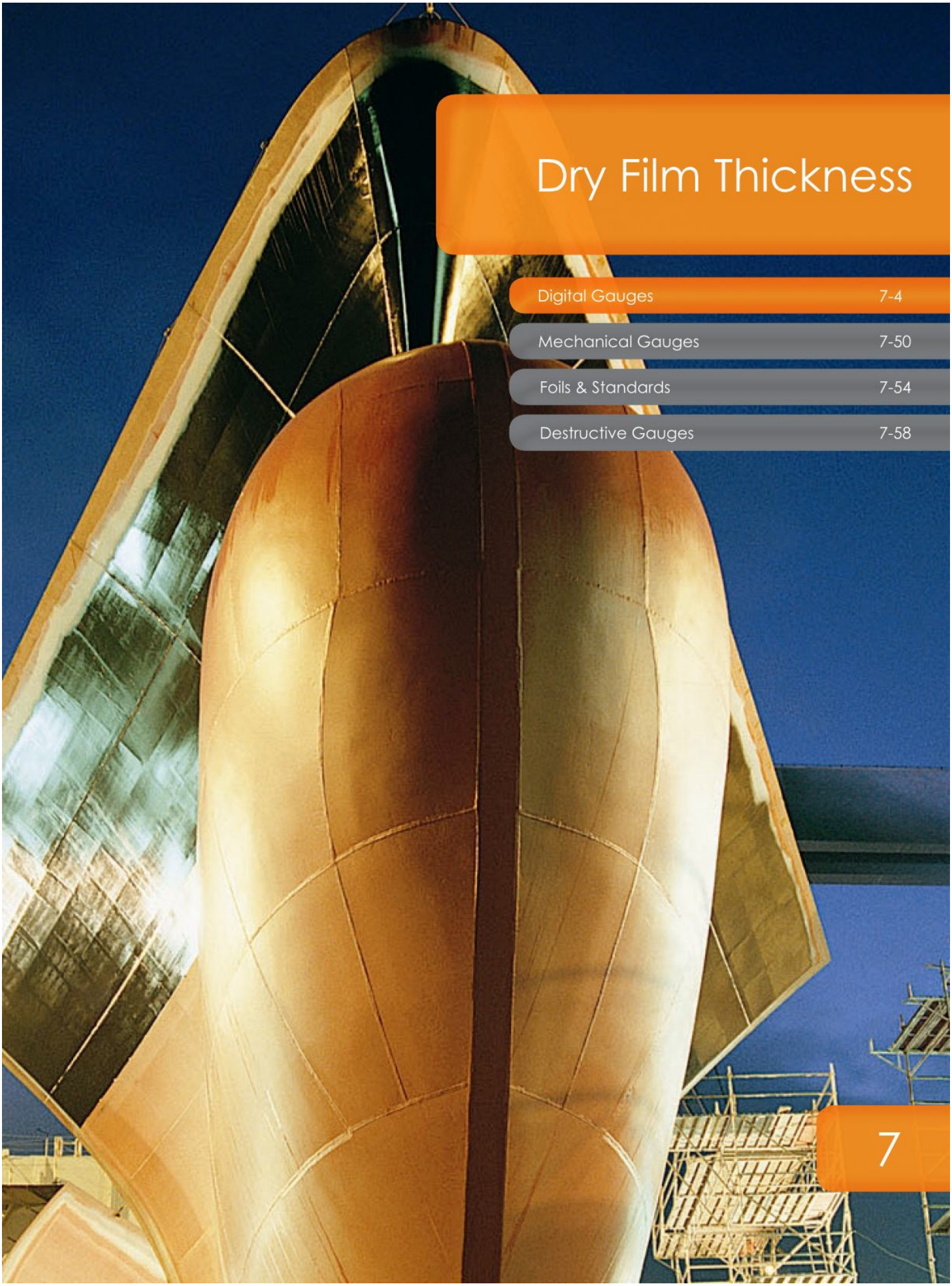
How to use a Powder Comb



Place the comb into the powder and slide the comb along the surface. The measurement points (or teeth) are pointed and allow the powder to flow around them.

The thickness of the powder lies between the highest value where a drag mark is visible and the lowest value where a drag mark has not been produced.

* The Elcometer 155 is not available for sale in the USA
○ Optional Calibration Certificate available.



Dry Film Thickness

Digital Gauges 7-4

Mechanical Gauges 7-50

Foils & Standards 7-54

Destructive Gauges 7-58

7

Dry Film Thickness



Dry Film Thickness is probably the most critical measurement in the coatings industry. It provides vital information as to the expected life of the substrate, the product's fitness for purpose and its appearance. It also ensures compliance with a host of International Standards.

A 'dry film' is the coating on a surface which has cured as the solvent has evaporated and the coating is dry to touch. The coating is typically a paint, a varnish or a powder. But it can be any substance applied to a substrate. A dry film thickness (dft) gauge, often referred to as a coating thickness gauge, can be used to measure the thickness of coatings when dry.

There are three types of dry film thickness gauges; destructive, mechanical and digital. In 1947, Elcometer launched one of the world's first non-destructive coating thickness gauges, the Elcometer 101, and over the past 7 decades, Elcometer have developed a comprehensive range of destructive, mechanical and digital Dry Film Thickness gauges to meet all of your coating inspection requirements.

Coating Thickness Standards

There are three types of coating thickness standards available from Elcometer:

Calibration Foils; supplied individually or in sets, these precision foils (or 'shims'), accurately measured to ±1%, offer you the ideal method for adjusting the calibration of your coating thickness gauge on your substrate, taking into account your specific substrate material, surface finish and form, to ensure the greatest possible accuracy. Foils are available with or without a calibration certificate traceable to National Standards (UKAS and NIST).

Coated Standards; mounted in a protective folder, these hard wearing coated ferrous or non-ferrous tiles are ideal for accurately measuring the performance of the coating thickness gauge. Coated standards are accurate to within ±2% and are supplied with a calibration certificate.

Zero Test Plates; in some cases, it may be difficult or impractical to obtain an uncoated substrate. For this reason Elcometer provide a range of zero test plates. These test plates, when used in conjunction with a set of foils, are ideal for accurately measuring the performance of your coating thickness gauge.

Choose the correct Thickness Gauge for your dry film thickness measurement

Digital Gauges

- The most accurate and reliable method for metal and cementitious substrates
- Incredible accuracy and super-fast measurement
- For use on almost any substrate, whether ferrous or non-ferrous
- Compatible with ElcoMaster® to import measurements at a click of a button





Mechanical Gauges

- Used in areas where electrical instruments are not permitted or temperatures are high
- For measurement on ferrous substrates
- Quick and immediate results

Destructive Gauges

- For measurement on non-metallic substrate or assessing the thickness of a multi-coat paint
- Low cost, portable and easy to use



Elcometer 500 Coating Thickness Gauge - Cementitious Substrates

The **Elcometer 500** coating thickness gauge accurately measures the thickness of coatings on concrete and other similar substrates[1] - non destructively.

STANDARDS:
ASTM D6132, SSPC-PA 9,
ISO 2808 Method 10

Easy to read, user definable display with automatic screen brightness

Store up to 100,000 readings in up to 1,000 alpha-numeric batches

Measure DFT on concrete
FAST · REPEATABLE · ACCURATE · DURABLE

Ergonomic design, ideal for continuous use

Measure more than 60 readings per minute in Standard Mode and over 140 readings per minute in Scan Mode

Accurately measure up to 9mm (355mils) of coatings on concrete or other similar substrates[2]

Rugged, intelligent probes with field replaceable tips;

C1 150 - 2,500µm (6 - 98mils)
C2 750 - 9,000µm (30 - 355mils)





Bluetooth® wireless technology

compatible with ElcoMaster

[1] Similar substrates include plasterboard, drywall, concrete block, brick, etc.
[2] Epoxy coatings, thickness on other materials may vary

Coating Thickness Gauge - Cementitious Substrates

Elcometer 500

Fast

Significantly reduce your inspection times.

Measure over 60 readings per minute in standard mode and over 140 readings per minute in scan mode.



Ergonomic probes with replaceable probe tips

Rugged

Designed to last.

Designed to work in harsh environments, with a 2 year gauge warranty[3], the Elcometer 500 is robust, ergonomic and sealed against dirt and water, equivalent to a rating of IP54.



Easy to use and minimum set up required

Intelligent

Maximise inspection time.

Supplied with user replaceable probe tips, the gauge informs user when probe tip requires changing, maximising inspection time.



USB and Bluetooth® data output to iPhone[4] or Android™ devices

Easy to Use

Calibrated and ready for immediate use.

Select the coating material from the gauge library and start measuring, there is no need to set up gates, range values or know the thickness of the coating.



No force is required to take a reading

Wireless Connectivity

Seamlessly connect to any PC, Android™ or iOS mobile device.

Instantly transmit your thickness values via USB or Bluetooth® to your PC or mobile device using ElcoMaster® or your own software application.

[3] The Elcometer xxx is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

[4] Compatible with iPod, iPhone and iPad.

Elcometer 500 **Coating Thickness Gauge - Cementitious Substrates**

3 different modes of calibration

The Elcometer 500's user calibration adjustment procedures are fully traceable to National and International Standards.

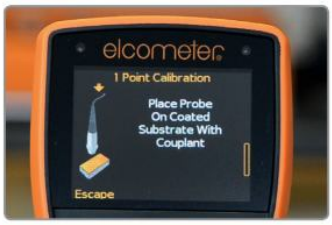
1. Coating Material Library



The Elcometer 500's advanced measurement technology means that you no longer need to know how thick the coating should be or to set up measurement gates before taking a reading.

- Simply switch on the gauge
- Select the coating from the calibration library
- Take a reading - it is that easy.

2. Material Thickness Calibration



To obtain the greatest measurement accuracy, the Elcometer 500 can be calibrated using the known thickness of the coating to be measured.

If a sample of known thickness is not available, the Elcometer 500 Coating Calibration Mould (CCM) can be used to create a coating of known thickness which is traceable to both National and International Standards.

3. Sound Velocity Calibration



The Elcometer 500 can be calibrated by entering the speed of sound from the Product Datasheet available from the coating manufacturer.

Coating Thickness Gauge - Cementitious Substrates | **Elcometer 500**

Creating a coating sample

How to create a coating sample using the Elcometer 500 (CCM).

Step 1

Place the Coating Calibration Mould (CCM) on a flat surface and completely fill the sample chamber with the test coating.



Step 2

Using the plastic scraper, scrape over the coating allowing the excess to fall into the overflow chamber. Allow the coating to cure.



Step 3

When fully cured, calibrate a ferrous coating thickness gauge on the side of the CCM then measure and record the dry film thickness at the centre of the coating.

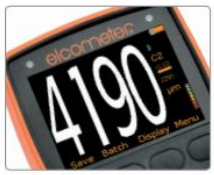


Step 4

Measure the same point using the Elcometer 500. Enter the dry film thickness measurement and save it in the Elcometer 500's Coating Materials list.



Display Modes



Individual Readings



Readings & Statistics



Readings & Run Charts



Readings & Bar Graphs



Readings & Differential

Elcometer 500 Coating Thickness Gauge - Cementitious Substrates

Product Features	■ Standard	□ Optional
	Model B	Model T
Fast, accurate reading rate; *60+ readings per minute*	■	■
Repeatable & reproducible measurements	■	■
Easy to use menu structure; *in 30+ languages*	■	■
Tough, impact, waterproof & dust resistant; *equivalent to IP54*	■	■
Bright colour screen; *with automatic rotating display (0°, 90°, 180° & 270°)*	■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*	■	■
USB power supply; *via PC*	■	■
Test certificate & 2 year gauge warranty[1]	■	■
Ambient light sensor; *with adjustable auto brightness*	■	■
Automatic probe recognition	■	■
Gauge software updates[2]; *via ElcoMaster® software*	■	■
Data output	■	■
USB; *to computer*	■	■
Bluetooth®; *to computer, Android™ & iOS[3] devices*		■
Measurement units; *µm, mm, mils, inch*	■	■
Signal strength indicator	■	■
User selectable reading resolution; *Low & High reading resolution*	■	■
Display modes; *user selectable*		■
Readings	■	■
Readings & differential; *reading and the offset from a set nominal difference*		■
Bar graph		■
Live reading trend graph; *in Batch Mode*		■
Run chart; *trend graph of last 20 readings*		■
User selectable statistics;	■	■
Number of readings; η, Mean (average); $\bar{x}$, Standard deviation; σ, Highest reading; Hi, Lowest reading; Lo, Coefficient of variation; CV%	■	■
Nominal dry film thickness; NDFT, High & low limits; definable audible & visual alarms, Number of readings above high limit; Number of readings below low limit; Range; I		■
Multiple calibration methods with on-screen instructions; *in 30+ languages*	■	■
Material selection; *preset choice of materials or create own user defined materials*	■	■
Velocity entry; *direct entry of a material's sound-velocity*	■	■
1 Point; *using a coating sample of known thickness*	■	■
Calibration lock; *with optional PIN code unlock*	■	■
Gauge memory; *number of readings*		100,000
Number of batches; *with unique batch calibrations*		1,000
Alpha-numeric batch names; *user definable on the gauge*		■
Fixed Batch Size Mode; *with batch linking*		■
Batch review graph		■
Delete last reading	■	■
Limits; *40 user definable audible & visual pass/fail warnings*		■
Live Reading Mode; *transfer of individual readings to external device*	USB	USB & Bluetooth®
Reading save function	■	■
Date and time stamp		■
Scan Mode		■
ElcoMaster® software & USB cable	□	■
Protective case	■	■
Plastic transit case	□	■

[1] The Elcometer xxx is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. [2] Internet connection required [3] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.

Coating Thickness Gauge - Cementitious Substrates

Elcometer 500

Technical Specification

Part Number	Description	Certificate
A500C-B	Elcometer 500 Coating Thickness Gauge Model B	•
A500C-T	Elcometer 500 Coating Thickness Gauge Model T	•
A500-KIT1	Elcometer 500 Coatings on Concrete Inspection Kit	•
Operating Temperature	-10 to 50°C (14 to 122°F)	
Power Supply	2 x AA batteries (rechargeable batteries can be used)	
Battery Life	Alkaline: Approximately 15 hours Lithium: Approximately 28 hours	
Gauge Weight	161g (5.68oz) including batteries, without transducer	
Gauge Dimensions	141 x 73 x 37mm (5.55 x 2.87 x 1.46") without transducer	
Packing List	**Elcometer 500 Coating Thickness Gauge Model B & T** Elcometer 500 Coating Thickness Gauge, 4ml (0.14fl oz) bottle of probe tip oil, 120ml (4fl oz) bottle of ultrasonic couplant, 2 x AA batteries, protective case, transit case (Model T), wrist harness, 3 x screen protectors, ElcoMaster® software (Model T), USB cable (Model T), test certificate **Elcometer 500 Coatings on Concrete Inspection Kit** Elcometer 500 Model T Coating Thickness Gauge, C1 & C2 coating thickness probes, C1 & C2 probe measurement foils: 1, 2, 3 & 8mm (40, 80, 120 & 310mils), Elcometer 456 Model B Ferrous Integral Gauge, Elcometer 456 calibration foils: 0.5 & 1.5mm (20 & 60mils), 2 x coating calibration moulds, 120ml (4fl oz) bottle of ultrasonic couplant, 4ml (0.14fl oz) bottle of probe tip oil, transit case, ElcoMaster® software & USB cable	

Probe Range

Scale C1



		Certificate
T500-C1	Elcometer 500 Scale C1 Probe	
Range[1]: 150 - 2,500µm (6 - 98mils)	Accuracy[2]: ±2% or ±10µm (±2% or ±0.4mil)	•
Resolution: Low: 10µm, 0.01mm, 1mil or 0.001"	High: 1µm, 0.001mm, 0.1mil or 0.0001"	

Scale C2



		Certificate
T500-C2	Elcometer 500 Scale C2 Probe	
Range[1]: 750 - 9,000µm (30 - 355mils)	Accuracy[2]: ±2% or ±10µm (±2% or ±0.4mil)	•
Resolution: Low: 10µm, 0.01mm, 1mil or 0.001"	High: 1µm, 0.001mm, 0.1mil or 0.0001"	

Accessories

Part Number	Description
T50027602-1	C1 Replacement Probe Tip; Pack of 2
T50027602-2	C2 Replacement Probe Tip; Pack of 2
T50027604	Probe Tip Oil; 4ml (0.14fl oz) Bottle
T92015701	Ultrasonic Couplant; 120ml (4fl oz)
T92024034-7	Ultrasonic Couplant; 300ml (10fl oz)
T92024034-8	Ultrasonic Couplant; 500ml (17fl oz)
T92024034-3	Ultrasonic Couplant; 3.8l (1 US Gallon)
T92024034-9	Ultrasonic Couplant (High Temp); 60ml (2fl oz); *for use in high temperature environments up to 510°C (950°F)*
T99022255-13	C1 Foil Set: 1 & 2mm (40 & 80mils)
T99022255-13C	C1 Foil Set - Certified: 1 & 2mm (40 & 80mils)
T99022255-14	C2 Foil Set: 3 & 8mm (120 & 310mils)
T99022255-14C	C2 Foil Set - Certified: 3 & 8mm (120 & 310mils)
T50027567-1	Elcometer 500 Coating Calibration Mould (CCM)

• Test Certificate supplied as standard

[1] Epoxy coatings, thickness on other materials may vary

[2] Whichever is greater

Elcometer 456 Separate Coating Thickness Gauge

The **Elcometer 456** coating thickness gauge is available with a wide range of interchangeable probes; providing greater coating thickness measurement flexibility on metal substrates.

- Measure coatings up to 31mm (1,220mils) on metal substrates
- Easy to read, user definable display with automatic screen brightness
- Ergonomic design, ideal for continuous use
- Dust and waterproof rugged design equivalent to IP64
- Temperature stable measurements

Measure DFT – Fast · Repeatable · Accurate · Durable – Ferrous & Non-Ferrous Substrates



Bluetooth® wireless technology

compatible with ElcoMaster.

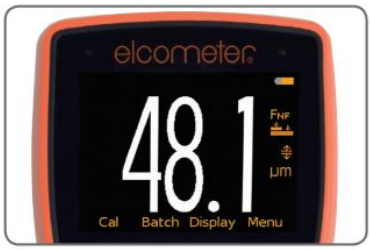
Separate Coating Thickness Gauge

Elcometer 456

Fast

Helping you become more efficient.

70+ readings per minute and 140+ per minute with Scan Probe, multiple calibration memories and alpha numeric batch identification.



Large easy to read measurements in Metric and Imperial units

Accurate

Accurate measurements on smooth, rough, thin and curved surfaces.

Measures on smooth, rough, thin and curved surfaces to ±1% in accordance with National & International Standards.



Halve the inspection time using the scan probe

Easy

Large buttons and colour screens.

LCD screens with auto rotate; factory calibrated with high and low reading limit indicators in multiple languages.



View up to 8 user selectable statistics on-screen

Reliable

Designed to last.

Heavy duty, impact resistant and supplied with fully traceable test certificates and our 2 year gauge warranty*.



Rugged and reliable, ideal for harsh environments

Powerful

Store up to 150,000 readings in 2,500 batches.

Measures up to 31mm (1,220mils) of coating on metal substrates with USB and Bluetooth® data output making it compatible with ElcoMaster®.

For a wide range of probes to meet your specific application, see page 7-16



* The Elcometer 456 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

Elcometer 456 Separate Coating Thickness Gauge

Scan and Auto Repeat Modes



Using the Scan Probe in Scan Mode

Using the Elcometer 456 in Scan Mode with the Scan Probe enables users to significantly reduce dry film thickness inspection times without affecting accuracy:

- Slide the Scan probe over the entire surface area, as the probe is lifted off the surface the gauge displays the average coating thickness value, the highest thickness and the lowest thickness values.
- Each set of three readings (average, high and low) can be displayed on the run graph and stored into the memory.
- During each scan the Elcometer 456 displays the live thickness reading together with an analogue bar graph which graphically indicates the thickness relative to both the nominal thickness and any user-defined limits.



Using the Scan Probe in Auto Repeat Mode

With a reading rate in excess of 140 readings per minute the Auto Repeat Mode significantly speeds up the inspection of large areas of coatings:

- The Scan Probe can be slid across the coated surface, more than 2 coating thickness measurements are recorded every second.
- Coating thickness readings can be stored individually into the gauge's memory batch, providing significantly more information about the coating's thickness in the same time frame.



* Scan and Auto Repeat Modes require an Elcometer 456 Model T gauge with Scan Probe.

Separate Coating Thickness Gauge

Elcometer 456

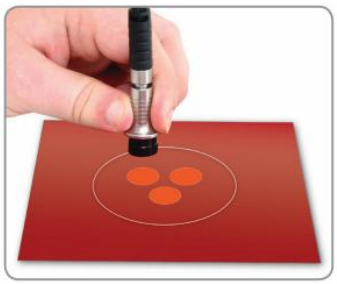
Scan Probes



The Scan Probes further enhance the speed and accuracy of field based dry film coating thickness measurement:

- Featuring a highly durable 'snap on' replaceable probe cap
- A revolutionary design which allows users to take individual readings or rapidly scan large surface areas - without damaging the probe or coating
- Uses the Elcometer 456's patented offset feature[1], ensuring that any cap wear during use[2] is incorporated within the calibration process - the gauge even informs the user when to replace the cap.
- Standard Scan Probe or larger Roller Bearing Scan Probe available
- Roller Bearing Scan Probe is ideal for large coated structures, abrasive coatings and pre-construction primers.

Counted Average and Fixed Batch Modes



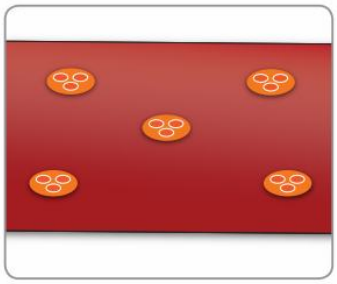
Counted Average Mode

- The Elcometer 456 Model S and Model T are supplied with the Counted Average Mode
- Once the user has defined the number of individual gauge readings to be taken within a spot measurement, the gauge stores the average of the individual gauge readings into the memory.

Fixed Batch Sizes

- The Fixed Batch Size feature within the Elcometer 456 Model T allows users to define the maximum number of readings in each batch.
- Once the maximum number of readings has been reached the gauge automatically opens up a new batch which is linked to the previous batch (name-1, name-2, etc.).

Working with Standards and Test Methods



- International Standards and test methods often describe the number of individual gauge readings to be taken in a spot measurement and/or the number of spot measurements required over a defined surface area.
- SSPC PA2 requires a minimum of three gauge readings to be taken per spot measurement and five spot measurements over 10m² (~100ft²).
- The Elcometer 456 Model S or Model T can be set with a counted average of three and a fixed batch size of five to meet these requirements. Each batch defines an area of measurement.
- When the Scan Probe is connected to the Elcometer 456 Model T with Auto Repeat Mode selected, SSPC PA2 (or similar test methods) can be completed more than 40% faster.

[1] Patent Number US6243661

[2] When tested on smooth surfaces probe end caps have been scanned in excess of 50km (30 miles)

Elcometer 456 Separate Coating Thickness Gauge

Product Features	■ Standard □ Optional		
	Model B	Model S	Model T
Fast, accurate reading rate; *70+ readings per minute*	■	■	■
Repeatable & reproducible measurements	■	■	■
Easy to use menu structure; *in 30+ languages*	■	■	■
Tough, impact, waterproof & dust resistant; *equivalent to IP64*	■	■	■
Bright colour screen; *with permanent backlight*	■	■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*	■	■	■
Large positive feedback buttons	■	■	■
USB power supply; *via PC*	■	■	■
Test certificate	■	■	■
2 year gauge warranty*	■	■	■
Automatic rotating display; *0°, 90°, 180° & 270°*	■	■	■
Ambient light sensor; *with adjustable auto brightness*	■	■	■
Emergency light	■	■	■
Tap awake from sleep	■	■	■
Gauge software updates[1]; *via ElcoMaster® software*	■	■	■
Data output	■	■	■
USB; *to computer*	■	■	■
Bluetooth®; *to computer, Android™ & iOS‡ devices*		■	■
On screen statistics	■	■	■
Number of readings; *η* Mean (average); $\bar{x}$ Standard deviation; σ Highest reading; *Hi* Lowest reading; *Lo* Coefficient of variation; *CV%,* Elcometer index value[2]; *EIV*	■	■	■
Nominal dry film thickness; *NDFT*		■	■
IMO PSPC; *%>NDFT, %>90<NDFT, 90:10 pass/fail*		■	■
High & low limits; *definable audible & visual alarms*		■	■
Number of readings above high limit;		■	■
Number of readings below low limit;		■	■
Live reading trend graph; *in Batch Mode*		■	■
ElcoMaster® software & USB cable	□	■	■
Replaceable screen protectors	□	■	■
Protective case	■	■	■
Plastic transit case	□	□	■
Separate models; *with automatic probe recognition*	■	■	■
Probe type; *Ferrous (F), Non-Ferrous (N), Dual (FNF)*[3]	F, N, FNF	F, N, FNF	F, N, FNF
Measurement range; *see page 7-16 for probe selection*	0-31mm 0-1,220mils	0-31mm 0-1,220mils	0-31mm 0-1,220mils
On-screen calibration instructions; *in 30+ languages*	■	■	■
Multiple calibration methods	■	■	■
Factory; *resets to the factory calibration*	■	■	■
2-point; *for smooth and rough surfaces*	■	■	■
1-point; *zero calibration*	■	■	■
Zero offset[4]*; for calibration according to ISO19840*	■	■	■
Predefined calibration & measurement methods		■	■
ISO, SSPC PA2, Swedish, Australian		■	■

* Elcometer 456 probes are covered by a 1 year warranty which is extendable within 60 days from date of purchase, free of charge, to 2 years via www.elcometer.com.

[1] Internet connection required [2] Elcometer Index Values are used in the automotive industry to assess a coating's overall quality; USA Patent Number US7606671B2

[3] FNF Patent Number USA: 5886522 [4] Zero Offset USA Patent Number US6243661

Separate Coating Thickness Gauge

Elcometer 456

Product Features

■ Standard □ Optional

	Model B	Model S	Model T
Automatic calibration; *for rapid calibration*		■	■
Calibration memory type; *gauge (g) or gauge & batch (gb)*	g	gb	gb
Number of batches; *with unique calibrations*		1	2,500
Calibration memories; *3 user-programmable memories*			■
Measurement outside calibration warning			■
Calibration lock; *with optional PIN code unlock*	■	■	■
Delete last reading	■	■	■
Gauge memory; *number of readings*	Last 5	1,500	150,000
Individual batch calibrations; *sent to PC via ElcoMaster®*		■	■
Limits; *user definable audible & visual pass/fail warnings*		■	■
Gauge (g) or gauge & batch specific (gb) limits		g	gb
Date and time stamp		■	■
Review, clear & delete batches		■	■
Batch types; *normal, counted average, IMO PSPC*		■	■
Navsea Mode			■
Batch review graph			■
Copy batches and calibration settings			■
Alpha-numeric batch names; *user definable on the gauge*			■
Scan & Auto Repeat Modes; *with Scan Probe connected*			■
Fixed Batch Size Mode; *with batch linking*			■

Technical Specification

Model	Model B	Model S	Model T	Certificate
Elcometer 456 Ferrous Separate	A456CFBS	A456CFSS	A456CFTS	●
Elcometer 456 Non-Ferrous Separate	A456CNBS	A456CNSS	A456CNTS	●
Elcometer 456 Dual FNF Separate	A456CFNFBS	A456CFNFSS	A456CFNFTS	●
Display Information	2.4" (6cm) QVGA colour TFT display, 320 x 240 pixels			
Battery Type	2 x AA batteries, rechargeable batteries can also be used			
Battery Life	approximately 24 hours of continuous use at 1 reading per second[5]			
Gauge Dimensions (h x w x d)	141 x 73 x 37mm (5.55 x 2.87 x 1.46")			
Gauge Weight (including batteries supplied)	161g (5.68oz)			
Operating Temperature	-10 to 50°C (14 to 122°F)			
Packing List	Elcometer 456 gauge, wrist harness, transit case (T), protective case (B, S, T), 1 x screen protectors (S, T), 2 x AA batteries, operating instructions, USB cable (S, T), ElcoMaster® software (S, T) For separate gauge probe options see page 7-16			

STANDARDS:

AS 2331.1.4, AS 3894.3-B, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6B, BS 3900-C5-6A, BS 5411-11, BS 5411-3, BS 5599, DIN 50981, DIN 50984, ECCA T1, EN 13523-1, IMO MSC.215(82), IMO MSC.244 (83), ISO 1461, ISO 19840, ISO 2063, ISO 2178, ISO 2360, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, ISO 2808-12, JIS K 5600-1-7, NF T30-124, SS 184159, SSPC PA 2, US Navy PPI 63101-000, US Navy NSI 009-32

[5] Using default settings & lithium batteries, alkaline or rechargeable batteries may differ

● Certificate supplied as standard.

Elcometer 456 Probe Range for Separate Coating Thickness Gauge

All **Elcometer 456 probes** are fully interchangeable and are available in a number of designs and scale ranges to meet your specific application.



- Fully interchangeable and available in a number of designs and scale ranges
- Supplied with a Test Certificate and a set of calibration foils
- Ferrours, non-ferrous and dual FNF probes available
- Ergonomic design, ideal for continuous use
- Temperature stable measurements

Probe Range for Separate Coating Thickness Gauge

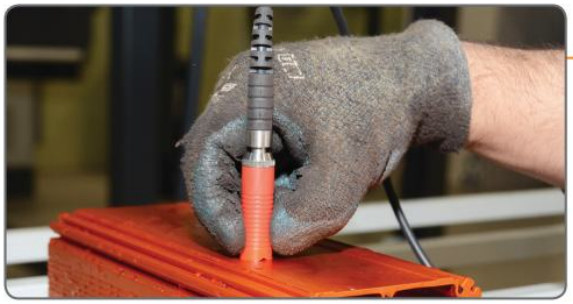
Elcometer 456

Choosing the correct probe for your coating thickness gauge:

Ferrous Probes (F)

- Ferrous probes measure non-magnetic coatings on ferromagnetic substrates.
- Elcometer 456 ferrous gauges accept any ferrous probe.





Non-Ferrous Probes (N)

- Non-ferrous probes measure non-conductive coatings on non-ferrous metal substrates.
- Elcometer 456 non-ferrous gauges accept any non-ferrous probe.

Dual Probes (FNF)

- Dual FNF probes measure both ferrous and non-ferrous applications with automatic substrate detection.
- Elcometer 456 FNF gauges accept all ferrous, non-ferrous and dual FNF probes.





High Temperature

- Elcometer probes have a maximum operating temperature of 80°C (176°F)*.
- Separate ferrous probes have a maximum operating temperature of 150°C (300°F)*.
- Hi-Temperature PINIP™'s have a maximum operating temperature of 250°C (480°F)*.

*The stated temperature is the substrate temperature, and the duty cycle of the probe must be reduced to ensure a minimal temperature build-up within the probe.

Elcometer 456 Probe Range for Separate Coating Thickness Gauge

Choosing the correct probe for your coating thickness gauge:

Straight Probes



Standard Straight Probe

Standard probes measure coatings on both flat and curved surfaces.



Anodising Probe

Chemical resistant & washable - ideal for the anodising environment.



Mini Probe

Mini probes are ideal for harder to reach areas and edges.



Waterproof Probe

Sealed for use underwater at depth, even in diving gloves.



Soft Coating Probe

Large surface area probes are for soft materials (HVCA approved).



Thick Coatings Probe

Ideal for measuring coatings up to 31mm thick.

Scan Probes



Standard Scan Probe

Rapidly scan large surface areas without damaging the probe or the coating.



Ball Bearing Scan Probe

Clip on adaptors for large coated structures, abrasive coatings and pre-construction primers.

Probe Range for Separate Coating Thickness Gauge

Elcometer 456

Choosing the correct probe for your coating thickness gauge:

Angled Probes



Right Angle Probe

Take readings in areas with restricted clearance.



Mini Right Angle Probe

For measuring coatings on edges, narrow pipes or small surface areas.



Telescopic Probe

Extending probes for hard to reach areas.



45° Angle Probe

Measure difficult to access or complex areas.

Plug In Integral Probes (PINIP™)



PINIP™ Integral Probe

Transforms a separate gauge into an integral gauge, ideal for single handed use.



Hi-Temperature PINIP™

Measure coatings on ferrous substrates up to 250°C (480°F).

Armoured Cable Probes



Reinforced heavy duty cables reduce the risk of cable damage.

Elcometer 456 Probe Range for Separate Coating Thickness Gauge

Scale 0.5 Probe Range 0-500µm / 0-20mils



Accuracy[a]:	±1-3% or ±2.5µm	±1-3% or ±0.1mil
Range:	0-500µm	0-20mils
Resolution:	0.1µm: 0-100µm 1µm: 100-500µm	0.01mil: 0-5mils 0.1mil: 5-20mils
Certificate:	•	

See '#' on the probes table on the opposite page for comparision.

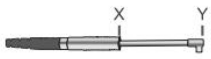




a. Whichever is the greater
b. FNF (F): FNF probe in F Mode FNF (N): FNF probe in N Mode

• Certificate supplied as standard.

c. Probe length is measured from X to Y



d. Excluding Scan Probe end cap
e. Scan Probe calibrated using a sample of the uncoated substrate
Elcometer 456 probes are covered by a 1 year warranty

Probe Range for Separate Coating Thickness Gauge

Elcometer 456

Scale 0.5 Probe Range — 0-500µm / 0-20mils

Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
2	45° Angle Mini Probe	300mm (11.80")	T456CFM3R45D	18mm (0.71")	3mm (0.12")
3	Right Angle Mini Probe	300mm (11.80")	T465CFM3R90D	16mm (0.63")	3mm (0.12")
4	Right Angle Mini Probe	150mm (5.90")	T456CFM3R90C	16mm (0.63")	3mm (0.12")
5	Straight Mini Probe	150mm (5.9")	T456CFM3---C	6mm (0.24")	3mm (0.12")
6	45° Angle Mini Probe	45mm (1.77")	T456CFM3R45A	16mm (0.63")	3mm (0.12")
7	Right Angle Mini Probe	45mm (1.77")	T456CFM3R90A	16mm (0.63")	3mm (0.12")
8	Straight Mini Probe	45mm (1.77")	T456CFM3---A	6mm (0.24")	3mm (0.12")

Non-Ferrous (N) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Right Angle Mini Probe	400mm (15.70")	T456CNM3R90E	16mm (0.63")	4mm (0.16")
4	Right Angle Mini Probe	150mm (5.90")	T456CNM3R90C	16mm (0.63")	4mm (0.16")
5	Straight Mini Probe	150mm (5.90")	T456CNM3---C	6mm (0.24")	4mm (0.16")
7	Right Angle Mini Probe	45mm (1.77")	T456CNM3R90A	16mm (0.63")	4mm (0.16")
8	Straight Mini Probe	45mm (1.77")	T456CNM3---A	6mm (0.24")	4mm (0.16")

Non-Ferrous - Graphite (N)

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Right Angle Mini Probe	400mm (15.70")	T456CNMG3R90E	16mm (0.63")	4mm (0.16")
4	Right Angle Mini Probe	150mm (5.90")	T456CNMG3R90C	16mm (0.63")	4mm (0.16")
7	Right Angle Mini Probe	45mm (1.77")	T456CNMG3R90A	16mm (0.63")	4mm (0.16")

Scale FM7 Probe Range — 0.6-3.8mm / 25-150mils



Accuracy[a]:	±7.5% or ±114µm	±7.5% or ±4.5mils
Range[d]:	0.60-3.8mm	25-150mils
Resolution:	1µm: 0-1mm 10µm: 1-3.8mm	0.1mil: 0-139.3mils 1.0mil: 39.4-150mils
Certificate:	•	

Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
6	45° Angle Mini Probe	45mm (1.77")	T456CFM7R45A	20mm (0.79")	6.5 mm (0.26")

Elcometer 456 Probe Range for Separate Coating Thickness Gauge

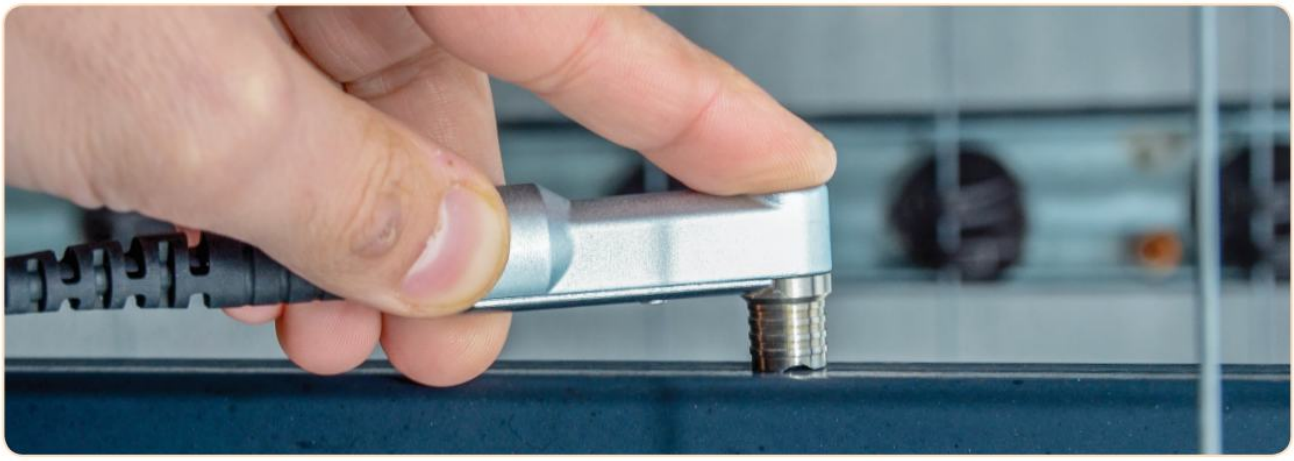
Scale 1 Probe Range 0-1500µm / 0-60mils



Accuracy[ae]:	±1-3% or ±2.5µm	±1-3% or ±0.1mil
Range[d]:	0-1,500µm	0-60mils
Resolution:	0.1µm: 0-100µm 1µm: 100-1,500µm	0.01mil: 0-5mils 0.1mil: 5-60mils
Certificate:	•	

See '#' on the probes table on the opposite page for comparision.

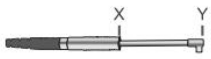




a. Whichever is the greater
b. FNF (F): FNF probe in F Mode FNF (N): FNF probe in N Mode

• Certificate supplied as standard.

c. Probe length is measured from X to Y



d. Excluding Scan Probe end cap
e. Scan Probe calibrated using a sample of the uncoated substrate
Elcometer 456 probes are covered by a 1 year warranty

Probe Range for Separate Coating Thickness Gauge

Elcometer 456

Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CF1S	85mm (3.35")	4mm (0.16")
2	Scan Probe	45mm (1.77")	T456CF1U	86mm (3.38")	15mm (0.59")
3	Scan Probe armoured	45mm (1.77")	T456CF1UARM	140mm (5.51")	15mm (0.59")
4	90° Probe	45mm (1.77")	T456CF1R	28mm (1.10")	4mm (0.16")
5	90° Mini Probe	45mm (1.77")	T456CFM5R90A	16mm (0.63")	4mm (0.16")
5	90° Mini Probe sealed	45mm (1.77")	T456CFME5R90A	16mm (0.63")	4mm (0.16")
5	90° Mini Probe sealed, 2m cable	45mm (1.77")	T456CFME5R90A-2	16mm (0.63")	4mm (0.16")
6	PINIP™ Integral Probe		T456CF1P	170mm (6.69")	4mm (0.16")
8	Straight Probe sealed	45mm (1.77")	T456CF1E	85mm (3.35")	4mm (0.16")

Non-Ferrous (N) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CN1S	85mm (3.35")	4mm (0.16")
4	90°Probe	45mm (1.77")	T456CN1R	28mm (1.10")	4mm (0.16")
5	Mini 90°Probe	45mm (1.77")	T456CNM5R90C	16mm (0.63")	4mm (0.16")
5	Mini 90°Probe	400mm (15.7")	T456CNM5R90E	16mm (0.63")	4mm (0.16")
6	PINIP™ Integral Probe		T456CN1P	180mm (7.09")	4mm (0.16")
7	Anodiser Probe	45mm (1.77")	T456CN1AS	100mm (3.94")	4mm (0.16")

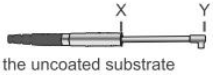
Ferrous & Non-Ferrous (FNF) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CFNF1S	88mm (3.46")	F: 4mm (0.16") N: 6mm (0.24")
2	Scan Probe	45mm (1.77")	T456CFNF1U	89mm (3.50")	15mm (0.59")
4	Right Angle Probe	45mm (1.77")	T456CFNF1R	38mm (1.50")	F: 4mm (0.16") N: 6mm (0.24")
6	PINIP™ Integral Probe		T456CFNF1P	180mm (7.09")	F: 4mm (0.16") N: 6mm (0.24")
8	Straight Probe armoured cable	45mm (1.77")	T456CFNF1ARM	185mm (7.28")	F: 4mm (0.16") N: 6mm (0.24")

a. Whichever is the greater
b. FNF (F): FNF probe in F Mode FNF (N): FNF probe in N Mode

- Certificate supplied as standard.

c. Probe length is measured from X to Y



d. Excluding Scan probe end cap
e. Scan Probe calibrated using a sample of the uncoated substrate
Elcometer 456 probes are covered by a 1 year warranty

Elcometer 456 Probe Range for Separate Coating Thickness Gauge

Scale 2 Probe Range 0-5mm / 0-200mils



Accuracy[a]:	±1-3% or ±20µm	±1-3% or ±1.0mil
Range[d]:	0-5mm	0-200mils
Resolution:	1µm: 0-1mm 10µm: 1-5mm	0.1mil: 0-50mils 1.0mil: 50-200mils
Certificate:	•	

See '#' on the probes table on the opposite page for comparision.



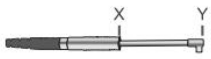
1 2 3 4 5 6 7 8



a. Whichever is the greater
b. FNF (F): FNF probe in F Mode FNF (N): FNF probe in N Mode

• Certificate supplied as standard.

c. Probe length is measured from X to Y



d. Excluding Scan Probe end cap
e. Scan Probe calibrated using a sample of the uncoated substrate
Elcometer 456 probes are covered by a 1 year warranty

Probe Range for Separate Coating Thickness Gauge

Elcometer 456

Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CF2S	89mm (3.50")	8mm (0.32")
2	Straight Probe armoured cable	45mm (1.77")	T456CF2ARM	138mm (5.43")	8mm (0.32")
3	Scan Probe	45mm (1.77")	T456CF2U	90mm (3.54")	15mm (0.59")
4	90° Probe	45mm (1.77")	T456CF2R	32mm (1.26")	8mm (0.32")
5	Telescopic Probe	56-122cm (22-48")	T456CF2T	36mm (1.42")	8mm (0.32")
6	Soft Coating Probe	45mm (1.77")	T456CF2B	89mm (3.50")	8mm (0.32")
7	Waterproof Probe 1m (3') cable	45mm (1.77")	T456CF2SW	138mm (5.43")	8mm (0.32")
7	Waterproof Probe 5m (15') cable	45mm (1.77")	T456CF2SW-5	138mm (5.43")	8mm (0.32")
7	Waterproof Probe 15m (45') cable	45mm (1.77")	T456CF2SW-15	138mm (5.43")	8mm (0.32")
7	Waterproof Probe 30m (98') cable	45mm (1.77")	T456CF2SW-30	138mm (5.43")	8mm (0.32")
7	Waterproof Probe 50m (164') cable	45mm (1.77")	T456CF2SW-50	138mm (5.43")	8mm (0.32")
7	Waterproof Probe 75m (250') cable	45mm (1.77")	T456CF2SW-75	138mm (5.43")	8mm (0.32")
8	PINIP™ Integral Probe		T456CF2P	174mm (6.85")	8mm (0.32")
8	Hi-Temperature PINIP™		T456CF2PHT	174mm (6.85")	8mm (0.32")

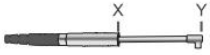
Non-Ferrous (N) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CN2S	88mm (3.46")	14mm (0.55")
8	PINIP™ Integral Probe		T456CN2P	185mm (7.28")	14mm (0.55")

a. Whichever is the greater
b. FNF (F): FNF probe in F Mode FNF (N): FNF probe in N Mode

● Certificate supplied as standard.

c. Probe length is measured from X to Y



d. Excluding Scan probe end cap
e. Scan Probe calibrated using a sample of the uncoated substrate
Elcometer 456 probes are covered by a 1 year warranty

Elcometer 456 Probe Range for Separate Coating Thickness Gauge

Scale 3 Probe Range 0-13mm / 0-500mils



Accuracy[a]:	±1-3% or ±50µm	±1-3% or ±2.0mils
Range[d]:	0-13mm	0-500mils
Resolution:	1µm: 0-2mm 10µm: 2-13mm	0.1mil: 0-100mils 1.0mil: 100-500mils
Certificate:	•	

See '#' on the probes table on the opposite page for comparision.

1 

2 

3 

Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CF3S	102mm (4.02")	14mm (0.55")
2	PINIP™ Integral Probe		T456CF3P	184mm (7.24")	14mm (0.55")

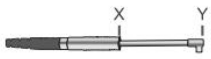
Non-Ferrous (N) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CN3S	170mm (6.69")	35mm (1.38")

a. Whichever is the greater
b. FNF (F): FNF probe in F Mode FNF (N): FNF probe in N Mode

• Certificate supplied as standard.

c. Probe length is measured from X to Y
d. Excluding Scan Probe end cap
e. Scan Probe calibrated using a sample of the uncoated substrate
Elcometer 456 probes are covered by a 1 year warranty



Probe Range for Separate Coating Thickness Gauge

Elcometer 456

Scale 6 Probe Range — F: 0-25mm / 0-980mils — N: 0-30mm / 0-1,200mils

Accuracy[a]:	±1-3% or ±100µm	±1-3% or ±4.0mils
Range[d]:	F: 0-25mm N: 0-30mm	F: 0-980mils N: 0-1,200mils
Resolution:	10µm: 0-2mm 100µm: 2-30mm	1mil: 0-100mils 10mils: 100-1,200mils
Certificate:	•	



See '#' on the probes table below for comparision.

1 

2 

Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CF6S	150mm (5.90")	51 x 51mm² (2 x 2 inch²)
2	Straight Probe armoured cable	45mm (1.77")	T456CF6ARM	190mm (7.48")	51 x 51mm² (2 x 2 inch²)

Non-Ferrous (N) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
1	Straight Probe	45mm (1.77")	T456CN6S	160mm (6.30")	58mm (2.29")
2	Straight Probe armoured cable	45mm (1.77")	T456CN6ARM	200mm (7.87")	58mm (2.29")

Scale 7 Probe Range — 0-31mm / 0-1,220mils

Accuracy[a]:	±1-3% or ±100µm	±1-3% or ±4.0mils
Range[d]:	0-31mm	0-1220mils
Resolution:	10µm: 0-2mm 100µm: 2-31mm	1.0mil: 0-100mils 10mils:100-1220mils
Certificate:	•	



Ferrous (F) Probes

#	Description[c]	Probe Length	Part Number	Minimum Headroom	Minimum Sample Diameter[b]
2	Straight Probe armoured cable	45mm (1.77")	T456CF7ARM	200mm (7.87")	55 x 55mm² (2.17 x 2.17 inch²)

Elcometer 456 & 355 Probe Placement Jig

The **Elcometer Probe Placement Jig** is the ideal accessory for measuring coatings on small or complex components when the highest levels of repeatability and accuracy are required.

Increases the gauge's repeatability and reproducibility

Supplied with a probe housing to suit standard F1, F2, F4, F5 and N1 probes

Housings to suit other probes are available as optional accessories



Compatable with Elcometer 456 probes and Elcometer 355 probes

Ideal for small and large components alike

Probe Placement Jig

Elcometer 456 & 355

The Elcometer probe placement jig is the ideal accessory for measuring coatings on small or complex components when the highest levels of repeatability and accuracy are required.

The Probe Placement Jig makes the gauge score highly in repeatability and reproducibility studies by placing the probe accurately, at the same angle and in the same place on the substrate each time.

Ideal for small and large components alike, the Probe Placement Jig is supplied with a probe housing to suit standard F1, F2, F4, F5 and N1 probes. Housings to suit other probes are available as optional accessories.



Technical Specification

Part Number	Description
T95012880	Probe Placement Jig

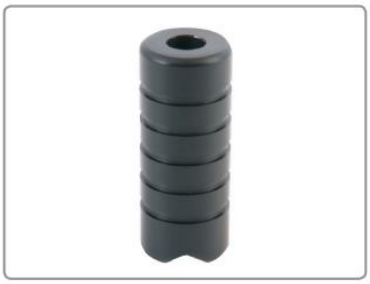
Each probe placement jig is supplied with a probe housing and a component holder to suit Scale 1 or Scale 2 straight probes.

T95013028	Component Hand Vice
T95012888	Cable Release Assembly - ideal for remote measurements
T95015961	Dual FNF Probe Housing Adaptor
T95016896	Mini Probe Housing Adaptor

For a wide range of probes to meet your specific application,
see page 7-16



Elcometer 456 Accessories



Jumbo Hand Grip
Ideal for precision placement for the most accurate results on flat and curved surfaces. Place the probe inside the Jumbo Hand Grip and take measurements - ideal when wearing gloves. Suitable for any Elcometer 456 Scale 1 or Scale 2 straight probes.

F and N Probes	Dual FNF Probes	
T9997766-	T99913225	Jumbo Hand Grip



V-Probe Adaptor
Ideal for precision placement for the most accurate results on medium and large diameter curved surfaces such as pipes and cylinders. Suitable for any Elcometer 456 Scale 1 or Scale 2 straight probes.

F and N Probes	Dual FNF Probes	
T9997381-	T99913133	V-Probe Adaptor



Scan Probe Replacement End Caps
Highly durable - when tested on smooth surfaces probe end caps have been scanned in excess of 50km (30 miles) - each end cap snaps on to the end of the Scan probe significantly enhancing the lifetime of the probe.

F & Dual FNF Probes	
T456C23956	Replacement Scan Probe End Caps (3 per pack)



Roller Scan Probe Cap
Clip on adaptor designed for large coated structures, abrasive coatings and pre-construction primers. The Roller Scan Cap has scanned in excess of 50km (30 miles) on rough surfaces without damaging the substrate or probe.

F & Dual FNF Probes	
T456C29050	Elcometer 456 Roller Scan Probe Cap

Accessories

Elcometer 456

Data Output Controller
Enables data to be output from the Elcometer 456 via RS232 ports for the purposes of controlling automated production lines.

The Elcometer Software Support Team, or users can produce their own customised software to utilise the data output from the Elcometer 456 gauge in order to remotely trigger pass/fail criteria for their processes.



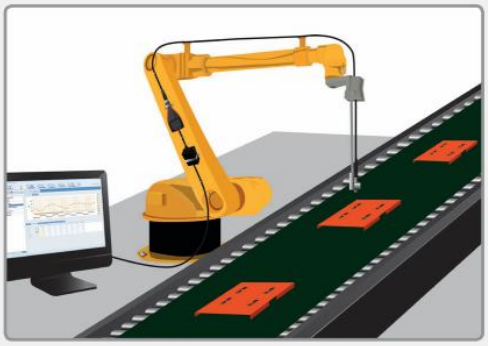
Part Number	Description
T99925387	Elcometer Data Output Controller
Operating Temperature	0 to 50°C (32°F to 122°F)
Data Input	USB
Data Output	One RS232 serial output via 9 way D-Type connector
Power Supply	Requires 5V 1A(min) DC supply via mini USB. External plug-in mains adapter with interchangeable UK/EU/US/AUS pins supplied.
Packing List	Elcometer Data Output Controller, USB to RS232 converter lead, power supply (with 4 sets of interchangeable pins)

Using the Data Output Controller

The Elcometer 456 coating thickness gauge probe is attached to a robot arm, to automatically measure dry film thickness on the production line.

The Elcometer 456 connects to the data output controller to transfer live dry film thickness readings via RS232 ports to the automated production line.

Customised software for the data output controller can be produced, using high/low limits to trigger a pass or fail on the automated production line, helping to improve quality.



For a full range of calibration standards and foils sets see page 7-55



Elcometer 456 Integral Coating Thickness Gauge

The **Elcometer 456** coating thickness gauge is available with an **integral probe**; ideal for single handed operation, allowing for consistent, repeatable and accurate results.



- Easy to read, user definable display with automatic screen brightness
- Reading rate of 70+ per minute
- Ergonomic design, ideal for continuous use
- Measure coatings up to 31mm (1,220mils) on metal substrates
- Stores up to 150,000 readings in alpha numeric batches
- Scratch and solvent resistant screen
- Bigfoot™ integral probe

Bluetooth® wireless technology

compatible with ElcoMaster

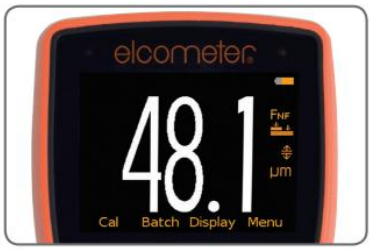
Integral Coating Thickness Gauge

Elcometer 456

Easy

Calibrated and ready for immediate use.

Easy to use menus, large buttons and colour LCD screens with auto rotate; factory calibrated and ready to use, straight from the box.



Large easy to read measurements in Metric and Imperial units

Accurate

Accurate measurements on smooth, rough, thin and curved surfaces.

With a thickness measurement capability to ±1% and increased reading resolution, the Elcometer 456 produces accurate, temperature stable measurements every time.



Bigfoot™ integral probe for accurate measurements

Reliable

Peace of mind.

Repeatable and reproducible and available with a 2 year* manufacturer's warranty; giving you peace of mind.



Easy to use and minimum set up required

Rugged

Durable and suitable for use in harsh environments.

Suitable for use in harsh environments, the 456 is sealed, heavy duty and impact resistant with dust and waterproof equivalent to IP64.

Powerful

Store up to 150,000 readings in 2,500 batches.

Measures up to 31mm (1,220mils) of coating on metal substrates with USB and Bluetooth® data output making it compatible with ElcoMaster®.



USB and Bluetooth® data output to iPhone[2] or Android™ devices

STANDARDS:

AS 2331.1.4, AS 3894.3-B, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6B, BS 3900-C5-6A, BS 5411-11, BS 5411-3, BS 5599, DIN 50981, DIN 50984, ECCA T1, EN 13523-1, IMO MSC.215(82), IMO MSC.244 (83), ISO 1461, ISO 19840, ISO 2063, ISO 2178, ISO 2360, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, ISO 2808-12, JIS K 5600-1-7, NF T30-124, SS 184159, SSPC PA 2, US Navy PPI 63101-000, US Navy NSI 009-32

[1] The Elcometer 456 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. [2] Compatible with iPod, iPhone and iPad.

Elcometer 456 Integral Coating Thickness Gauge for Metal Substrates

Product Features	■ Standard	□ Optional	
	Model B	Model S	Model T
Fast, accurate reading rate; *70+ readings per minute*	■	■	■
Repeatable & reproducible measurements	■	■	■
Easy to use menu structure; *in 30+ languages*	■	■	■
Tough, impact, waterproof & dust resistant; *equivalent to IP64*	■	■	■
Bright colour screen; *with permanent backlight*	■	■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*	■	■	■
Large positive feedback buttons	■	■	■
USB power supply; *via PC*	■	■	■
Test certificate	■	■	■
2 year gauge warranty[1]	■	■	■
Automatic rotating display; *0°, 90°, 180° & 270°*	■	■	■
Ambient light sensor; *with adjustable auto brightness*	■	■	■
Emergency light	■	■	■
Tap awake from sleep	■	■	■
Gauge software updates[2]; *via ElcoMaster® software*	■	■	■
Data output	■	■	■
USB; *to computer*	■	■	■
Bluetooth®; *to computer, Android™ & iOS‡ devices*		■	■
On screen statistics	■	■	■
Number of readings; *n*, Mean (average); $\bar{x}$, Standard deviation; σ Highest reading; *Hi*, Lowest reading; *Lo*, Coefficient of variation; *CV%*, Elcometer index value[3]; *EIV*	■	■	■
Nominal dry film thickness; *NDFT*		■	■
IMO PSPC; *%>NDFT, %>90<NDFT, 90:10 pass/fail*		■	■
High & low limits; *definable audible & visual alarms*		■	■
Number of readings above high limit;		■	■
Number of readings below low limit;		■	■
Live reading trend graph; *in Batch Mode*		■	■
ElcoMaster® software & USB cable	□	■	■
Replaceable screen protectors	□	■	■
Protective case	■	■	■
Plastic transit case	□	□	■
Integral models; *with automatic gauge switch on*	■	■	■
Probe type; *Ferrous (F), Non-Ferrous (N), Dual (FNF)*[4]	F, N, FNF	F, N, FNF	F, N, FNF
Measurement range	0-13mm 0-500mils	0-1500µm 0-60mils	0-1500µm 0-60mils
On-screen calibration instructions; *in 30+ languages*			
Multiple calibration methods	■	■	■
Factory; *resets to the factory calibration*	■	■	■
2-point; *for smooth and rough surfaces*	■	■	■
1-point; *zero calibration*	■	■	■
Zero offset[5]; *for calibration according to ISO19840*		■	■
Predefined calibration & measurement methods		■	■
ISO, SSPC PA2, Swedish, Australian		■	■

[1] The Elcometer 456 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. Elcometer 456 probes are covered by a 1 year warranty.

[2] Internet connection required [3] Elcometer Index Values are used in the automotive industry to assess a coating's overall quality; USA Patent Number US7606671B2

[4] FNF Patent Number USA: 5886522 [5] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.

• Certificate supplied as standard.

Integral Coating Thickness Gauge for Metal Substrates

Elcometer 456

Product Features

■ Standard □ Optional

	Model B	Model S	Model T
Automatic calibration; *for rapid calibration*		■	■
Calibration memory type; *gauge (g) or gauge & batch (gb)*	g	gb	gb
Number of batches; *with unique calibrations*		1	2,500
Calibration memories; *3 user-programmable memories*			■
Measurement outside calibration warning			■
Calibration lock; *with optional PIN code unlock*	■	■	■
Delete last reading	■	■	■
Gauge memory; *number of readings*	Last 5	1,500	150,000
Individual batch calibrations; *sent to PC via ElcoMaster®*		■	■
Limits; *user definable audible & visual pass/fail warnings*		■	■
Gauge (g) or gauge & batch specific (gb) limits		g	gb
Date and time stamp		■	■
Review, clear & delete batches		■	■
Batch types; *normal, counted average, IMO PSPC*		■	■
Navsea Mode			■
Batch review graph			■
Copy batches and calibration settings			■
Alpha-numeric batch names; *user definable on the gauge*			■
Scan & Auto Repeat Modes; *with Scan probe connected*			■
Fixed Batch Size Mode; *with batch linking*			■

Technical Specification

Scale 1 — Range: 0-1,500µm (0-60mils) Accuracy*: ±1-3% or ±2.5µm (±0.1mil)
Resolution: 0.1µm: 0-100µm; 1µm: 100-1,500µm (0.01mil: 0-5mils; 0.1mil: 5-60mils)

Model	Model B	Model S	Model T	Certificate
Elcometer 456 Ferrous Integral	A456CFBI1	A456CFSI1	A456CFTI1	•
Elcometer 456 Non-Ferrous Integral	A456CNBI1	See separate gauges with N2 PINIP™ Probe	See separate gauges with N2 PINIP™ Probe	•
Elcometer 456 Dual FNF Integral	A456CFNFBI1	A456CFNFSI1	A456CFNFTI1	•

Scale 2 — Range: 0-5mm (0-200mils) Accuracy*: ±1-3% or ±20µm (±1.0mil)
Resolution: 1µm: 0-1mm; 10µm: 1-5mm (0.1mil: 0-50mils; 1mil: 50-200mils)

Model	Model B	Model S	Model T	Certificate
Elcometer 456 Ferrous Integral	A456CFBI2	See separate gauges with F2 PINIP™ Probe	See separate gauges with F2 PINIP™ Probe	•

For higher resolution & accuracy on thin coatings Scale 2 gauges can be switched to the Scale 1 mode measurement performance

Scale 3 — Range: 0-13mm (0-500mils) Accuracy*: ±1-3% or ±50µm (±2.0mils)
Resolution: 1µm: 0-2mm; 10µm: 2-13mm (0.1mil: 0-100mils; 1mil: 100-500mils)

Model	Model B	Model S	Model T	Certificate
Elcometer 456 Ferrous Integral	A456CFBI3	See separate gauges with F3 PINIP™ Probe	See separate gauges with F3 PINIP™ Probe	•

Display Information	2.4" (6cm) QVGA colour TFT display, 320 x 240 pixels
Battery Type	2 x AA batteries, rechargeable batteries can also be used
Battery Life	approximately 24 hours of continuous use at 1 reading per second[5]
Gauge Dimensions (h x w x d)	141 x 73 x 37mm (5.55 x 2.87 x 1.46")
Gauge Weight (including batteries supplied)	156g (5.50oz)
Operating Temperature	-10 to 50°C (14 to 122°F)
Packing List	Elcometer 456 gauge, calibration foils, wrist harness, transit case (T), protective case (B, S, T), 1 x screen protectors (S, T), 2 x AA batteries, operating instructions, USB cable (S, T), ElcoMaster® software (S, T)

Dry Film Thickness - Digital

Elcometer 456 IPC — Industrial Protective Coating Thickness Gauge

The **Elcometer 456 IPC** Industrial Protective Coating Thickness Gauge is pre-calibrated to measure DFT on shot or grit blasted steel substrates.

Easy to use multi-lingual menu structure

Stores up to 150,000 readings in alpha numeric batches

Pre-calibrated with 4 profile ranges:

Profile	Metric	Imperial
Smooth	0-25µm	0-1mil
Fine	25-60µm	1-2mils
Medium	60-100µm	2-3mils
Coarse	>100µm	3-4mils



Built in integral probe for stable, repeatable readings on flat or curved surfaces

Measure dry film thickness on shot or grit blasted steel substrates

Bluetooth® wireless technology

compatible with ElcoMaster.

Industrial Protective Coating Thickness Gauge

Elcometer 456 IPC

Ready to Use

Calibrated and ready for immediate use.

Pre-calibrated with 4 profile ranges, simply remove the Elcometer 456 IPC Gauge out of the box and begin scanning.

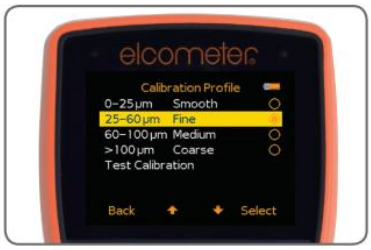


Transfer readings via Bluetooth® or USB to ElcoMaster®

Reliable

Designed to last.

Robust, durable, weather resistant and available with a 2 year* manufacturer's warranty; giving you peace of mind.



Ready to use straight from the box, no need for calibration

Wireless Connectivity

Seamlessly connect to any PC, Android™ or iOS mobile device.

Instantly transmit your thickness values via USB or Bluetooth® to your PC or mobile device using ElcoMaster® or your own software application.



Displays 3 individual readings together with their average

Efficient

Stable, repeatable readings on flat or curved surfaces.

With a built in integral probe, the Elcometer 456 IPC is designed to display three individual readings together with their average in microns or mils.



STANDARDS:
ASTM D7091, ISO 2808, ISO 19840, SSPC PA-2, US Navy NSI 009-32

* The Elcometer 456 IPC is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

Elcometer 456 IPC Industrial Protective Coating Thickness Gauge

Product Features

Model	Model S	Model T
Part Number	A456CFI1-IPC	A456CFTI1-IPC
Test Certificate	●	●
Fast, accurate reading rate; *70+ readings per minute*	■	■
Data output	■	■
USB; *to computer*	■	■
Bluetooth®; *to computer, Android™ & iOS[1] devices*	■	■
On screen statistics; *in Batch Mode*		■
Number of readings; η, Mean (average); x̄, Standard deviation; σ, Highest reading; Hi, Lowest reading; Lo, Coefficient of variation; CV%, Elcometer index value[2]; EIV, Nominal dry film thickness; NDFT, High & low limits; definable audible & visual alarms, Number of readings above high limit; Number of readings below low limit		■
ElcoMaster® software & USB cable		■
Integral Probe type; *Ferrous (F)*	■	■
Measurement range; *0 - 1,500µm (0 - 60mils)*	■	■
Resolution; *10µm/1mil (where 5µm/0.5mil is rounded up)*	■	■
Accuracy[3]; *±5%*	■	■
Minimum substrate thickness; *300µm (12mils)*	■	■
Pre-calibrated with 4 profile ranges;	■	■
Smooth 0-25µm 0-1mil, Fine 25-60µm 1-2mils, Medium 60-100µm 2-3mils, Coarse >100µm 3-4mils	■	■
Auto calibration	■	■
Calibration memory type; *gauge (g) or gauge & batch (gb)*	g	gb
Number of batches; *with unique calibrations*		2,500
Calibration lock; *with optional PIN code unlock*	■	■
Delete last reading	■	■
Gauge memory; *number of readings*		150,000
Individual batch calibrations; *sent to PC via ElcoMaster®*		■
Limits; *user definable audible & visual pass/fail warnings*		■
Gauge & batch specific limits		■
Date and time stamp		■
Review, clear & delete batches		■
Batch types; *normal, counted average*		■
Batch review graph		■
Copy batches and calibration settings		■
Alpha-numeric batch names; *user definable on the gauge*		■

Technical Specification

Battery Type	2 x AA batteries, rechargeable batteries can also be used
Battery Life[4]	Alkaline: Approx. 16 hours Lithium: Approx. 24 hours
Gauge Dimensions (h x w x d)	141 x 73 x 37mm (5.55 x 2.87 x 1.46")
Weight (including batteries)	156g (5.5oz)
Operating Temperature	-10 to 50°C (14 to 122°F)
Packing List	Elcometer 456 IPC Gauge, calibration foils, wrist harness, protective case, 1 x screen protector, USB cable, test certificate, 2 x AA batteries & user guide.

[1] Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App. ● Test certificate supplied as standard.
[2] Elcometer Index Values are used in the automotive industry to assess a coating's overall quality; USA patent number US7606671B2 [3] When in test calibration mode
[4] Rechargeable batteries may differ

Paint & Powder Coating Thickness Gauge

Elcometer 415

The **Elcometer 415** Industrial Paint & Powder Thickness Gauge provides fast, accurate paint & powder thickness measurements on smooth & thin industrial coated surfaces.

Auto rotating large colour display provides clear visibility whatever the angle of measurement

Scratch, solvent & powder resistant display

Large easy to read values in microns or mils

Rugged & resistant to powder coatings ingress equivalent to IP64

Easy to use, ergonomic design provides maximum comfort for continuous use



1 point & 2 point calibration ensures accuracy on smooth & thin coated substrates

Incredibly fast (60+ readings per minute), reducing inspection times, increasing productivity

Automatically switches between ferrous & non-ferrous substrates*

* Elcometer 415 FNF models

Bluetooth® wireless technology

compatible with ElcoMaster.

Elcometer 415 Paint & Powder Coating Thickness Gauge



Large reading with key statistics

Statistics

The Elcometer 415 doesn't just take a thickness measurement.

In addition to the coating thickness, the Elcometer 415 displays the key statistical values required to assess the overall industrial finishing; number of readings (n), average (x), lowest (Lo) and highest (Hi) paint thickness.



Ideal for measuring dry film thickness on thin substrates

Accurate

Stay accurate with simple calibration.

The Elcometer 415 is easy to use and has 1 point & 2 point calibration, ensuring accurate measurements on smooth & thin industrial paint & powder coated surfaces.



360° auto rotating display for clear readings at any angle

Reliable

Each gauge is designed to last.

Robust, durable & powder resistant, the Elcometer 415 is available with a 2 year[2] manufacturer's warranty; giving you peace of mind.



Transfer live data via Bluetooth® to PC, Android™ or iOS mobile devices[3]

Wireless Connectivity

Seamlessly connect to any PC, Android™ or iOS mobile device.

As each measurement is taken the new Elcometer 415 instantly transmits the thickness values via USB or Bluetooth®[3] to your PC or mobile device using ElcoMaster® or your own software application.

STANDARDS:

AS2331.1.4, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186, ASTM D 1400, ASTM D 7091, ASTM E 376, BS 3900-C5-6A, BS 3900-C5-6B, BS 5411-11, BS 5411-3, BS 5599, DIN 50981, DIN 50984, ECCA T1, EN 13523-1, ISO 2178, ISO 2360, ISO 2808-12, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, JIS K 5600-1-7, NF T30-124

[1] Elcometer 415 FNF models [2] The Elcometer 415 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to [2] years within 60 days of purchase via www.elcometer.com. [3] Elcometer 415 Model T

Paint & Powder Coating Thickness Gauge

Elcometer 415

Product Features

Model	Model B	Model B	Model T	Model T	Certificate
Part Number	A415CFBI	A415CFNFBI	A415CFTI	A415CFNFTI	•
Built in Probe Type	Ferrous	Ferrous/ Non-Ferrous	Ferrous	Ferrous/ Non-Ferrous	
Live Data Output	USB	USB	Bluetooth® & USB	Bluetooth® & USB	
On Screen Statistics	Number of readings (n), Average/Mean ($\bar{x}$), Lowest reading (Lo), Highest reading (Hi)				
Fast Accurate Reading Rate	60+ readings per minute		Measurement Range: 0 - 1000µm (0 - 40mils)		
Accuracy[3]	±1-3% or ±2.5µm (±0.1mil)				
Resolution	0.1µm: 0 -100µm; 1µm: 100 - 1000µm (0.01mil: 0 - 5mils; 0.1mil: 5 - 40mils)				
Minimum Substrate Thickness	Steel: 300µm (12mils)		Aluminium: 100µm (4mils) - FNF gauges only		
Operating Temperature	-10 to 50°C (14 to 122°F)		Relative Humidity (RH): 0 to 95%		
Power Supply	2 x AA Batteries or via USB Cable *(rechargeable batteries can also be used)*				
Battery Life[4]	Alkaline: Approximately 16 hours Lithium: Approximately 24 hours				
Gauge Dimensions *(h x w x d)*	14.1 x 7.30 x 3.70cm (5.55 x 2.87 x 1.46")				
Gauge Weight	156g (5.5oz) *(including batteries)*				
Packing List	Elcometer 415 gauge, 2 x AA batteries, steel & aluminium check pieces[5], foil set, wrist strap, impact resistant carry case, screen protector[2], calibration test certificate, operating instructions, USB cable[2], ElcoMaster® CD[2] & 2 year warranty extension card[6]				

Technical Specification

T99916925	Calibration Check Piece; Steel (Ferrous)
T99916901	Calibration Check Piece; Aluminum (Non-Ferrous)
T99022255-1	Foil Set; 0-1,000µm (0 - 40mils)
T99022255-1C	Certified Foil Set; 0 - 1,000µm (0 - 40mils)
T99921325	USB Cable
T99922341	Self Adhesive Screen Protectors (Pack of 10)

[1] Elcometer 415 FNF models [2] Elcometer 415 Model T

[3] When subject to a 2-point calibration: ±1% when calibrated close to the required thickness, ±3% across the range

[4] Rechargeable batteries may differ

[5] F models: steel check piece; FNF models: steel & aluminium check pieces

[6] The Elcometer xxx is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

• Calibration test certificate supplied as standard.

Dry Film Thickness - Digital

Elcometer 311 Automotive Paint Gauge

The **Elcometer 311** Automotive Paint Meter is the fastest on the market, used to instantly measure paint thickness and provide an indication of the overall condition of paintwork.

Fast reading rate of 60+ readings per minute significantly reduces inspection times

Dust & waterproof rugged design equivalent to IP64, ideal for measuring in wet or dry conditions

Automatic temperature compensation accurately measures in desert or alpine conditions alike



Automatic rotating display allows you to read the thickness value on horizontal & vertical surfaces

Large easy to read values in mils & microns

Ergonomic design gives you maximum comfort when measuring vehicles all day

Ambient light sensor automatically adjusts the screen brightness to your lighting condition

Switches instantly to measure coatings on steel & aluminium[1]

compatible with ElcoMaster

Bluetooth® wireless technology

Scratch, solvent & water resistant colour display for protection against accidental damage

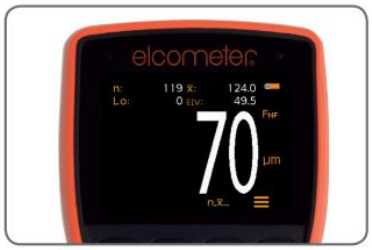
Automotive Paint Gauge

Elcometer 311

Statistics

The Elcometer 311 doesn't just take a thickness measurement.

In addition to the coating thickness, the Elcometer 311 displays the key statistics such as the number of readings (n), average coating thickness ($\bar{x}$), the lowest paint thickness (Lo) and the Elcometer Index Value (EIV)[2].



Large easy to read display

Powerful

The higher the EIV the more severe the PPW.

The EIV provides the inspector with a single number which illustrates the vehicle's overall paint condition and establishes any previous paintwork (PPW).



Durable & impact resistant case clips straight on to your belt

Reliable

Giving you peace of mind.

Robust, durable & weather resistant, the Elcometer 311 is available with a 2 year[4] manufacturer's warranty.



360° auto rotating display for measuring at any angle

Wireless Connectivity

Seamlessly connect to any PC, Android™ or iOS mobile device.

Instantly transmit your thickness values via USB or Bluetooth® to your PC or mobile device using ElcoMaster®[3] or your own software application.



USB and Bluetooth® data output to iPhone[5] or Android™ devices

STANDARDS:
ISO 2178, ISO 2808, ISO 2808-7C, ISO 2808-7D, ISO 2808-12A, ISO 2808-11B, ASTM E376, JIS K 5600-1-7, AS/NZS 1580.108.1

[1] Elcometer 311 FNF models [2] EIV Patent number US 7,606,671 B2 [3] Available on the Elcometer 311 Model T only
[4] The Elcometer 311 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. [5] Compatible with iPod, iPhone and iPad.

Elcometer 311 Automotive Paint Gauge

Technical Specification

	Model B	Model B	Model T	Certificate
Part Number	A311CFBI	A311CFNFBI	A311CFNFTI	●
Built in Probe Type	Steel (F)	Steel & Aluminium (FNF)	Steel & Aluminum (FNF)	
Live Data output via Bluetooth® or USB			■	

On screen statistics	Number of readings (n), Mean/Average ($\bar{x}$), Lowest reading (Lo), Elcometer Index Value (EIV)[1]		
Fast accurate reading rate	60+ readings per minute	Measurement Range	0-500µm / 0-20mils
Accuracy[2]	±5% or ±20µm (1.0mil)		
Resolution	10µm (0.5mil)		
Minimum Substrate Thickness[3]	Steel: 800µm (30mils)	Aluminium: 300µm (12mils) - FNF gauges only	
Operating Temperature	-10 to 50°C / 14 to 122°F	Relative Humidity (RH)	0 to 95%
Power Supply	2 x AA Batteries or via USB *(rechargeable batteries can also be used)*		
Battery Life[4]	Alkaline: approximately 16 hours Lithium: approximately 24 hours		
Gauge Dimensions *(h x w x d)*	14.1 x 7.30 x 3.70cm / 5.55 x 2.87 x 1.46"		
Gauge Weight	156g / 5.5oz *(including batteries)*		
Packing List	Elcometer 311 gauge, 2 x AA batteries, steel & aluminium check pieces[5], calibration check foil, wrist strap, impact resistant carry case, calibration test certificate, operating instructions, 2 year warranty extension card[6]		

Accessories

T99916925	Calibration Check Piece; Steel (Ferrous)	T99921325	USB Cable
T99916901	Calibration Check Piece; Aluminum (Non-Ferrous)		
T99022570-7A	Calibration Check Foil; Nominal value 125µm (5mils)		
T99922341	Self Adhesive Screen Protectors (Pack of 10)		

Elcometer Index Value - EIV

The Elcometer Index Value (EIV) provides the inspector with a single number which illustrates the vehicle's overall paint condition and establishes any previous paint work (PPW) which has been undertaken. This quantifiable number determines the extent of rework & the overall quality of the vehicle being appraised.

[1] EIV Patent number US 7,606,671 B2 [2] Whichever is the greater [3] For specified accuracy [4] Rechargeable batteries may differ

[5] F models: steel check piece; FNF models: steel & aluminium check pieces [6] The Elcometer 311 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

● Calibration test certificate supplied as standard.

Precision Coating Thickness Gauge

Elcometer 355

The **Elcometer 355's** watchwords are accuracy, simplicity, versatility and durability making this a true state of the art hand-held measuring system packed with time-saving and cost-cutting features.



Elcometer 355 — Precision Coating Thickness Gauge



Rugged aluminium case

Accurate

Accuracy is key.

With an accuracy of ±1% or 1µm, the Elcometer 355 is ideal for measuring thin substrates where precision and accuracy is key.



Probe Modules accurate to ±1% or 1µm, whichever is the greater

Statistics

Store key statistics for evaluation.

In addition to the coating thickness, the Elcometer 355 can record the key statistics such as the number of readings (n), average coating thickness (x), the lowest paint thickness (Lo) and standard deviation (σ).

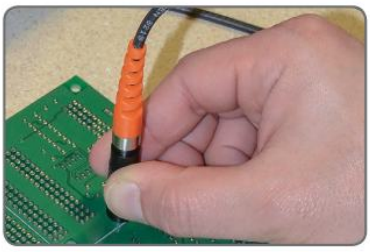


Large easy to read display

Rugged

Durable and suitable for use in harsh environments.

Robust & durable aluminium case, the Elcometer 355 is designed for the toughest environments



Choice of probes for the relevant applications

Powerful

Store up to 10,000 readings in 200 batches.

Measures up to 1,500µm (60mils) of coating on metal substrates with data output making it compatible with ElcoMaster®.

STANDARDS:

AS 2331.1.4, AS 3894.3-B, AS/NZS 1580.108.1, ASTM B 244, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6A, BS 3900-C5-6B, BS 5411-3, BS 5411-11, BS 5599, DIN 50981, DIN 50984, ECCA T1, EN 13523-1, IMO MSC.215(82), IMO MSC.244 (83), ISO 1461, ISO 19840, ISO 2063, ISO 2178, ISO 2360, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, ISO 2808-12, JIS K 5600-1-7, NF A49-211, NF T30-124, SS 184159, SSPC PA 2, US Navy PPI 63101-000, US Navy NSI 009-32

Precision Coating Thickness Gauge

Elcometer 355

Technical Specification

Part Number	Description	Certificate
A355----S	Elcometer 355 Standard Coating Thickness Gauge	○
A355----T	Elcometer 355 Top Coating Thickness Gauge	○
Operating Temperature	0°C to 50°C (32°F to 120°F)	
Storage Temperature	-10°C to 60°C (14°F to 140°F)	
Dimensions	175 x 83 x 42mm (6.9 x 3.3 x 1.6")	
Weight	650g (1.43lb)	
Reading Speed	40 readings per minute Auto Repeat Mode 130/140 readings per minute	
Data Output	RS232C Serial or Parallel Output via D25 Type Connector (Female)	
Memory	Standard: 5,000 reading memory in 25 pre-set batches Top: 10,000 reading memory in up to 200 batches (individually calibrated)	
Battery Type	3 x 1.5V AA Cells (Alkaline) or 3 x 1.5V Nickel Metal Hydride rechargeable cells	
Battery Life	Minimum: 40 hours with alkaline batteries, 20 hours with rechargeable batteries	
Packing List	Elcometer 355 Top or Standard Gauge, leather carry case, precision hand grip, 3 x AA batteries, ElcoMaster® software, PC cable and operating instructions	

Probe Range

Unique probe modules allow the Elcometer 355 Coating Thickness Gauges to be versatile and flexible for any measurement application.

Probe modules can be freely interchanged as required for both ferrous (F) and non-ferrous (N) metal substrates.

Most probe modules are capable of an accuracy of ±1% of the reading on a variety of coatings and surfaces.

Telescopic probes extend from 410mm (16") to 1,100mm (43").



Scale 1

Range: 0-1,500µm (0-60mils) Accuracy*: ±1% or ±1µm (±0.04mil)

Resolution: 0.1µm: 0-200µm; 0.5µm: 200-500µm; 1µm: 500-1,500µm (0.005mil: 0-8mils; 0.02mil: 8-20mils; 0.05mil: 20-60mils)

Probe Design	Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
F1 Standard	T35511952	85mm (3.35")	6mm (0.24")	●
F1 Right Angle	T35511953	28mm (1.10")	6mm (0.24")	●
N1 Standard	T35511982	85mm (3.35")	8mm (0.31")	●
N1 Right Angle	T35511983	28mm (1.10")	6mm (0.24")	●

Scale 4

Range: 0-250µm (0-10mils) Accuracy*: ±1% or ±1µm (±0.04mil)

Resolution: 0.1µm: 0-250µm (0.005mil: 0-10mils)

Probe Design	Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
F4 Standard	T35511950	85mm (3.35")	4mm (0.16")	●
F4 Right Angle (long)	T35511951	18mm (0.71")	3mm (0.12")	●
N4 Standard	T35511980	90mm (3.54")	8mm (0.31")	●

* Whichever is greater ○ Optional Calibration Certificate available. ● Test Certificate supplied as standard.

Elcometer 355 Probe Placement Jig



The Elcometer probe placement jig is the ideal accessory for measuring coatings on small or complex components when the highest levels of repeatability and accuracy are required.

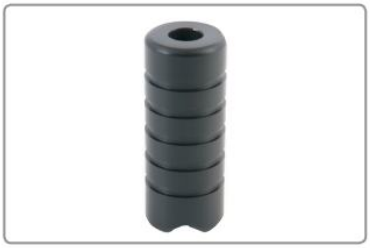
The Probe Placement Jig makes the gauge score highly in repeatability and reproducibility studies by placing the probe accurately, at the same angle and in the same place on the substrate each time.

Ideal for small and large components alike, the Probe Placement Jig is supplied with a probe housing to suit standard F1, F4 and N1 probes. Housings to suit other probes are available as optional accessories.

Technical Specification

Part Number	Description
T95012880	Probe Placement Jig
T95013028	Component Hand Vice
T95012888	Cable Release Assembly - ideal for remote measurements
T95015589	N4 Probe Adaptor - must be purchased for use with N4 Probes

Accessories



Jumbo Hand Grip
Ideal for precision placement for the most accurate results on flat and curved surfaces. Place the probe inside the Jumbo Hand Grip and take measurements - ideal when wearing gloves.

Part Number	Description
T9997766-	Jumbo Hand Grip - F and N Probes
	For use with the following Elcometer 355 probes: F1 Standard, F2 Standard, F4 Standard, F5 Rebar, N1 Standard

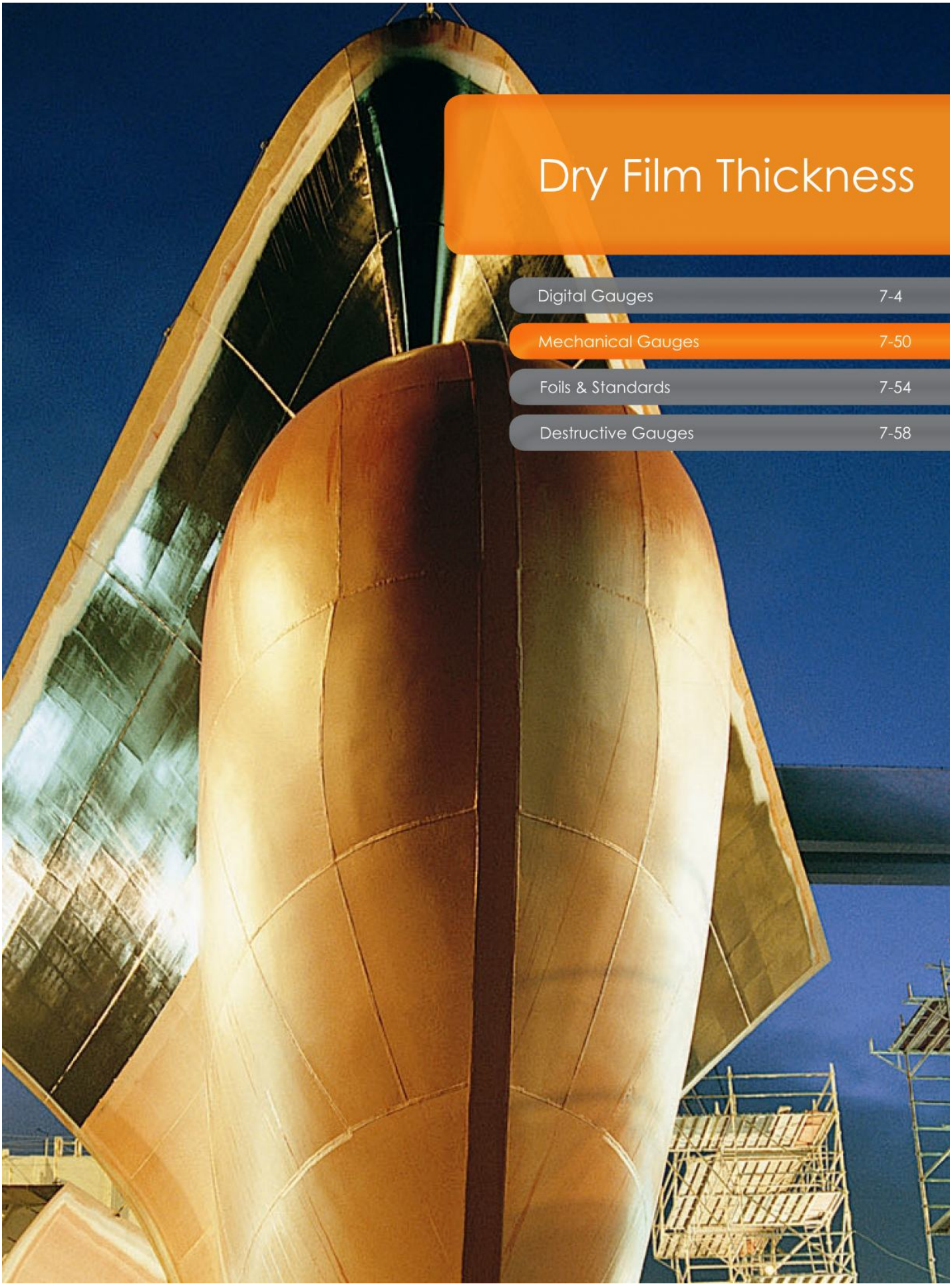


V-Probe Adaptor
Ideal for precision placement for the most accurate results on medium and large diameter curved surfaces such as pipes and cylinders.

Part Number	Description
T9997381-	V-Probe Adaptor - F and N Probes
	For use with the following Elcometer 355 probes: F1 Standard, F2 Standard, F4 Standard, F5 Rebar, N1 Standard



For more information on the Probe Placement Jig, see pages 7-28



Dry Film Thickness

Digital Gauges 7-4

Mechanical Gauges 7-50

Foils & Standards 7-54

Destructive Gauges 7-58

Elcometer 211 Mechanical Coating Thickness Gauge

The **Elcometer 211** Coating Thickness Gauge, commonly referred to as the "Banana Gauge", is a Type I instrument designed to measure dry film thickness.



- Small and portable with an accuracy ±5%
- Foils supplied to check calibration on site
- Ideal for cold surfaces and underwater use
- Factory calibrated - with user calibration adjustment
- Available in either Metric or Imperial version
- Measures coatings up to 6mm (250mils)
- "V" grooved base ideal for pipeline inspection

STANDARDS:

AS 2331.1.3, AS 3894.3-A, ASTM G 12, ASTM B 499, AS/NZS 1580.108.1, BS 5411-11, BS 3900-C5-6A, DIN 50981, ISO 2178, ISO 2808-6A, ISO 2808-7A, JIS K 5600-1-7,NF T 30-124, SSPC-PA2

Mechanical Coating Thickness Gauge

Elcometer 211

Ready to Use



Calibrated and ready for immediate use.

The Elcometer 211 is factory calibrated with user calibration adjustment and also comes with foils to check calibration on site.

Accurate



Small and portable with an accuracy ±5%.

Available in either Metric or Imperial versions, the Elcometer 211 measures coatings up to 6mm (250mils).

Versatile



Ideal for use in a range of enivornments.

The gauge is ideal for use underwater, on cold surfaces and in environments where the use of electronic instruments is difficult. The “V” grooved base also makes it ideal for pipeline inspection.

Technical Specification

Part Number	Description	Range	Certificate
A211F--1M	Elcometer 211 Coating Thickness Gauge	0 - 1,000µm	○
A211F--8M	Elcometer 211 Coating Thickness Gauge	0.65 - 6mm	○
A211F--1E	Elcometer 211 Coating Thickness Gauge	0 - 40mils	○
A211F--8E	Elcometer 211 Coating Thickness Gauge	25 - 250mils	○
Accuracy	±5% of the reading or ±2.5µm/0.1mil (whichever is the greater)		
Substrate Thickness	0.4mm (16mils) minimum		
Measurement Area	30mm (1.18”) Diameter minimum		
Measurement Diameter	20mm (0.8”) minimum		
Edge Effects	Must be at least 6mm (0.24”) from edge		
Dimensions	200 x 60 x 30mm (7.8 x 2.4 x 1.2”)		
Packing List	Elcometer 211, calibration foil set, carry pouch, wrist strap and operating instructions		

For a full range of calibration standards and foils sets see page 7-55



* Underwater use voids the warranty and users should replace the gauges periodically

○ Optional Calibration Certificate available.

Elcometer 101 Coating Thickness Gauge



STANDARDS:
AS 2331.1.3, ASTM B 499, ASTM G 12, BS 5411-11, ISO 2178, JIS K 5600-1-7, SSPC PA2

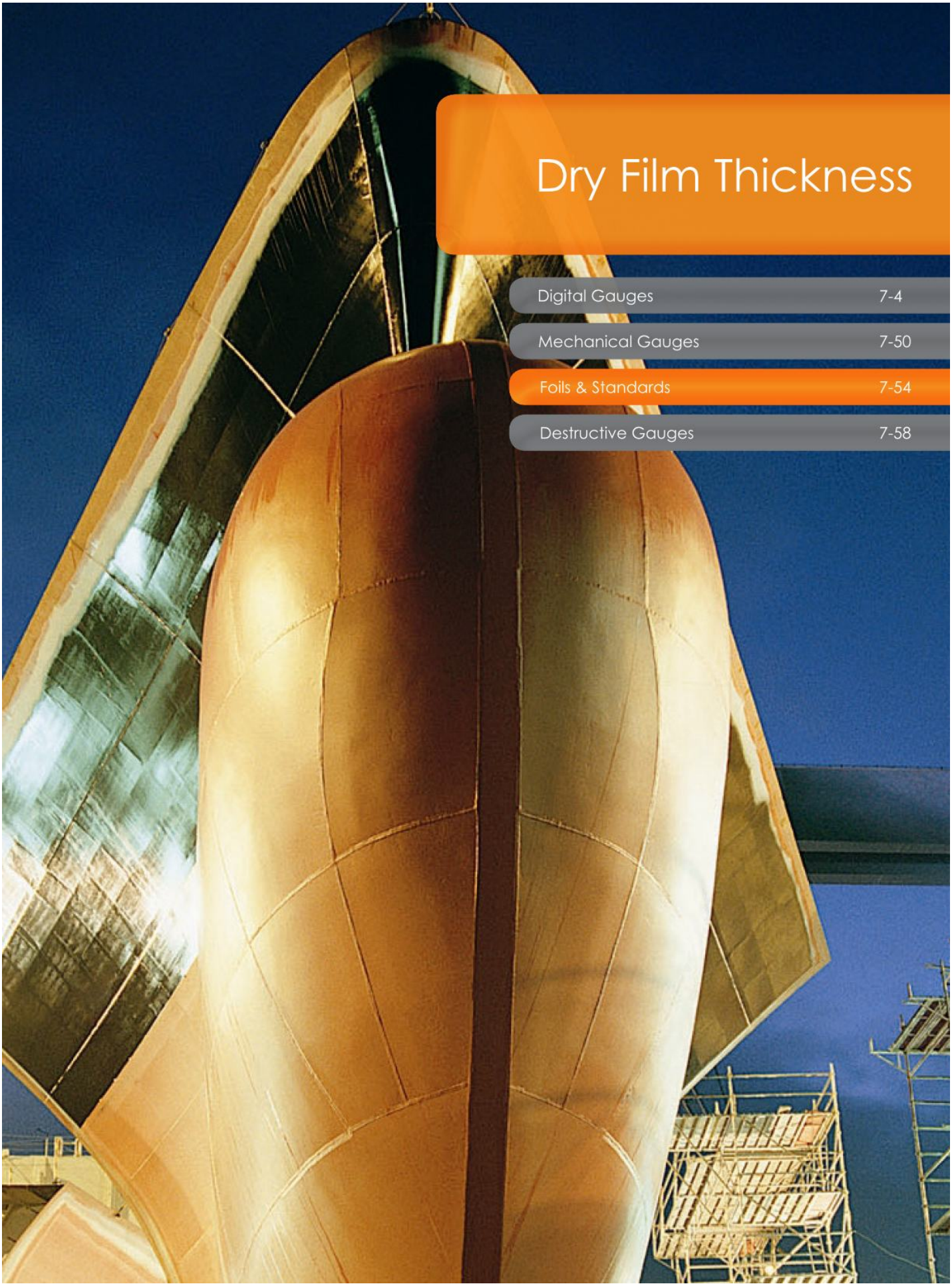
The original non-destructive dry film thickness gauge, the Elcometer 101 was the world's first portable coating thickness gauge with the original being produced in 1947 - 70 years old and still going strong!

- Insensitive to hot and cold surfaces - ideal for hot sprayed metal coatings
- Incorporates reading hold feature
- Accuracy of ±10%
- Ideal for hazardous areas

Technical Specification

Part Number	Description	Scale Range	Certificate
A101A-01A	Elcometer 101 Mechanical Coating Thickness Gauge	0 - 600µm (0 - 25mils)	○
Operating Plane	90° to substrate		
Minimum Measurement Area	38 x 15mm (1.5 x 0.6")		
Minimum Measurement Diameter	25mm (1") (on bar material)		
Accuracy	±10% of the reading or 2.5µm (0.1mil) whichever is the greater		
Packing List	Elcometer 101, calibration foils, carry case, wrist harness and operating instructions		

○ Optional Calibration Certificate available



Dry Film Thickness

Digital Gauges 7-4

Mechanical Gauges 7-50

Foils & Standards 7-54

Destructive Gauges 7-58

Elcometer 990 Individual Precision Foils



Calibration foils or 'shims' are the most convenient way of creating a coating thickness standard on the substrate material, surface finish or form. This is the ideal method for adjusting the calibration of the coating thickness gauge to ensure the greatest possible accuracy.

Technical Specification

Part Number	Colour	Dimensions		Values[1]		Certificate[2]
T99022570-1A	Silver	50 x 25mm	(1.97 x 0.98")	12.5µm	(0.5mil)	○
T99022570-2A	Purple	50 x 25mm	(1.97 x 0.98")	25µm	(1.0mil)	○
T99022570-2B	Purple	75 x 50mm	(2.95 x 1.97")	25µm	(1.0mil)	○
T99022570-4A	Dark Blue	50 x 25mm	(1.97 x 0.98")	50µm	(2.0mils)	○
T99022570-4B	Dark Blue	75 x 50mm	(2.95 x 1.97")	50µm	(2.0mils)	○
T99022570-6A	Green	50 x 25mm	(1.97 x 0.98")	75µm	(3.0mils)	○
T99022570-7A	Brown	50 x 25mm	(1.97 x 0.98")	125µm	(5.0mils)	○
T99022570-7B	Brown	75 x 50mm	(2.95 x 1.97")	125µm	(5.0mils)	○
T99022570-9A	Peacock Blue	50 x 25mm	(1.97 x 0.98")	175µm	(7.0mils)	○
T99022570-10A	White	50 x 25mm	(1.97 x 0.98")	250µm	(10mils)	○
T99022570-10B	White	75 x 50mm	(2.95 x 1.97")	250µm	(10mils)	○
T99022570-12A	Black	50 x 25mm	(1.97 x 0.98")	500µm	(20mils)	○
T99022570-12B	Black	75 x 50mm	(2.95 x 1.97")	500µm	(20mils)	○
T99022570-14A	Grey-Blue	50 x 25mm	(1.97 x 0.98")	1,000µm	(40mils)	○
T99022570-14B	Grey-Blue	75 x 50mm	(2.95 x 1.97")	1,000µm	(40mils)	○
T99022570-16A	Clear	50 x 25mm	(1.97 x 0.98")	1mm	(40mils)	○
T99022570-17A	Off White	50 x 25mm	(1.97 x 0.98")	1,500µm	(60mils)	○
T99022570-18A	Clear	50 x 25mm	(1.97 x 0.98")	2mm	(80mils)	○
T99022570-18B	Clear	75 x 50mm	(2.95 x 1.97")	2mm	(80mils)	○
T99022570-20A	Clear	50 x 25mm	(1.97 x 0.98")	3mm	(120mils)	○
T99022570-21A	Clear	50 x 25mm	(1.97 x 0.98")	4mm	(160mils)	○
T99022570-23A	Clear	50 x 25mm	(1.97 x 0.98")	8mm	(310mils)	○
T99022570-24B	Clear	75 x 50mm	(2.95 x 1.97")	9.5mm	(370mils)	○
T99022570-25B	Grey	75 x 50mm	(2.95 x 1.97")	15mm	(590mils)	○
T99022570-26B	Grey	75 x 50mm	(2.95 x 1.97")	25mm	(980mils)	○
T45618978-2[3]	Grey	n/a		1,500µm	(60mils)	○
T45618978-[3]	Grey	n/a		5,000µm	(197mils)	○

[1] Actual foil values may vary, but are accurately labelled

[2] A Certificate can be supplied with any combination of up to 8 Foils

[3] For use with the high temperature PINIP™ probes only due to the potential high temperature of the sample. Foils supplied in a cap which fits over the PINIP™ probe.

○ Optional Calibration Certificate available.

Calibration Foils Sets

Elcometer 990

The Elcometer 990 Calibration Foils are ideal for use in the laboratory, on the production line or on site. Calibration foils or 'shims' are the most convenient way of creating a coating thickness standard on the substrate material, surface finish or form. This is the ideal method for adjusting the calibration of the coating thickness gauge to ensure the greatest possible accuracy.





Features:

- Metric and Imperial values displayed on each foil
- Available individually or in foil sets
- Precision foils with ±1% accuracy
- Each foil has a unique serial number for traceability
- Available in thicknesses from 12.5µm to 20mm (0.5 to 790mils)

Technical Specification

Description	Foil Values (µm)	Foil Values (mils)	Un-Certified	Certified
Scale 1 Foil Set; 0-1500µm (0-60mils)	25, 50, 125, 250, 500, 1,000	1.0, 2.0, 5.0, 10, 20, 40	T99022255-1	T99022255-1C
Scale 2 Foil Set; 0-5mm (0-200mils)	25, 50, 125, 250, 500, 1,000, 2,000, 3,000	1.0, 2.0, 5.0, 10, 20, 40, 80, 120	T99022255-2	T99022255-2C
Scale 3 Foil Set; 0-13mm (0-500mils)	250, 500, 1,000, 2,000, 4,000, 8,000	10, 20, 40, 80, 160, 315	T99022255-3	T99022255-3C
Scale 4 Foil Set; 0-250µm (0-10mils)	12.5, 25, 50, 125, 250	0.5, 1.0, 2.0, 5.0, 10	T99022255-4	T99022255-4C
Scale 5 Foil Set; 0-500µm (0-20mils)	12.5, 25, 50, 125, 250, 500	0.5, 1.0, 2.0, 5.0, 10, 20	T99022255-5	T99022255-5C
Scale 6 Foil Set; 0-30mm (0-1200mils)	1,000, 2,000, 5,000, 9,500, 15mm, 25mm	40, 80, 200, 375, 590, 980	T99022255-6	T99022255-6C
Scale M3 Foil Set; 0-500µm (0-20mils)	12.5, 25, 50, 125, 250, 500	0.5, 1.0, 2.0, 5.0, 10, 20	T99022255-7	T99022255-7C
Scale 2B Foil Set*; 0-5mm (0-200mils)	25, 50, 125, 250, 500, 1,000, 2,000, 2,000	1.0, 2.0, 5.0, 10, 20, 40, 80, 80	T99022255-8	T99022255-8C

Using Calibration Foils



Each foil has been independently measured at the centre point.

For the greatest accuracy, place the probe in the centre of the foil.

Up to 4 foils can be combined to create a wider range of thickness values.



* The Scale 2B foil sets are designed for soft coating probes and have a larger foil surface area.

Elcometer 990 Zero Test Plates



Elcometer provides a range of Zero Test Plates. When used in conjunction with a set of foils, Test Plates are ideal to test a coating thickness gauge's functionality and calibration, ideal for when it may be difficult or impractical to obtain an uncoated substrate.

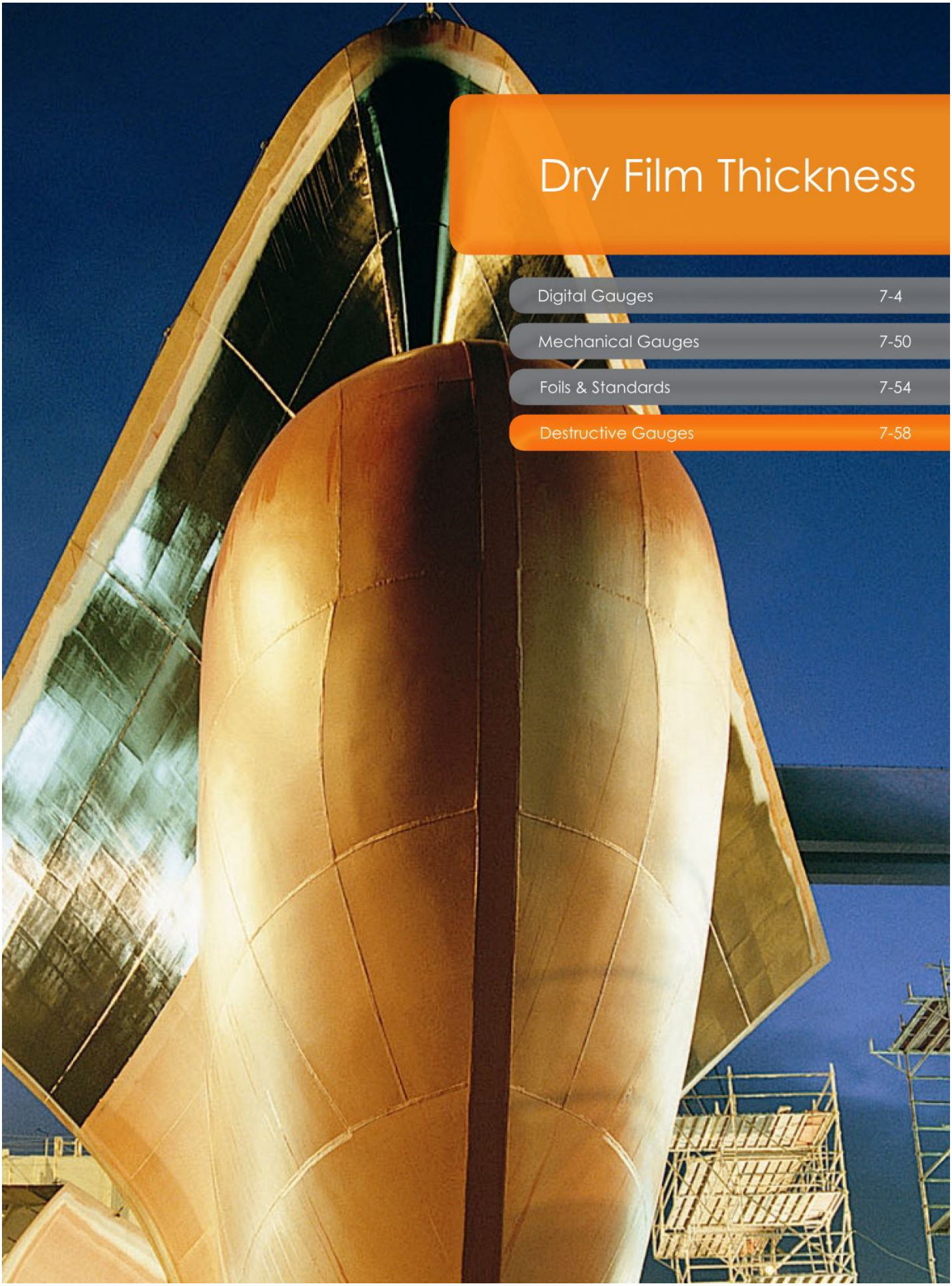
For a list of standards, foils and foil sets, (see page 7-55).

Technical Specification

Description	Size	Size	Ferrous	Non-Ferrous	Certificate
Precision Zero Test Plate (±1%)	50.8 x 25.4mm	2.0 x 1.0"	T9994910-	T9994911-	
Zero Test Plate	76.2 x 50.8mm	3.0 x 2.0"	T9999529-	T9999530-	
Zero Test Plate (large)	76.2 x 101.6mm	3.0 x 4.0"	T9994054-	T9994055-	○
Steel (F) Checkpiece*	50.8 x 88.9mm	2.0 x 3.5"	T99916925	-	
Aluminium (N) Checkpiece*	50.8 x 88.9mm	2.0 x 3.5"	-	T99916901	

* To be used only with the Elcometer 311 or Elcometer 415

○ Optional Calibration Certificate available.



Dry Film Thickness

Digital Gauges 7-4

Mechanical Gauges 7-50

Foils & Standards 7-54

Destructive Gauges 7-58

Elcometer 121/4 Standard & Top Paint Inspection Gauges (P.I.G.)

Available in two models, the **Elcometer 121** Paint Inspection Gauge (P.I.G.) is designed to measure the paint thickness of single or multiple layers of coatings.



Standard & Top Paint Inspection Gauges (P.I.G.)

Elcometer 121/4

Available in two models, the Elcometer 121 Paint Inspection Gauge is designed to measure the thickness of single or multiple layers of coatings.

Both models are supplied with illuminated integrated graticule microscopes.

The Top model has an internal carousel allowing each of the three cutters to be selected easily together with a crosshatch adhesion tester.



Technical Specification

	Description		
	Elcometer 121/4 Standard P.I.G.	Elcometer 121/4 Top P.I.G.	Certificate
Part Number	A121---S	A121---T	○
Range	2 - 2,000µm (0.08 - 80mils) Accuracy is dependent on tool cut angle, half a division		
Dimensions	110 x 75 x 30mm (4.3 x 3 x 1.2"), 369g (13oz)	110 x 75 x 40mm (4.3 x 3 x 1.6), 383g (13.5oz)	
Packing List	Elcometer 121/4, cutters 1, 4 and 6, x50 microscope, 4 x AG3 batteries for lamp (fitted), hexagonal wrench, black marker pen, wrist strap, carry case and operating instructions		

Accessories

Part Number	Description	Angle	Measurement Range	Graticule	Certificate
T99915761-1	Tungsten Carbide Cutter No 1	45°	20 - 2,000µm (1 - 80mils)	20µm (1mil)	○
T99915761-4	Tungsten Carbide Cutter No 4	26.6°	10 - 1,000µm (0.5 - 35mils)	10µm (0.5mil)	○
T99915761-6	Tungsten Carbide Cutter No 6	5.7°	2 - 200µm (0.1 - 8mils)	2µm (0.1mil)	○

		Coating Thickness	Standard	
T99913700-1	X-Hatch Cutter, 6 teeth x 1mm	0 - 60µm (0 - 2.4mils)	ISO	○
T99913700-2	X-Hatch Cutter, 11 teeth x 1mm	0 - 50µm (0 - 2.0mils)	ASTM	○
T99913700-3	X-Hatch Cutter, 11 teeth x 1.5mm	0 - 60µm (0 - 2.4mils)	-	○
T99913700-4	X-Hatch Cutter, 6 teeth x 2mm	50 - 125µm (2.0 - 5.0mils)	ASTM	○
T99913700-4	X-Hatch Cutter, 6 teeth x 2mm	0 - 60µm (0 - 2.4mils)	ISO	○
T99913700-4	X-Hatch Cutter, 6 teeth x 2mm	61 - 120µm (2.4 - 4.7mils)	ISO	○
T99913700-5	X-Hatch Cutter, 6 teeth x 3mm	121 - 250µm (4.8 - 9.8mils)	ISO	○
K0001539M001	Adhesion Tape (1 roll)		ASTM	
T9998894-	Adhesion Tape (2 rolls)		ASTM	
K0001539M002	Adhesion Tape (1 roll)		ISO	
T9999358-	Adhesion Tape (2 rolls)		ISO	

STANDARDS:

AS 1580.108.2, AS 1580.408.4*, AS 3894.9*, ASTM D 3359-B*, ASTM D 4138-A, BS 3900-C5-5B, BS 3900-E6*, DIN 50986, ECCA T6*, EN 13523-6*, ISO 2808-5B, ISO 16276-2*, ISO 2409*, ISO 2808-6B, JIS K 5600-1-7, NF T30-038*, NF T30-123

* Standards apply to Top Model only
○ Optional Calibration Certificate available.

Elcometer 141 Paint Inspection Gauge



The Elcometer 141 Paint Inspection Gauge is a useful method to determine the thickness of both single & multiple layer coatings.

Ideal for use on metallic & non-metallic substrates such as wood, glass and plastics.

- Large easy grip handle - makes cutting thick or hard coatings easy
- Internal cutter storage compartment
- x50 magnification microscope

STANDARDS:
AS 1580.108.2, ASTM D 4138-A, BS 3900-C5-5B, DIN 50986, ISO 2808-5B, ISO 2808-6B, JIS K 5600-1-7, NF T 30-123

Technical Specification

Part Number	Description	Certificate
A141---D	Elcometer 141 Paint Inspection Gauge	○
Scale Range	0 to 1.8mm (0 to 0.07")	
Scale Resolution	0.02mm (0.001")	
Dimensions (fitted to handle)	160 x 100 x 35mm (6.3 x 4 x 1.4")	
Weight (fitted to handle)	510g (1lb 2oz)	
Packing List	Elcometer 141 P.I.G, x 50 microscope, 3 cutters, marker pen, hexagonal wrench, carry case and operating instructions	

Accessories

Part Number	Description	Cutting Angle	Measurement Range	Graticule Scale Factor	Certificate
T99915761-1	Tungsten Carbide Cutter No 1	45°	20 - 2,000µm (1 - 80mils)	20µm (1mil)	○
T99915761-4	Tungsten Carbide Cutter No 4	26.6°	10 - 1,000µm (0.5 - 35mils)	10µm (0.5mil)	○
T99915761-6	Tungsten Carbide Cutter No 6	5.7°	2 - 200µm (0.1 - 8mils)	2µm (0.1mil)	○

Using the Paint Inspection Gauge



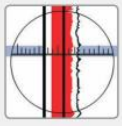
1. Take the coated product.



2. Using the supplied marker, draw a line across the coating.

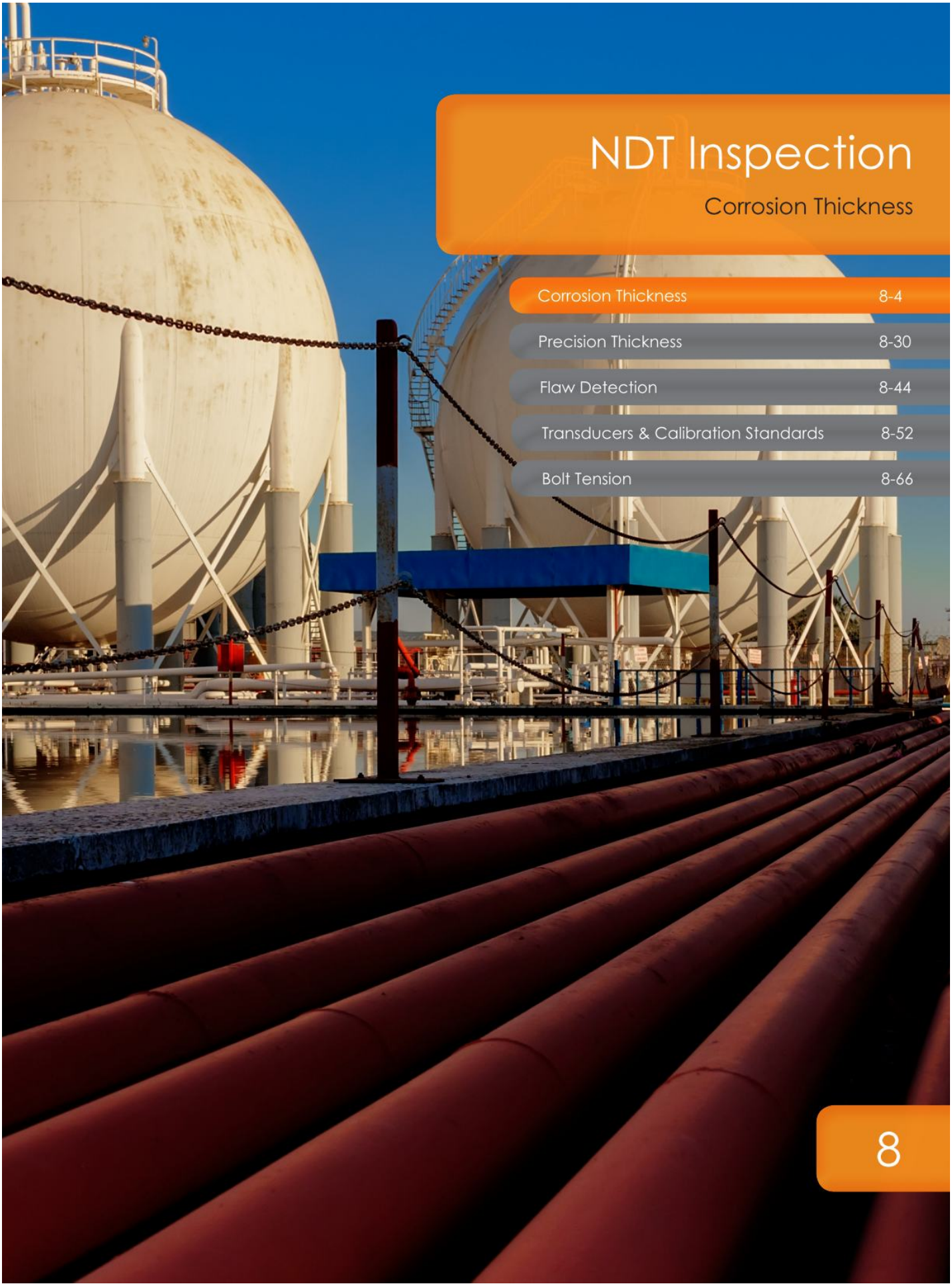


3. Using the P.I.G, make a cut at right angles to the marker line, all the way down to the substrate.



4. Use the supplied microscope to count the number of graticule divisions across the coating layer & calculate the thickness value using the graticule scale factor.

○ Optional Calibration Certificate available.



NDT Inspection

Corrosion Thickness

Corrosion Thickness 8-4

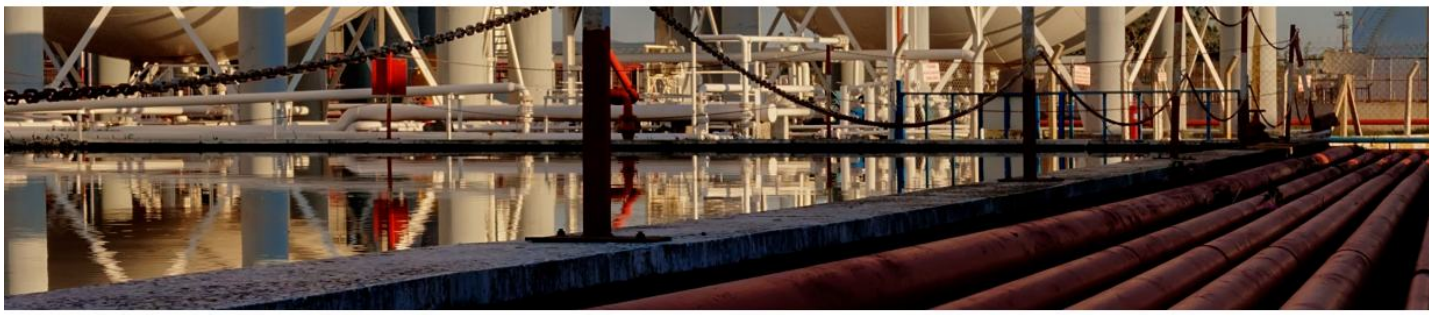
Precision Thickness 8-30

Flaw Detection 8-44

Transducers & Calibration Standards 8-52

Bolt Tension 8-66

Corrosion Thickness



Ultrasonic thickness gauges are used to accurately determine the thickness of a variety of materials when only one side is accessible - ideal for monitoring corrosion and erosion.

Converting the time of flight of a pulse of sound energy, sent into and reflecting back from a defect or opposite surface, ultrasonic thickness gauges are ideal for measuring a material's thickness and detecting pits and flaws in a material without damage.

A coated surface may disguise defects in the substrate beneath; the wall thickness of a pipeline, for example, may have been eroded by the flow of the material inside.

Likewise, the walls of a storage tank may appear acceptable on the outside but be dangerously thin inside due to the corrosive chemicals stored within.

From a steel thickness gauge to a gauge which ignores the thickness of the coating, Elcometer has a range of ultrasonic material thickness gauges to meet your specific requirements.

Measurement Modes Explained:

PE

Pulse Echo (PE): the standard method for measuring material thicknesses from 0.63mm to 500mm (0.025 to 20")

IE

Interface Echo (IE): a highly accurate measurement mode, Interface Echo displays the total thickness from the top surface to the material density boundary.

EE

Echo Echo ThruPaint™ Mode (EE): the coating thickness is ignored and the material thickness from the top surface of the material to the material density boundary (typically the back-wall) is measured.

VM

Velocity Mode (VM): measures the speed of sound of materials and is ideal for determining the homogeneity of a material/ alloy and the correct velocity of a material for calibration.

PLAS

Plastic Mode (PLAS): a mode specifically used for measuring very thin plastics. A special graphite delay line accessory is required for this mode.

PETP

Pulse Echo Temp Comp Mode (PETP): similar to the PE mode, PETP takes into account and compensates for the variations in measurement caused by temperature variations.

EEV

Echo Echo Verify Mode (EEV): measures by comparing the values between 3 reflections and is mainly used to eliminate errors from surface coatings and to make measurements in multiple layered materials.

CT

Coating Only Mode (CT): displays the thickness of the coating applied to the material.

PECT

Pulse Echo Coating Mode (PECT): displays both the material thickness (PE) and the coating thickness (CT) at the same time.

Choose the correct Ultrasonic Gauge for your non-destructive measurement

Material Thickness



- Ideal for measuring and recording material thickness from just 0.63mm (0.025") to 500mm (20") and sound-velocity on a variety of substrates
- Selectable measurement rates of 4, 8 and 16 Hz (4, 8 or 16 readings per second).



Precision Thickness

- Ideal for measuring and recording material thickness from just 0.15mm (0.006") to 500mm (20") and sound-velocity on a variety of substrates
- Selectable measurement rates of 4, 8 and 16 Hz (4, 8 or 16 readings per second).



Flaw Detection

- Flaw detector and thickness gauge in one
- A range of flaw detection modes such as TRIG, DAC, TCG, Flank and Peak.



Bolt Tension

- Accurately measure elongation, load, stress, and %strain of the bolt
- Incredible accuracy within ±1% or 0.1mm whichever the greater

Elcometer MTG — Ultrasonic Material Thickness Gauge

The **Elcometer MTG range** has all the features and functionality necessary for measuring material thickness and velocity on virtually any material - for a wide range of applications.



- Auto recognition, ensures correct probe is identified when transducer is changed
- Scan Mode at 16Hz, ideal for measuring a large surface area
- User selectable reading resolution; 0.1mm (0.01") or 0.01mm (0.001")
- Pulsed Echo (PE), Echo Echo ThruPaint™ & Velocity (VM) measurement modes
- Hi & Lo limit indicators provides indication of problem areas
- Some MTG gauges are supplied as a gauge only, without transducer. Transducers must be ordered separately.

  (Wide range of transducers available - see page 8-12)
- Integrated zero disc, ensures maximum accuracy
- Stores up to 100,000 readings in up to 1,000 sequential batches
- Selectable reading rate of 4, 8, 16Hz (4, 8, 16 readings per second)

STANDARDS:
ASTM E 797, EN 14127, EN 15317

Bluetooth® wireless technology

compatible with ElcoMaster®

Ultrasonic Material Thickness Gauge

Elcometer MTG

Accurate

A range of calibration options for accuracy and efficiency.

The MTG gauges have a range of calibration options including the 1-Point calibration method. Users can also select one of 39 pre-set materials stored within the gauge or store up to three calibrations into the memory.



Easy to use and minimum set up required

Versatile

Measures uncoated & coated surfaces.

Flexible & easy to use, the Elcometer MTG range doesn't just measure uncoated surfaces but can also measure coated surfaces. Using Echo Echo ThruPaint™ Mode (EE), coatings up to 2mm (80mils) are ignored.



Coatings up to 2mm (80mils) can be ignored

Customisable

Choose & customise the reading display.

The Elcometer MTG range has a choice of display modes allowing the user to select the most appropriate for their needs; Readings, Selected Statistics, Bar Graph, Run Chart, B-Scan & Differential Mode.



Customisable reading display

Intelligent

User definable limits for pass/fail indication.

Users are able to set upper and lower limits with audible and visual pass/fail warnings. Limits can be set for individual readings or for each batch.



Set user definable limits for auidble and visual pass/fail warnings

Wireless Connectivity

Seamlessly connect to any PC, Android™ or iOS mobile device.

Compatible with both ElcoMaster® and ElcoMaster® Mobile Apps, readings can be downloaded via USB or Bluetooth® to PC, iOS or Android™ devices for further analysis and reporting.



Connect the gauge via Bluetooth® or USB to a mobile device

Elcometer MTG — Ultrasonic Material Thickness Gauge

User Definable Upper and Lower Limits



The MTG gauges have user definable upper and lower limits with audible and visual pass/fail warnings allowing the user to compare readings to pre-defined values. The MTG8 can store up to 40 pre-programmed limits which can be set for individual readings or for each batch.

If a measurement is taken which falls outside set limits, the reading value and the limit icon turn red, the red LED flashes and the alarm beeps providing immediate indication of problem areas.

A Range of Calibration Methods



1 Point; after setting the zero point a reading is taken and adjusted on an uncoated sample piece of test material of a known thickness. Once the thickness has been entered and confirmed, the derived sound velocity is displayed.

2 Point; readings are taken and adjusted on two uncoated sample pieces of test material with known thicknesses. Once the second thickness has been entered and confirmed, the derived sound-velocity is displayed.

Material; calibration using the sound-velocity of a material, selected from a pre-defined list of materials stored in the gauge.

Velocity; calibration using the known sound-velocity of the material under test.

Thickness Set; callibration is performed using the known thickness of the material under test. Up to three calibrations can also be saved in the gauge memory. Once saved, the user can select the calibration memory - without the need to re-calibrate the gauge.

Scan Mode



When enabled, users can slide the transducer over a large surface area whilst the gauge takes readings at a rate of 16 Hz (16 readings per second). During each scan, the live thickness is displayed together with an analogue bar graph showing the thickness relative to the set nominal value and any user defined limits, with audible and visual warnings if any readings fall outside the set limits.

When the transducer is lifted off the surface, the average, lowest and highest thickness value is displayed making scan mode ideal for checking a sample's overall uniformity.

Ultrasonic Material Thickness Gauge

Elcometer MTG

Sequential or Grid Batching

Individual readings can be stored in up to 1,000 sequential or grid type, alpha-numeric batches, together with date and time stamp and reading location*. Users have the option to view batch readings, statistics and a graph of all readings stored within the batch.

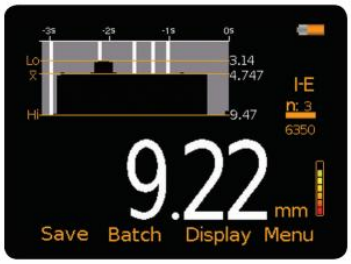
The obstruction feature (Obst), allows the user to record areas of obstruction on the grid where measurements could not be taken.



B-Scan Reading

A time based, cross sectional 2 dimensional B-Scan provides a graphical view of the material under test, ideal for relative depth analysis.

The zoom of the B-Scan reading can either be set to automatic or can be defined by the user to focus on areas of interest.



Differential Mode

Once a user defined nominal thickness value has been set, the gauge displays the measured thickness together with the variation from the set nominal value thus indicating areas of the material which are thinner or thicker than expected.



Velocity Mode

Velocity mode measures the speed of sound of materials and is ideal for determining the homogeneity of a material/alloy and the correct velocity of a material for calibration.



* Grid batches only

Elcometer MTG Ultrasonic Material Thickness Gauge

A choice of display and measurement modes

Readings



The reading value is displayed.

Selected Statistics



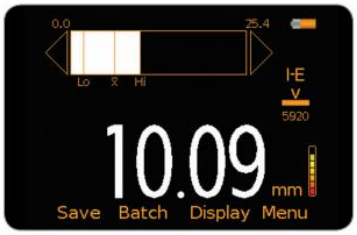
Up to 8 statistical values can be displayed as defined by the user.

Run Chart



A line trend graph of the last 20 measurements which is updated after each reading.

Bar Graph



An analogue representation of the current measurement value together with the highest (Hi), lowest (Lo) and average (x̄) reading.

Readings & Differential



The last reading is displayed together with the variation from the nominal value (if set).

B-Scan



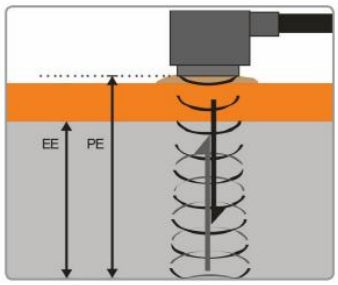
A cross-sectional view of the material being tested is displayed along with readings taken, saved readings, highest (Hi), lowest (Lo) and average (x̄) reading and upper/lower limit values (if set).

Measurement Modes

Pulsed Echo (PE); the total thickness from the base of the transducer to the material density boundary (typically the back-wall) is measured. Suitable for measurement of materials between 0.63mm and 500mm (0.025" to 20") thick.

Echo Echo ThruPaint™ (EE); a coating of up to 2.0mm (0.08") thick is ignored and the material thickness from the top surface of the material to the material density boundary (typically the back-wall) is measured. Suitable for measurement of materials between 2.54mm and 20mm (0.1" to 0.787") thick.

Velocity Mode (VM); measures the speed of sound of the material. Ideal for measuring the homogeneity of a material/alloy.



Ultrasonic Material Thickness Gauge

Elcometer MTG

Product Features

Model Number	MTG2	MTG4	MTG6	MTG8
Easy to use menu structure in multiple languages	■	■	■	■
Tough, impact, waterproof and dust resistant equivalent to IP54	■	■	■	■
Bright colour screen with permanent backlight	■	■	■	■
Ambient light sensor, with adjustable brightness	■	■	■	■
Scratch and solvent resistant display; 2.4" (6cm) TFT	■	■	■	■
Large positive feedback buttons	■	■	■	■
USB power supply via PC	■	■	■	■
Gauge software updates[1] via ElcoMaster® Software	■	■	■	■
2 year gauge warranty[2]	■	■	■	■
Limits: 40 definable audible & visual pass/fail warnings				■
Measurement Mode				
Pulsed Echo (PE)	■	■	■	■
Echo Echo ThruPaint™ (EE)		■	■	■
Velocity Mode (VM)			■	■
Measurement Rate				
4, 8, 16Hz	4Hz	4Hz	4, 8, 16Hz[3]	4, 8, 16Hz[3]
Thickness Range[4]				
PE 0.63-500mm (0.025-19.999")	■	■	■	■
EE 2.54 - 25.40mm (0.100-1.000")		■	■	■
Measurement Units				
mm or inches	■	■	■	■
m/s, inch/µs			■	■
Repeatability / Stability Indicator	■	■	■	■
Display Mode				
Reading	■	■	■	■
Selected statistics			■	■
Scan thickness bar graph			■	■
Run Chart			■	■
Readings and Differential				■
B-Scan cross sectional display				■
Selectable Reading Resolution				
Lo; 0.1mm, 0.01 Inch, 10m/s, or 0.001 in/µs	■	■	■	■
Hi; 0.01mm, 0.001 Inch, 1m/s, or 0.0001 in/µs			■	■

[1] Internet connection required

[2] The Elcometer MTG range is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

[3] User selectable default setting in Scan Mode is 16 Hz

[4] Dependent on the material being measured and the transducer being used

Elcometer MTG Ultrasonic Material Thickness Gauge

Product Features

Model Number	MTG2	MTG4	MTG6	MTG8
Statistics				
Number of readings,n; Mean average, $\bar{x}$; Standard deviation, σ.			■	■
Lowest reading, Lo; Highest reading, Hi			■	■
Low / high limit value				■
Reading Range Value ⌶				■
Nominal Value				■
Number of readings below the low limit				■
Number of readings above the high limit				■
Calibration Options				
Zero (using the integral zero disc)	■	■	■	■
1 - point		■	■	■
2 - point			■	■
Material selection; 39 preset materials*		■	■	■
Factory; resets to the factory calibration		■	■	■
Velocity (speed of sound)			■	■
Known thickness value			■	■
Calibration Features				
Calibration lock; with optional PIN Lock			■	■
Test calibration feature			■	■
Calibration memories: 3 programmable memories				■
Measurement outside calibration warning				■
Data Logging				
Number of readings			1,500	100,000
Number of batches			1	1,000
Sequential batching			■	■
Grid batching				■
Fixed Batch Size Mode; with batch linking				■
Obstruct entry; add 'obst' into grid location				■
Delete last reading			■	■
Date & time stamp			■	■
Review, clear & delete batches			■	■
Alpha numeric batch names; user definable				■
Batch review graph				■
Data Output				
USB to PC	■	■	■	■
Bluetooth® to PC, Android™ & iOS devices			■	■
ElcoMaster® software			■	■
Transducer Probe Type				
Dual Element	■	■	■	■
Auto transducer recognition	■	■	■	■
Auto V-path correction	■	■	■	■

* See page 8-64 for lists of preset materials

Ultrasonic Material Thickness Gauge

Elcometer MTG

Technical Specification

Part Number Gauge Only	Complete with 5MHz ¼" right angle dual element transducer	Description	Certificate
	MTG2-TXC	Elcometer MTG2 Ultrasonic Material Thickness Gauge	○
MTG4	MTG4-TXC	Elcometer MTG4 Ultrasonic Material Thickness Gauge	○
MTG6DL	MTG6DL-TXC	Elcometer MTG6DL Ultrasonic Material Thickness Gauge	●
MTG8BDL	MTG8BDL-TXC	Elcometer MTG8BDL Ultrasonic Material Thickness Gauge	●

Model Number	MTG2	MTG4	MTG6	MTG8
Measurement Range[1]				
Pulsed Echo (PE)	0.63 - 500mm (0.025 - 19.999")	0.63 - 500mm (0.025 - 19.999")	0.63 - 500mm (0.025 - 19.999")	0.63 - 500mm (0.025 - 19.999")
Echo Echo ThruPaint™ (EE)		2.54 - 20.00mm (0.100-0.787")	2.54 - 20.00mm (0.100-0.787")	2.54 - 20.00mm (0.100-0.787")
Velocity Mode (VM)		1,250-10,000 m/s (0.0492 - 0.3937in/µs)	1,250-10,000 m/s (0.0492 - 0.3937in/µs)	1,250-10,000 m/s (0.0492 - 0.3937in/µs)
Measurement Accuracy[2]				
Pulsed Echo (PE)	±0.1mm (0.63-19.99mm) ±0.5% (20.00-500.00mm)	±0.1mm (0.63-19.99mm) ±0.5% (20.00-500.00mm)	±0.05mm (0.63-9.99mm) ±0.5% (10.00-500.00mm) ±0.004" (0.025-0.393") ±0.5% (0.394-20.00")	
Echo Echo ThruPaint™ (EE)		±0.1mm (2.54-20.00mm)	±0.05mm (2.54-9.99mm) ±0.5% (10.00-20.00mm) ±0.004" (0.100-0.393") ±0.5% (0.394-0.787")	

Operating Temperature	-10 to 50°C (14 to 122°F)
Power Supply	2 x AA batteries
Battery Life[3]	Alkaline: 15 hours Lithium: 28 hours
Gauge Weight	210g (7.4oz) - including batteries, without transducer
Gauge Dimensions	145 x 73 x 37mm (5.7 x 2.84 x 1.46"), without transducer
Packing Lists	Elcometer MTG2 Ultrasonic Material Thickness Gauge, 5MHz ¼" right angle dual element transducer, ultrasonic couplant, carry pouch, screen protector, wrist harness, 2 x AA batteries, operating instructions, test certificate & 2 year warranty extension card.
	Elcometer MTG4 Ultrasonic Material Thickness Gauge, 5MHz ¼" right angle dual element transducer (MTG4-TXC only), ultrasonic couplant, carry pouch, screen protector, wrist harness, 2 x AA batteries, operating instructions, test certificate & 2 year warranty extension card.
	Elcometer MTG6 Ultrasonic Material Thickness Gauge, 5MHz ¼" right angle dual element transducer (MTG6DL-TXC only), ultrasonic couplant, plastic transit case, 3 x screen protectors, wrist harness, 2 x AA batteries, operating instructions, calibration certificate, ElcoMaster® software CD & USB cable
	Elcometer MTG8 Ultrasonic Material Thickness Gauge, 5MHz ¼" right angle dual element transducer (MTG8BDL-TXC only), ultrasonic couplant, plastic transit case, 3 x screen protectors, wrist harness, 2 x AA batteries, operating instructions, calibration certificate, ElcoMaster® software CD & USB cable

● Calibration Certificate supplied as standard. ○ Test Certificate supplied as standard. [1] Dependent on material being measured & transducer being used.
[2] On steel. [3] Approximate battery life, when in Continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

Elcometer MTG — Material Thickness Transducers



The **MTG Transducer range** has intelligent automatic transducer recognition ensuring correct probe identification even when the transducer is changed.



Disk	Part Number	Probe Diameter	Probe Configuration	Damping*	ThruPaint™	Connector Type: Potted right angle	Connector Type: Microdot	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	Suitable for: MTG4	MTG6	MTG8
	2.25 MHz Dual Element Thickness Transducer																		
●	TXC2M25CP-2	1/4"	Right Angle	S		•		•	•			•					•	•	•
●	TXC2M25EP-2	1/2"	Right Angle	S		•		•	•			•					•	•	•
	3.50 MHz Dual Element Thickness Transducer																		
●	TXC3M50EP-1	1/2"	Right Angle	S		•		•	•			•					•	•	•
	5.00 MHz Dual Element Thickness Transducer																		
●	TXC5M00BP-4	3/16"	Right Angle	S		•				•			•	•			•	•	•
●	TXC5M00CP-4	1/4"	Right Angle	S		•				•			•	•			•	•	•
●	TXC5M00CP-10	1/4"	Right Angle	H	•	•				•			•	•			•	•	•
●	TXC5M00CP-8	1/4"	Hi Temp	S		•				•			•	•			•	•	•
●	TXC5M00EP-3	1/2"	Right Angle	S		•				•			•	•			•	•	•
	7.50 MHz Dual Element Thickness Transducer																		
●	TXC7M50BP-3	3/16"	Right Angle	S		•				•			•	•	•		•	•	•
●	TXC7M50CP-4	1/4"	Right Angle	S		•				•			•	•	•		•	•	•
●	TXC7M50CP-6	1/4"	Right Angle	H	•	•				•			•	•	•		•	•	•
	10.0 MHz Dual Element Thickness Transducer																		
○	TXC10M0BP-1	3/16"	Right Angle	S		•							•		•	•	•	•	•
○	TXC10M0CP-4	1/4"	Right Angle	S		•							•		•	•	•	•	•

Each transducer can be easily identified by the disk on the top.





For couplant for Elcometer Transducers see page 8-62.

* Damping: **S** - Standard undamped Transducer, **H** - Highly Damped Transducer
All transducers are supplied with a calibration certificate
To select another transducer from the one supplied with the gauge please remove TXC from the part number

Corrosion Thickness Gauge

Elcometer CG70

The **Elcometer CG70** range of corrosion thickness gauges with its large, easy to read display, provides users with A and B-Scan options for accurate interpretation of measurements.



Elcometer CG70 Corrosion Thickness Gauge



Coatings up to 2mm (80mils) can be ignored

Versatile

Measures uncoated & coated surfaces.

Flexible & easy to use, the Elcometer CG70 range doesn't just measure uncoated surfaces but can also measure coated surfaces. Using Echo Echo ThruPaint™ Mode (EE), coatings up to 2mm (80mils) are ignored.



Measurements transmitted via USB for instant report generation

Powerful

Store up to 12,000 readings and waveforms or B-Scans.

Taking 32 readings per second in scan mode, the internal data logger stores up to 12,000 readings together with their waveforms.



Customisable reading display

Customisable

Choose & customise the reading display.

The Elcometer CG70 range has a choice of display modes allowing the user to select the most appropriate for their needs; Readings, B-Scan, B-Scan combined with readings, Scan bar & the A-Scan on the CG70ABDL.



Measurements transmitted via USB for instant report generation

Data Output to PC

Easily connect to any PC.

USB output to ElcoMaster® data management software allows ease of analysis and professional reporting.

Corrosion Thickness Gauge

Elcometer CG70

Product Features

Model	CG70BDL	CG70ABDL
Measurement Mode	PE & EE (ThruPaint™)	PE & EE (ThruPaint™)
Calibration Options		
1 - point	■	■
2 - point	■	■
Material selection	■	■
Velocity (speed of sound)	■	■
Display Mode		
Material thickness digits display	■	■
B-Scan cross sectional display	■	■
Combined B-Scan and digits display	■	■
Scan bar display	■	■
A-Scan display		+ Rectified, - Rectified, Full Waveform (RF)
Measurement Rate		
Manual	4 readings per second	4 readings per second
Scan Mode	32 readings per second	32 readings per second
Scan bar display	6 readings per second	6 readings per second
Measurement Resolution	0.01mm (0.001")	0.01mm (0.001")
Velocity Calibration Range	1250 - 10,000m/s (0.0492 - 0.3937in/µs)	1250 - 10,000m/s (0.0492 - 0.3937in/µs)
Additional Features		
High Speed Scan Mode	■	■
Differential Mode	■	■
Limit Alarm Mode	■	■
B-Scan display speed	15 seconds per screen	15 seconds per screen
Flaw Mode		Basic prove-up flaw detection using single element angle beam transducers
Calibration Setups	6 factory & 64 user-definable setups transferrable to and from a PC archive	6 factory & 64 user-definable setups transferrable to and from a PC archive
Gates		• PE: 1 gate; EE: 2 gates, 1 gate with hold off • Adjustable threshold
Pulser Type	square wave pulser	square wave pulser with adjustable pulse width (spike, thin, wide)
Gain	PE: selectable low, medium or high gain EE: automatic gain control (AGC)	Manual or automatic gain control (AGC) with 40dB range (depending on mode selected)
Timing	20MHz with ultra low power 8 bit digitizer	20MHz with ultra low power 8 bit digitizer
Data Logging	• 12,000 readings with waveform • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations	• 12,000 readings with waveform • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations
Transducer Probe Type	dual element	dual element
Transducer Frequency Range	1 - 10MHz	1 - 10MHz
Transducer Recognition	manual - selectable from a list	manual - selectable from a list
V-path / dual path error correction	automatic	automatic
Probe Zero	manual (via integrated probe disk)	manual (via integrated probe disk)
Display	1/8 VGA (greyscale) 62 x 45.7mm (2.4 x 1.8") viewable area	1/8 VGA (greyscale) 62 x 45.7mm (2.4 x 1.8") viewable area
Units (selectable)	mm or inches	mm or inches
LED Backlight	on / off / auto	on / off / auto
Repeatability / Stability Indicator	■	■

Elcometer CG70 Corrosion Thickness Gauge

Technical Specification

Part Number	Description	Certificate
CG70ABDL	Elcometer CG70ABDL Corrosion Thickness Gauge	○
Transducer Probe Type	Dual Element	
Measurement Range[1]		
Pulsed Echo (PE)	0.63 - 254mm (0.025 - 9.999")	
Echo Echo ThruPaint™ (EE)	2.54 - 102mm (0.100 - 4.00")	
Measurement Accuracy[1]	± 1% or ±0.1mm whichever is the greater	
Resolution	0.1mm (0.01") or 0.01mm (0.001") switchable	
Reading Rate	4, 8 & 16Hz (4, 8 & 16 readings per second)	
Operating Temperature	-10 to 60ºC (14 to 140ºF)	
Data Output	USB & Bluetooth®	
Power Supply	3 x AA batteries	
Battery Life[2]	200 hours	
Gauge Weight	383g (13.5oz) - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm (2.5 x 6.5 x 1.24")	
Packing List	Elcometer NDT CG70 gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster® software, transfer cable	



For a range of transducers to meet your specific application, see page 8-24.
For couplant for Elcometer Transducers see page 8-62.

[1] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[2] Approximate battery life, when in continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

○ Test Certificate supplied as standard.

Corrosion Thickness Gauge

Elcometer CG100

Top of the range and easy to use, the **Elcometer CG100** provides inspectors with all the features necessary to measure the material and coating thickness at the same time.



Elcometer CG100 Corrosion Thickness Gauge



Measures the material and coating thickness at the same time

Versatile

Able to measure coating and material thickness.

The Elcometer CG100 has the ability to measure coatings and material thickness simultaneously while maintaining the ability to locate pits, flaws and defects in the material.



Set up to 64 user definable limits

Intelligent

User definable limits for pass/fail indication.

Set limits for pass/fail indication on individual reading or for each batch with audible & visual warnings.



Up to 16,000 readings can be saved into the gauge memory

Powerful

Store each measurement for further analysis.

Up to 16,000 readings can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® for further analysis and reporting.



Customisable reading display

Customisable

Choose & customise the reading display.

Up to 12,000 readings can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® for further analysis and reporting.

Corrosion Thickness Gauge

Elcometer CG100

Technical Specification

Part Number	Description	Certificate
CG100BDL	Elcometer CG100BDL Corrosion Thickness Gauge	○
CG100ABDL+	Elcometer CG100ABDL+ Corrosion Thickness Gauge	○
Transducer Probe Type	Dual Element	
Measurement Range[1]		
Pulsed Echo (PE)	0.63 - 500mm (0.025 - 19.999")	
Echo Echo ThruPaint™ (EE)	1.27 - 102mm (0.050 - 4.000")	
Echo Echo Verify (EEV)	1.27 - 25.4mm (0.050 - 1.000")	
Pulsed Echo Temp Comp (PETP)	0.63 - 500mm (0.025 - 19.999")	
Coating Thickness (CT)	0.01 - 2.54mm (0.0005 - 0.100")	
Pulsed Echo Coating Thickness (**PE**CT)	0.63 - 500mm (0.025 - 19.999")	
Pulsed Echo Coating Thickness (PE**CT**)	0.01 - 2.54mm (0.001 - 0.100")	
Measurement Accuracy[1]	± 1% or ±0.1mm whichever is the greater	
Resolution	0.1mm (0.01") or 0.01mm (0.001") switchable	
Reading Rate	4, 8 & 16Hz (4, 8 & 16 readings per second)	
Operating Temperature	-10 to 60ºC (14 to 140ºF)	
Data Output	USB & Bluetooth®	
Power Supply	3 x AA batteries	
Battery Life[2]	150 hours	
Gauge Weight	383g (13.5oz) - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm (2.5 x 6.5 x 1.24")	
Packing List	Elcometer NDT CG100 gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster® software, transfer cable	

For a range of transducers to meet your specific application, see page 8-24.
For couplant for Elcometer Transducers see page 8-62.



[1] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[2] Approximate battery life, when in continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

○ Test Certificate supplied as standard.

Elcometer CG100 Corrosion Thickness Gauge

Product Features

Model & Part Number	CG100B	CG100BDL
Display Mode		
Material thickness digits display	■	■
B-Scan cross sectional display	■	■
Combined B-Scan and digits display	■	■
Scan bar display	■	■
Coating thickness display	■	■
A-Scan display		
Measurement Mode	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT
Measurement Rate		
Manual	4 readings per second	4 readings per second
Scan Mode	50 readings per second	50 readings per second
Scan bar display	6 readings per second	6 readings per second
Measurement Resolution	0.01mm (0.001")	0.01mm (0.001")
Velocity Calibration Range	1250 - 13,995m/s (0.0492 - 0.5510in/ms)	1250 - 13,995m/s (0.0492 - 0.5510in/ms)
Additional Features:		
High Speed Scan Mode	■	■
Differential Mode	■	■
Limit Alarm Mode	■	■
B-Scan display speed	15 seconds per screen	15 seconds per screen
Flaw Mode		
Calibration Setups	6 factory & 64 user-definable setups transferrable to and from a PC archive	6 factory & 64 user-definable setups transferrable to and from a PC archive
Gates		
Damping		
Pulser Type	dual square wave pulsers up to 140Hz pulse repetition rate	dual square wave pulsers up to 140Hz pulse repetition rate
Gain	automatic gain control (AGC) with 110dB range (limited), or selectable gain: vlow, low, medium hi or vhi	automatic gain control (AGC) with 110dB range (limited), or selectable gain: vlow, low, medium hi or vhi
Timing	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer

Corrosion Thickness Gauge

Elcometer CG100

Product Features

Model & Part Number	CG100ABDL	CG100ABDL+
Display Mode		
Material thickness digits display	■	■
B-Scan cross sectional display	■	■
Combined B-Scan and digits display	■	■
Scan bar display	■	■
Coating thickness display	■	■
A-Scan display	+ Rectified, - Rectified, Full Waveform (RF)	+ Rectified, - Rectified, Full Waveform (RF)
Measurement Mode	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT
Measurement Rate		
Manual	4 readings per second	4 readings per second
Scan Mode	50 readings per second	32 readings per second
Scan bar display	6 readings per second	6 readings per second
Measurement Resolution	0.01mm (0.001")	0.01mm (0.001")
Velocity Calibration Range	1250 - 13,995m/s (0.0492 - 0.5510in/ms)	1250 - 9,999m/s (0.0492 - 0.3936in/ms)
Additional Features:		
High Speed Scan Mode	■	■
Differential Mode	■	■
Limit Alarm Mode	■	■
B-Scan display speed	adjustable display speed	adjustable display speed
Flaw Mode	Basic prove-up flaw detection using single element angle beam transducers	Basic prove-up flaw detection using single element angle beam transducers
Calibration Setups	6 factory & 64 user-definable setups transferrable to and from a PC archive	6 factory & 64 user-definable setups transferrable to and from a PC archive
Gates	3 fully adjustable gates: start, stop, width & threshold	3 fully adjustable gates: start, stop, width & threshold
Damping		adjustable; impedance matching for optimising transducer performance
Pulser Type	dual 200 volt square wave pulsers with adjustable pulse width (spike, thin, wide) and 50 volt cut/boost for greater penetration	dual 200 volt square wave pulsers with adjustable pulse width (spike, thin, wide) and 50 volt cut/boost for greater penetration
Gain	manual, automatic gain control (AGC) with 110dB range (limited),	manual, automatic gain control (AGC) with 110dB range (limited),
Timing	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer

Elcometer CG100 Corrosion Thickness Gauge

Product Features

Model & Part Number	CG100B	CG100BDL
Data logging		• 16,000 with B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations
Calibration Options		
1 - point	■	■
2 - point	■	■
Material selection	■	■
Velocity (speed of sound)	■	■
Transducer Probe Type	dual element	dual element
Transducer Frequency Range	1 - 10MHz	1 - 10MHz
Transducer Recognition	automatic & manual - selectable from a list	automatic & manual - selectable from a list
V-path / dual path error correction	automatic	automatic
Probe Zero	automatic & manual (via integrated probe disk)	automatic & manual (via integrated probe disk)
Display	1/8 VGA (grayscale) 62 x 45.7mm (2.4 x 1.8") viewable area	1/8 VGA (grayscale) 62 x 45.7mm (2.4 x 1.8") viewable area
Display Refresh Rate	25Hz	25Hz
Units (selectable)	mm or inches	mm or inches
Backlight	on / off / auto	on / off / auto
Repeatability / Stability Indicator	■	■
Battery Save Mode	auto	auto

Corrosion Thickness Gauge

Elcometer CG100

Product Features

Model & Part Number	CG100ABDL	CG100ABDL+
Data logging	• 16,000 with A/B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations	• 8,000 with A/B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations
Calibration Options		
1 - point	■	■
2 - point	■	■
Material selection	■	■
Velocity (speed of sound)	■	■
Transducer Probe Type	dual element & flaw prove up	dual element & flaw prove up
Transducer Frequency Range	1 - 10MHz	1 - 10MHz
Transducer Recognition	automatic & manual - selectable from a list	automatic & manual - selectable from a list
V-path / dual path error correction	automatic	automatic
Probe Zero	automatic & manual (via integrated probe disk)	automatic & manual (via integrated probe disk)
Display	1/8 VGA (grayscale) 62 x 45.7mm (2.4 x 1.8”) viewable area	1/4 VGA AMOLED colour display 57.6 x 43.2mm (2.27 x 1.78”) viewable area
Display Refresh Rate	25Hz	120Hz
Units (selectable)	mm or inches	mm or inches
Backlight	on / off / auto	adjustable brightness
Repeatability / Stability Indicator	■	■
Battery Save Mode	auto	auto

For a range of transducers to meet your specific application, see page 8-24.



Elcometer CG — Corrosion Thickness Gauge Transducers



Elcometer offer a complete range of dual element **thickness transducers** for use with the **corrosion detection** gauges.



Disk	Part Number	Probe Diameter	Probe Characteristic	Damping[1]	ThruPaint™	Connector Type: Potted	Microdot	Lemo	Top	Side	End	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	Suitable for: CG70	CG100	FD700+
	1.00 MHz Dual Element Thickness Transducer																						
●	TX1M00EP-2	1/2"	Standard	S		●				●		●	●		●						●	●	●
●	TX1M00EP-3	1/2"	Composite	S		●				●		●	●		●						●	●	●
	2.25 MHz Dual Element Thickness Transducer																						
●	TX2M25CP-2	1/4"	Standard	S		●				●		●	●			●					●	●	●
●	TX2M25CM-2	1/4"	Standard	S			●			●		●	●			●					●	●	●
●	TX2M25EP-2	1/2"	Standard	S		●				●		●	●			●					●	●	●
	5.00 MHz Dual Element Thickness Transducer																						
●	TX5M00BP-4	3/16"	Coating Thickness	CT	●	●				●				●			●	●			●	●	●
●	TX5M00CP-4	1/4"	Standard	S		●				●				●			●	●			●	●	●
●	TX5M00CP-10	1/4"	Standard	H	●	●				●				●			●	●			●	●	●
●	TX5M00CP-6	1/4"	Coating Thickness	CT	●	●				●				●			●	●			●	●	●
●	TX5M00CM-3	1/4"	Coating Thickness	CT	●		●			●				●			●	●			●	●	●
●	TX5M00CM-4	1/4"	Hi Temp[2]	H	●		●		●					●			●	●			●	●	●
●	TX5M00EP-3	1/2"	Standard	S		●				●				●			●	●			●	●	●
	7.50 MHz Dual Element Thickness Transducer																						
●	TX7M50BP-3	3/16"	Coating Thickness	CT	●	●				●				●			●	●	●		●	●	●
●	TX7M50CP-5	1/4"	Coating Thickness	CT	●	●				●				●			●	●	●		●	●	●
●	TX10M0CP-4	1/4"	Standard	S		●				●							●		●	●	●	●	●

Each transducer can be easily identified by the disk on the top.





For couplant for Elcometer Transducers see page 8-62.

[1] Damping: **S** - Standard undamped Transducer, **CT** - Damped Coating Thickness Transducer, **H** - Highly Damped Transducer
[2] High temperature probes suitable for measuring 482°C (900°F)

Underwater Thickness Gauge

Elcometer UG20DL

Waterproof to a depth of 300 metres (1,000 feet), the **Elcometer UG20DL** is an underwater material and coating thickness gauge ideal for offshore inspections.



Elcometer UG20DL Underwater Thickness Gauge



Measures coatings and material thickness simultaneously

Versatile

Able to measure coatings and material thickness.

The UG20DL has the ability to measure coatings and material thickness simultaneously while maintaining the ability to locate pits, flaws and defects in the material. The UG20DL also allows you to switch between single and dual element transducers. Based on the same operating principles as SONAR, the UG20DL is capable of measuring the thickness of various materials with accuracy as high as 0.01mm (0.004").

Product Features

Model & Part Number	**UG20DL**
Display Mode	
Material thickness digits display	■
Measurement Mode	Dual Element: PE, EE (ThruPaint™), PECT Single Element: EEV (ThruPaint™)
Measurement Rate	
Manual	4 readings per second
Additional Features	
A-Scan	stored in memory with each reading for review on PC
Calibration setups	1 user programmable & 8 pre-calibrated velocities for: aluminium, cast iron, iron, PVC, polyurethane, polystyrene, stainless steel & steel
Waterproof - depth rating	maximum depth 300 metres (1,000 feet) - equivalent to IP68
Pulser Type	dual square wave pulsers
Gain	automatic gain control (AGC) with 100dB range, or selectable gain: vlow, low, medium, hi or vhi
Timing	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer
Data Logging	5,000 with A-scan image & gauge settings in one batch sequential and grid logging alpha numeric batch identification
Calibration Options	velocity & material type
Transducer Probe Type	dual and single element
Transducer Frequency Range	1 - 10MHz
Transducer Recognition	custom automatic (dual transducers) & manual - selectable from a list
V-path / dual path error correction	automatic
Probe Zero	automatic (dual transducers) & manual (via integrated probe disk)
Display	12.7mm (1/2") 4.5 digit LCD
Display Refresh Rate	25Hz
Units (selectable)	mm or inches
Backlight	on / off / auto
Repeatability / Stability Indicator	■
Low Battery Indicator	■
Battery Save Mode	auto

Underwater Thickness Gauge

Elcometer UG20DL

Powerful

Store each measurement for further analysis.

Up to 5,000 readings can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® for further analysis and reporting.



Up to 5,000 readings can be saved into the gauge memory and downloaded

Technical Specification

Part Number	Description
UG20DL	Elcometer UG20DL Underwater Thickness Gauge
Transducer Probe Type	Single & Dual Element
Measurement Range[1]	
Pulsed Echo (PE)	0.63 - 500mm (0.025 - 19.999")
Echo Echo ThruPaint™ (EE)	2.54 - 102mm (0.100 - 4.000")
Echo Echo Verify (EEV)	1.00 - 150mm (0.040 - 6.000")
Pulsed Echo Coating Thickness (**PE**CT)	0.63 - 500mm (0.025 - 19.999")
Pulsed Echo Coating Thickness (PE**CT**)	0.01 - 2.54mm (0.001 - 0.100")
Measurement Accuracy[1]	± 1% or ±0.1mm whichever is the greater
Resolution	0.1mm (0.01") or 0.01mm (0.001") switchable
Reading Rate	4, 8 & 16Hz (4, 8 & 16 readings per second)
Operating Temperature	-29 to 60ºC (-20 to 140ºF)
Data Output	USB
Power Supply	3 x AA batteries
Battery Life[2]	50 hours (15 hours with backlight on)
Gauge Weight	680g (24.0oz) - including batteries
Gauge Dimensions	229.0 x 60.33mm (9.0 x 2.4")
Packing List	Elcometer NDT UG20DL gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster® software, transfer cable, spare gaskets and lubrication set

For a range of transducers to meet your specific application, see page 8-28.



[1] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[2] Approximate battery life, when in continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

Elcometer UG — Underwater Transducers

Suitable for:
UG20DL



Elcometer offer a range of **underwater material and coating thickness transducers** with dual elements, ideal for offshore inspections.



	Part Number	Probe Diameter	Element Type	Probe Characteristic	Damping[1]	Connector Type: ThruPaint™	Potted	Microdot	Lemo - UW[4]	Top	Side	End	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	UG20DL
	3.50 MHz Underwater Transducer																					
●	TX3M50EP-3	1/2"	Dual	Underwater	S	•	•			•			•	•			•					•
	5.00 MHz Underwater Transducer																					
●	TX5M00EP-8	1/2"	Dual	Underwater	S		•			•					•			•	•			•
●	TX5M00EP-9	1/2"	Dual	Underwater - 15m (50ft)	S		•			•					•			•	•			•

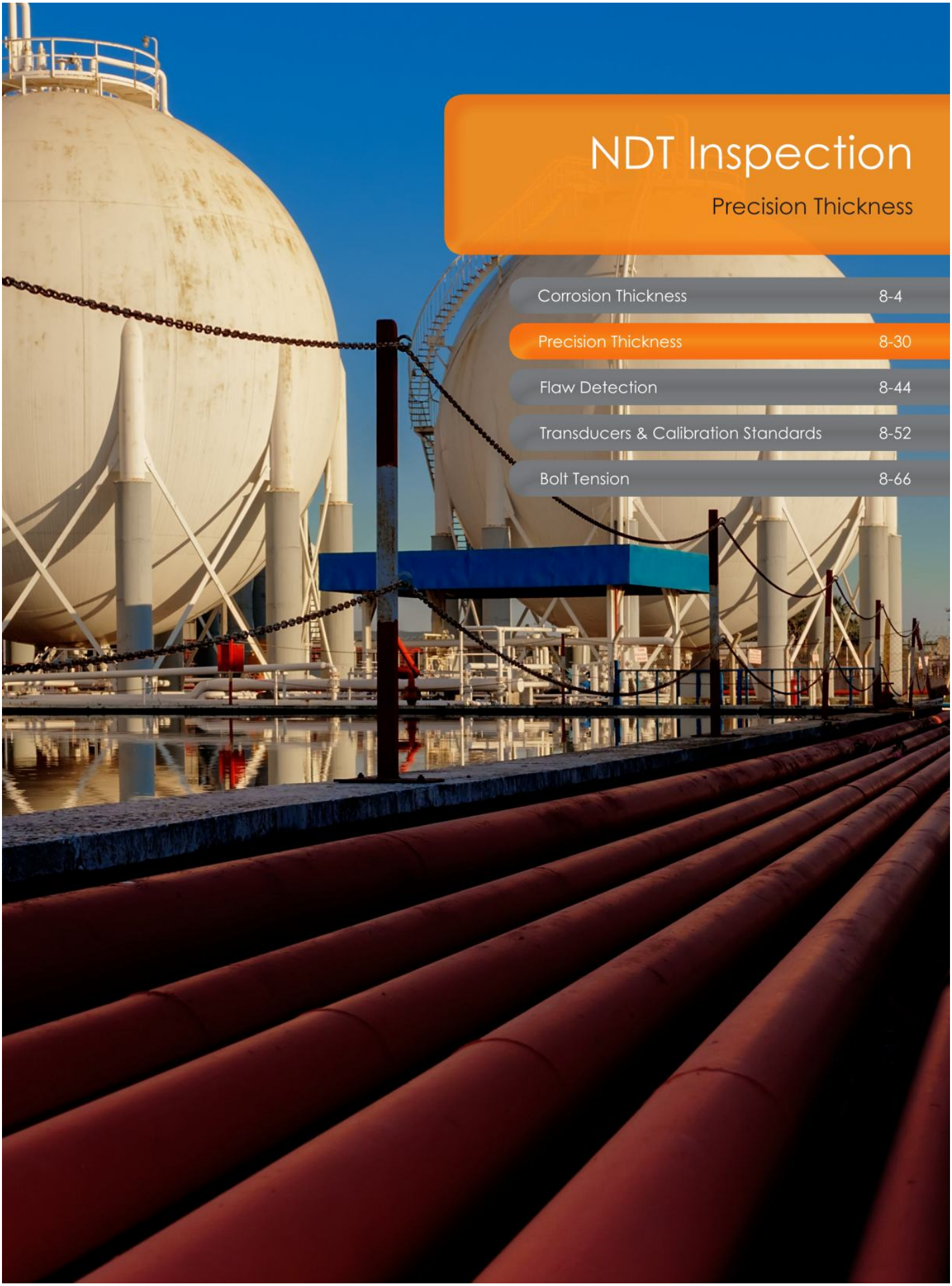
Each transducer can be easily identified by the disk on the top.

1MHz 2.25MHz 3.5MHz 5MHz 7.5 MHz 10MHz 15MHz 20MHz



For couplant for Elcometer Transducers see page 8-62.

[1] Damping: **S** - Standard undamped Transducer [2] Suitable for UG20DL only [3] For use with high temperature transducers up to 398°C (750°F)



NDT Inspection

Precision Thickness

Corrosion Thickness 8-4

Precision Thickness 8-30

Flaw Detection 8-44

Transducers & Calibration Standards 8-52

Bolt Tension 8-66

Elcometer PTG — Ultrasonic Precision Thickness Gauge

The **Elcometer PTG range** comes with all the features and functionality necessary for precisely measuring material thickness on virtually any material.

STANDARDS:
EN 14127, EN 15317

Selectable reading rate of 4, 8, 16Hz (4, 8, 16 readings per second)

2-Point, 1-Point, Material, Velocity, Thickness Set & Factory calibration options, allows accurate measurements of a wide range of materials

Intelligent transducer attached with auto recognition, ensures correct probe is identified when transducer is changed

The Elcometer PTG8 is supplied with or without a 15MHz ¼" Microdot Right Angle Single Element Thickness Transducer.

(Wide range of transducers available - see page 8-37)



Hi & Lo limit indicators provides indication of problem areas

Save up to 3 calibration methods in memory

Scan Mode at 16Hz, ideal for measuring a large surface area

Bluetooth® wireless technology

compatible with ElcoMaster.

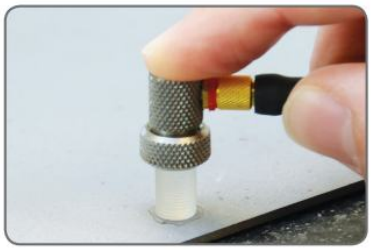
Ultrasonic Precision Thickness Gauge

Elcometer PTG

Accurate

Measures thin materials with pinpoint accuracy.

Flexible & easy to use, the Elcometer PTG gauges have a measurement range from 0.15mm (0.006") to 25.40mm (1.000") with upto ±1% accuracy, across three measurement modes; Interface Echo (IE), Echo Echo (EE) & Plastic mode (PLAS).



±1% accuracy across three measurement modes

Customisable

Choose & customise the reading display.

The Elcometer PTG range has a choice of display modes allowing the user to select the most appropriate for their needs; Readings, Selected Statistics, Bar Graph, Run Chart & Differential Mode.



Customisable reading display

Powerful

Store each measurement for further analysis.

Up to 100,000 readings can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® for further analysis and reporting.



Up to 100,000 readings can be saved into the gauge memory

Wireless Connectivity

Seamlessly connect to any PC, Android™ or iOS mobile device.

Connect the Elcometer PTG8 via Bluetooth® or USB to a PC, Android™ or iOS† mobile device & download the data into an inspection application or into ElcoMaster® for instant report generation.



Connect the gauge via Bluetooth® or USB to a mobile device

Elcometer PTG — Ultrasonic Precision Thickness Gauge

Measurement Modes



Interface Echo (IE); The total thickness from the top of any coating through to the material density boundary (typically the back-wall) is measured. Suitable for measurement of materials between 1.65mm and b 25.4mm (0.065" to 1") thick.

Echo Echo (EE); ideal for measuring thin materials, the material thickness from the top surface of the material to the material density boundary (typically the backwall) is measured. Suitable for measurement of materials between 0.15mm and 10.15mm (0.006" to 0.4") thick.

Plastic Mode (PLAS); specifically used for measuring very thin plastics between 0.15mm and 5mm (0.006" to 0.197") thick. A graphite delay line is required when using this mode.

User Definable Upper and Lower Limits



The PTG gauges have user definable upper and lower limits with audible and visual pass/fail warnings allowing the user to compare readings to pre-defined values. The PTG8 can store up to 40 pre-programmed limits which can be set for individual readings or for each batch.

If a measurement is taken which falls outside set limits, the reading value and the limit icon turn red, the red LED flashes and the alarm beeps providing immediate indication of problem areas.

Calibration Options



The PTG gauges have a number of calibration options including the 1-Point & 2-Point method and Velocity. Alternatively, the user can select one of 39 pre-set materials stored within the gauge including; aluminium, steel, stainless steel, cast iron, plexiglass, PVC, polystyrene and polyurethane.

The PTG8 allows users to store into memory up to three calibrations. Once saved the user can select a calibration without the need to re-calibrate the gauge. Using the gauge's alpha-numeric function, calibration memories can be re-named to suit the calibration setting.

Ultrasonic Precision Thickness Gauge

Elcometer PTG

A choice of display modes

Readings



The reading value is displayed.

Selected Statistics



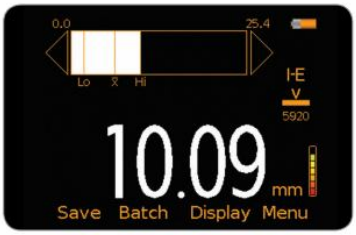
Up to 8 statistical values can be displayed as defined by the user.

Run Chart



A line trend graph of the last 20 measurements which is updated after each reading.

Bar Graph



An analogue representation of the current measurement value together with the highest (Hi), lowest (Lo) and average (x̄) reading.

Readings & Differential*



The last reading is displayed together with the variation from the nominal value (if set).

B-Scan



A cross-sectional view of the material being tested is displayed along with readings taken, saved readings, highest (Hi), lowest (Lo) and average (x̄) reading and upper/lower limit values (if set).

For a range of transducers to meet your specific application, see page 8-37.



* Not available in Scan Mode

Elcometer PTG — Ultrasonic Precision Thickness Gauge

Product Features

Model Number	PTG6	PTG8
Easy to use menu structure in multiple languages	■	■
Tough, impact, waterproof and dust resistant equivalent to IP54	■	■
Bright colour screen with permanent backlight	■	■
Ambient light sensor, with adjustable brightness	■	■
Scratch and solvent resistant display; 2.4" (6cm) TFT	■	■
Large positive feedback buttons	■	■
USB power supply via PC	■	■
Gauge software updates[1] via ElcoMaster® Software	■	■
2 year gauge warranty[2]	■	■
Limits: 40 definable audible & visual pass/fail warnings		■
Measurement Mode		
Echo-Echo (E-E)	■	■
Interface Echo (I-E)	■	■
Plastic Mode (PLAS)	■	■
Measurement Rate		
4, 8, 16Hz	4, 8, 16Hz[3]	4, 8, 16Hz[3]
Thickness Range[4]		
E-E 0.15 - 10.15mm (0.006-0.400")	■	■
I-E 1.65 - 25.40mm (0.065-1.000")	■	■
PLAS 0.15 - 5.00mm (0.006-0.197")	■	■
Measurement Units		
mm or inches	■	■
m/s, inch/µs		
Repeatability / Stability Indicator	■	■
Display Mode		
Reading	■	■
Selected statistics		■
Scan thickness bar graph		■
Run Chart		■
Readings and Differential		■
B-Scan cross sectional display		■
Selectable Reading Resolution		
Lo; 0.1mm, 0.01 Inch, 10m/s, or 0.001 in/µs	■	■
Hi; 0.01mm, 0.001 Inch, 1m/s, or 0.0001 in/µs	■	■

[1] Internet connection required

[2] The Elcometer PTG range is extendable within 60 days from date of purchase, free of charge to two years via www.elcometer.com

[3] User selectable default setting in Scan Mode is 16 Hz

[4] Dependent on the material being measured and the transducer being used

Ultrasonic Precision Thickness Gauge

Elcometer PTG

Product Features

Model Number	PTG6	PTG8
Statistics		
Number of readings,n; Mean average, $\bar{x}$; Standard deviation, σ.		■
Lowest reading, Lo; Highest reading, Hi		■
Low / high limit value		■
Reading Range Value		■
Nominal Value		■
Number of readings below low limit		■
Number of readings above high limit		■
Calibration Options		
Zero (using the integral zero disc)	■	■
1 - point	■	■
2 - point	■	■
Material selection; 39 preset materials*	■	■
Factory; resets to the factory calibration	■	■
Velocity (speed of sound)	■	■
Known thickness value		
Calibration Features		
Calibration lock; with optional PIN Lock	■	■
Test calibration feature	■	■
Calibration memories: 3 programmable memories		■
Measurement outside calibration warning		■
Data Logging		
Number of readings		100,000
Number of batches		1,000
Sequential batching		■
Grid batching		■
Fixed Batch Size Mode; with batch linking		■
Obstruct entry; add 'obst' into grid location		■
Delete last reading		■
Date & time stamp		■
Review, clear & delete batches		■
Alpha numeric batch names; user definable		■
Batch review graph		■
Data Output		
USB to PC	■	■
Bluetooth® to PC, Android™ & iOS devices		■
ElcoMaster® software	■	■
Transducer Probe Type		
Single Element	■	■
Auto transducer recognition	■	■

* See page 8-64 for lists of preset materials

Elcometer PTG — Ultrasonic Precision Thickness Gauge

Technical Specification

Part Number Gauge Only	Complete with 15MHz ¼" right angle single element transducer	Description	Certificate
PTG6	PTG6-TXC	Elcometer PTG6 Ultrasonic Precision Thickness Gauge	•
PTG8BDL	PTG8BDL-TXC	Elcometer PTG8BDL Ultrasonic Material Thickness Gauge	•

Model Number	**PTG6 & PTG8**	
Measurement Range[1]		
Interface Echo (IE)	1.65 - 25.40mm (0.065 - 1.00")	
Echo Echo (EE)	0.15 - 10.15mm (0.006 - 0.400")	
Plastic Mode (PLAS)	0.15 - 5.00mm (0.006 - 0.197")	
Measurement Accuracy[2]		
Interface Echo (IE)	±0.015mm (1.65-2.99mm) ±0.5%(3.00-25.4mm)	±0.0006" (0.065 0.117") ±0.5% (0.118-1.000")
Plastic Mode (PLAS)	±0.015mm (0.15-2.99mm) ±0.5% (3.00-5.00mm)	±0.0006" (0.006-0.117") ±0.5% (0.118-0.197")

Operating Temperature	-10 to 50°C (14 to 122°F)
Power Supply	2 x AA batteries
Battery Life[3]	Alkaline: 15 hours Lithium: 28 hours
Gauge Weight	210g (7.4oz) - including batteries, without transducer
Gauge Dimensions	145 x 73 x 37mm (5.7 x 2.84 x 1.46"), without transducer
Packing Lists	Elcometer PTG6 Ultrasonic Precision Thickness Gauge, 15MHz transducer (PTG6-TXC only) ultrasonic couplant, 3 x screen protectors, wrist harness, 2 x AA batteries, plastic transit case, calibration certificate, 2 year warranty extension card, operating instructions
	Elcometer PTG8 Ultrasonic Precision Thickness Gauge, 15MHz transducer (PTG8BDL-TXC only) ultrasonic couplant, 3 x screen protectors, wrist harness, 2 x AA batteries, plastic transit case, calibration certificate, USB cable, ElcoMaster® Software, 2 year warranty extension card, operating instructions

• Calibration Certificate supplied as standard.

[1] Dependent on material being measured & transducer being used. [2] On steel.

[3] Approximate battery life, when in Continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

Ultrasonic Precision Thickness Gauge

Elcometer PTG

When pinpoint accuracy is the key, the Elcometer **Precision Thickness Transducers** allow users to measure with precision.





Disk	Part Number	Probe Diameter	Probe Configuration	Damping*	ThruPaint™	Connector Type: Potted right angle	Connector Type: Microdot	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	Suitable for: PTG6	PTG8
	15.0 MHz Single Element Transducer																	
●	TXC15M0CM	1/4"	Right Angle	S			•			•			•		•	•	•	•
	20.0 MHz Single Element Transducer																	
●	TXC20M0CM	1/4"	Right Angle	S			•			•			•		•	•	•	•

Delay Lines

Part Number	Description
TD-24033-1	Cone Tip Delay Line: Acrylic; 1/8"
TD-24033-2	Cone Tip Delay Line: Acrylic; 3/16"
TD-24033-3	Cone Tip Delay Line: Graphite; 3/16"
TD-24033-4	Delay Line Tip (Pencil): Acrylic; 1/16" Dia x 0.45" L
TD-24033-5	Delay Line Tip (Pencil): Acrylic; 1/8" Dia x 0.45" L
TD-24033-6	Delay Line Tip: Acrylic; 1/4" Dia x 1/2" L
TD-24033-7	Delay Line Tip: Acrylic; 1/4" Dia x 3/8" L
TD-24033-8	Delay Line Tip: Graphite; 1/4"

Each transducer can be easily identified by the disk on the top.



For couplant for Elcometer Transducers see page 8-62.



* Damping: **S** - Standard undamped Transducer

Elcometer PG70ABDL Ultrasonic Precision Thickness Gauge

The **Elcometer PG70ABDL** can display the thickness value with A and B-Scan displays, allowing users to accurately assess a wide range of materials.



Up to 3 programmable calibration memories, allows the user to select a saved calibration method without the need to recalibrate the gauge

The Elcometer PTG8 is supplied with or without a 15MHz ¼" Microdot Right Angle Single Element Thickness Transducer.

(Wide range of transducers available - see page 8-42)

High speed scan: 32 readings per second

Data output and storage: 12,000 readings and waveforms

Range of display options: A-Scan, B-Scan, Pulse-Echo, Echo-Echo

A selectable resolution of either 0.01mm or 0.001mm

A range of calibration options allows accurate measurements of a wide range of materials

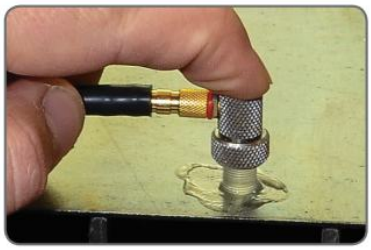
Ultrasonic Precision Thickness Gauge

Elcometer PG70ABDL

Accuracy

Measures thin materials with pinpoint accuracy.

Flexible & easy to use, the Elcometer PG60ABDL is able to measure the thinnest point of the substrate with maximum precision.



Pinpoint accuracy at the thinnest point

Intelligent

User definable limits for pass/fail indication.

Limits can be set on the Elcometer PG70ABDL for individual readings or for each batch with audible & visual alarms.



Set limits for audible and visual pass/fail indication

Powerful

Store each measurement for further analysis.

Up to 12,000 readings and waveforms can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® for further analysis and reporting.



Up to 12,000 readings can be saved into the gauge memory

Customisable

Choose & customise the reading display.

With a choice of display modes, the user can select the most appropriate option for their needs; Readings, Selected Statistics, Bar Graph, Run Chart & Differential Mode.



Customisable reading display

Elcometer PG70ABDL Ultrasonic Precision Thickness Gauge

Product Features

Model & Part Number	**PG70ABDL**
Display Mode	
Material thickness digits display	■
B-Scan cross sectional display	■
Combined B-Scan and digits display	■
Scan bar display	■
A-Scan display	+ Rectified, - Rectified, Full Waveform (RF)
Measurement Mode	PE, IE & EE
Measurement Rate: Manual Scan Mode Scan bar display	 4 readings per second 32 readings per second 6 readings per second
Additional Features:	
High speed scan mode	■
Differential Mode	■
Limit Alarm Mode	■
Selectable resolution	■
B-Scan display speed	15 seconds per screen
Calibration setups	16 factory & 48 user-definable setups transferrable to and from a PC archive
Gates	• PE: 1 gate; IE, Plastic & EE: 1 gate with hold off • Adjustable threshold
Pulser Type	square wave pulser with adjustable pulse width (spike, thin, wide)
Gain	manual or automatic gain control (AGC) with 40dB range (depending on mode selected)
Timing	40MHz with ultra low power 8 bit digitizer
Data Logging	• 12,000 readings with waveforms • grid logging • Alpha Numeric batch identification • OBSTRUCT indicates inaccessible locations
Calibration Options	single, two point, velocity & material type
Transducer Probe Type	single element with delay tip, pencil with delay tip & contact probes
Transducer Frequency Range	1 - 20MHz
Transducer Recognition	manual - selectable from a list
Display	1/8" VGA (grayscale), 62 x 45.7mm (2.4 x 1.8") viewable area
Units (selectable)	mm or inches
LED Backlight	on / off / auto
Repeatability / Stability Indicator	■
Low Battery Indicator	■
Battery Save Mode	auto
Transducer Connector Type	LEMO
RS232 Interface	Bi-directional

Ultrasonic Precision Thickness Gauge

Elcometer PG70ABDL

Technical Specification

Part Number	Description	Certificate
PG70ABDL	Elcometer PG70ABDL Precision Thickness Gauge	○
Transducer Probe Type	Single Element	
Measurement Range[1]		
Pulsed Echo (contact) (PE) on steel	1.000 - 254mm (0.040 - 10.000")	
Pulsed Echo (contact) (PE) on plastic	0.254 - 254mm (0.010 - 10.000")	
Echo Echo ThruPaint™ (EE) on steel	2.54 - 76.20mm (0.100 - 3.000")	
Echo Echo (contact) (EE) on steel	0.15 - 12.70mm (0.006 - 0.500")	
Interface Echo (IE) on steel	1.27 - 25.4mm (0.050 - 1.000")	
Interface Echo (IE) on plastic	0.127 - 25.4mm (0.005 - 1.000")	
Measurement Accuracy[1]	± 1% or ±0.1mm whichever is the greater	
Resolution	0.1mm (0.01") or 0.01mm (0.001") switchable	
Reading Rate	4, 8 & 16Hz (4, 8 & 16 readings per second)	
Operating Temperature	-10 to 60ºC (14 to 140ºF)	
Data Output	USB & Bluetooth®	
Power Supply	3 x AA batteries	
Battery Life[2]	Alkaline: 150 hours NiCad: 100 hours	
Gauge Weight	383g (13.5oz) - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm (2.5 x 6.5 x 1.24")	
Packing List	Elcometer NDT PG70ABDL gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster® software, transfer cable	

For a range of transducers to meet your specific application, see page 8-42.

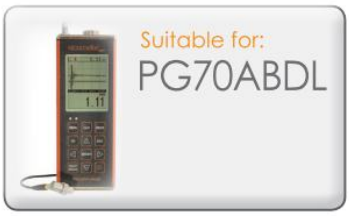


[1] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[2] Approximate battery life, when in continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

○ Test Certificate supplied as standard.

Elcometer Precision Thickness Transducers



When pinpoint accuracy is the key, the Elcometer **Precision Thickness Transducers** allow users to measure with precision.



Disk	Part Number	Probe Diameter	Element Type	Probe Characteristic	Damping[1]	Connector Type: ThruPaint™	Potted	Microdot	Lemo	Top	Side	End	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	PG70ABDL
	10.00 MHz Single Element Precision Transducer																					
○	TX10M0BM-1	3/16"	Si/El D/Line Pencil	1/16" Tip	S			•		•					•			•		•	•	•
	15.00 MHz Single Element Precision Transducer																					
●	TX15M0CM	1/4"	Si/El Delay Line	Standard	S			•			•				•			•		•	•	•

Delay Lines

Part Number	Description
TD-24033-1	Cone Tip Delay Line: Acrylic; 1/8"
TD-24033-2	Cone Tip Delay Line: Acrylic; 3/16"
TD-24033-3	Cone Tip Delay Line: Graphite; 3/16"
TD-24033-4	Delay Line Tip (Pencil): Acrylic; 1/16" Dia x 0.45" L
TD-24033-5	Delay Line Tip (Pencil): Acrylic; 1/8" Dia x 0.45" L
TD-24033-6	Delay Line Tip: Acrylic; 1/4" Dia x 1/2" L
TD-24033-7	Delay Line Tip: Acrylic; 1/4" Dia x 3/8" L
TD-24033-8	Delay Line Tip: Graphite; 1/4"

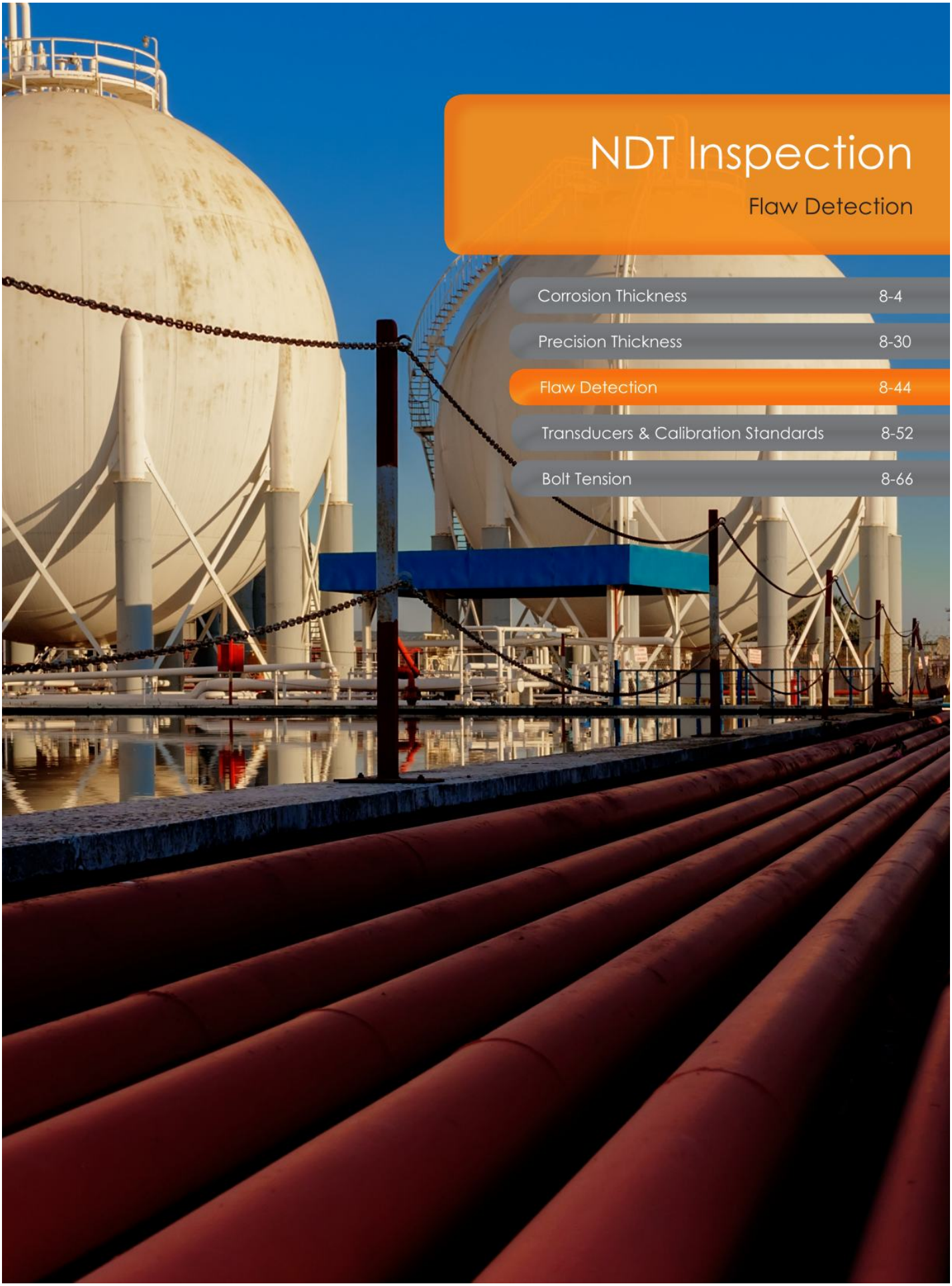
Each transducer can be easily identified by the disk on the top.





For couplant for Elcometer Transducers see page 8-62.

[1] Damping: **S** - Standard undamped Transducer



NDT Inspection

Flaw Detection

Corrosion Thickness 8-4

Precision Thickness 8-30

Flaw Detection 8-44

Transducers & Calibration Standards 8-52

Bolt Tension 8-66

Elcometer FD700 Mini Flaw Detector

The hand-held **Elcometer FD700** flaw detector range combines state-of-the-art flaw detection with advanced material thickness capabilities.



Mini Flaw Detector

Elcometer FD700

Versatile



Two gauges in one.

The FD700 series has two functions, a thickness gauge and a flaw detector. When the FD700 is set to thickness gauge it has the ability to measure coatings and material thickness simultaneously. When set to flaw detector the gauge has the ability to detect the size and position of flaws and to differentiate between flaw types in various materials and welded joints.

Material Thickness Features

Model & Part Number	**FD700+ & FD700DL+**
Display Mode	
Material thickness digits display	■
B-Scan cross sectional display	■
B-Scan with digits display	■
Scan bar display	■
Coating thickness display	■
A-Scan display	+ Rectified, - Rectified, Full Waveform (RF)
Flaw detection modes	TRIG, DAC, AWS, TCG, Zero Crossing, Flank, Peak
Measurement Mode	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT
Measurement Rate (Thickness Mode)	
Manual	4 readings per second
Scan Mode	32 readings per second
Scan bar display	6 readings per second
Additional Features:	
High Speed Scan Mode	■
Differential Mode	■
Limit Alarm Mode	■
B-Scan display speed	adjustable display speed
Calibration Setups	6 factory & 64 user-definable setups transferrable to and from a PC archive
Gates	3 fully adjustable gates: start, stop, width & threshold
Damping	adjustable; impedance matching for optimising transducer performance
Pulser Type	dual 200 volt square wave pulsers with adjustable pulse width (spike, thin, wide) and 50 volt cut/boost for greater penetration
Gain	manual, automatic gain control (AGC) with 110dB range with 0.2dB resolution
Timing	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer
Data Logging	• 8,000 with A/B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations
Calibration Options	single, two point, velocity & material type
Transducer Recognition	automatic
V-path / dual path error correction	automatic

Elcometer FD700 Mini Flaw Detector



Customisable reading display

Customisable

Choose & customise the reading display.

The FD700 has a choice of display modes allowing the user to select the most appropriate for their needs; from A & B-Scan displays to flaw detection modes such as TRIG, DAC, TCG, Flank and Peak.

Flaw Detection Features

Automatic Calibration:	Longitudinal (straight), or Shear (angle)
Probe Types:	Single Contact, Dual, Delay & Angle
Material Velocity Table:	Contains longitudinal and shear velocities for a variety of material types
TRIG	Trigonometric display of beam path, depth, surface distance, and curved surface correction. Used with angle beam transducers
DAC	Up to 8 points may be entered and used to digitally draw a DAC curve. Reference -2, -6, -10, (-6/-12), (-6/-14), (-2/-6/-10) dB. Amplitude displayed in %DAC, dB, or %FSH
AWS	Automatic defect sizing in accordance with AWS D1.1 structural welding code.
AVG/DGS	Automatic defect sizing using probe data. Stores up to 64 custom setups
TCG	Time corrected gain. 50 dB dynamic range, 20 dB per microsecond, up to 8 points for curve definition
Detection Modes	Zero Crossing, Flank and Peak
Display Freeze	Hold current waveform on screen
Peak Memory	Captures peak signal amplitude.
PRF	8 to 2000Hz in selectable steps (8, 16, 32, 66, 125, 250, 333Hz)
Pulse Width	40 to 400 ns. Selectable step options 40, 80 & 400 ns (labeled spike, thin & wide)
Frequency Bands	FD700+ & FD700DL+: Broadband 1.8 - 19 MHz (-3dB). FD700DL+: Three narrow bands at 2MHz, 5MHz, 10MHz
Horizontal Linearity	+/- 0.4% FSW
Vertical Linearity	+/- 1% FSH
Amplifier Linearity	+/- 1 dB
Amplitude Measurement	0 to 100% FSH, with 1% resolution
Delay	0 - 999in (25,375mm) at steel velocity
Display	1/4 VGA AMOLED colour display 57.6 x 43.2mm (2.27 x 1.78”) viewable area
Display Refresh Rate	60Hz
Units (selectable)	mm or inches
Backlight	adjustable brightness
Repeatability / Stability Indicator	■
Low Battery Indicator	■
Battery Save Mode	auto

Powerful

Store each measurement for further analysis.

Up to 210,000 readings with the graphic option turned off or 16,000 with graphics on can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® for further analysis and reporting.



Download to ElcoMaster® data management software

Technical Specification

Part Number	Description	Certificate
FD700DL+	Elcometer FD700DL+ Mini Flaw Detector	○
Transducer Probe Type	Single & Dual Element	
Thickness Gauge: Measurement Range[1]		
Pulsed Echo (PE)	0.63 - 2440mm (0.025 - 96")	
Echo Echo ThruPaint™ (EE)	1.27 - 102mm (0.050 - 4.000")	
Echo Echo Verify (EEV)	1.27 - 25.4mm (0.050 - 1.000")	
Pulsed Echo Temp Comp (PETP)	0.63 - 2440mm (0.025 - 96")	
Coating Thickness (CT)	0.01 - 2.54mm (0.0005 - 0.100")	
Pulsed Echo Coating Thickness (**PE**CT)	0.63 - 2440mm (0.025 - 96")	
Pulsed Echo Coating Thickness (PE**CT**)	0.01 - 2.54mm (0.0005 - 0.100")	
Measurement Accuracy[1]	± 1% or ±0.1mm whichever is the greater	
Resolution	0.1mm (0.01") or 0.01mm (0.001") switchable	
Reading Rate	4, 8 & 16Hz (4, 8 & 16 readings per second)	
Operating Temperature	-10 to 60ºC (14 to 140ºF)	
Data Output	USB	
Power Supply	3 x AA batteries	
Battery Life[2]	12 hours	
Gauge Weight	397g (14oz) - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm (2.5 x 6.5 x 1.24")	
Packing List	Elcometer NDT FD700 gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster® software, transfer cable	

For a range of transducers to meet your specific application, see page 8-48.



[1] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[2] Approximate battery life, when in continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

○ Test Certificate supplied as standard.

Elcometer FD — Single Element Transducers



Suitable for:
FD700+
FD700DL+

Single Element Transducers are the common 0° transducers and are ideal for inspecting large, simple geometry materials.



Disk	Part Number	Probe Diameter	Probe Characteristic	Damping*	Connector Type: Microdot	Lemo	BNC	Top	Side	End	Cast Iron	Suitable for measuring: Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	All Metals	Common Metals	Rough Surfaces	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	Immersion & Bubbler Inspections	FD700+	FD700DL+
	1.00 MHz Single Element Contact Transducers																													
●	TF1M00C-1	1/4"	Finger Tip Composite	S	•				•			•									•									•	•
●	TF1M00E-1	1/2"	Finger Tip Composite	S	•				•			•									•									•	•
	3.50 MHz Single Element Contact Transducers																													
●	TF3M50E-1	1/2"	Finger Tip Composite	S	•				•			•									•									•	•
	5.00 MHz Single Element Contact Transducers																													
●	TF5M00CG-1	1/4"	Finger Tip	HG	•				•			•									•									•	•
●	TF5M00EG-1	1/2"	Finger Tip	HG	•				•			•									•									•	•
●	TX5M00GM	3/4"	Si/El Magnetic	S	•			•												•		•	•	•	•					•	•
	10.00 MHz Single Element Contact Transducers																													
○	TF10M0CG-1	1/4"	Finger Tip	HG	•				•			•									•									•	•
	15.00 MHz Single Element Contact Transducers																													
●	TF15M0AH-1	1/8"	Finger Tip Slim Line	H	•				•			•									•									•	•
	20.00 MHz Single Element Contact Transducers																													
●	TF20M0AH-1	1/8"	Finger Tip Slim Line	H	•				•			•									•									•	•

Each transducer can be easily identified by the disk on the top.





For couplant for Elcometer Transducers see page 8-62.

* Damping: **S** - Standard undamped Transducer, **H** - Highly Damped Transducer, **HG** - High Gain Damping Transducers

Shear Wave Transducers

Elcometer FD

Shear Wave Transducers are designed to be used with angle beam wedges for a powerful flaw detection solution. The transducer is secured to the wedge with screws.



Suitable for:
FD700+
FD700DL+





Disk	Part Number	Probe Diameter	Probe Characteristic	Damping*	Microdot	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	All Metals	Common Metals	Rough Surfaces	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	Immersion & Bubbler Inspections	FD700+	FD700DL+
	1.00MHz Shear Wave - Quick Change Transducers																								
●	TF1M00CG	1/4"	Composite	HG	•																•			•	•
●	TF1M00CR	1/4"	Composite	R	•																•			•	•
●	TF1M00ER	1/2"	Composite	R	•																•			•	•
	2.25 MHz Shear Wave - Quick Change Transducers																								
●	TF2M25CG-4	1/4"	Standard	HG	•																•			•	•
●	TF2M25CR-4	1/4"	Standard	R	•																•			•	•
	5.00 MHz Shear Wave - Quick Change Transducers																								
●	TF5M00CG-4	1/4"	Standard	HG	•																•			•	•
●	TF5M00EG-5	1/2"	Standard	HG	•																•			•	•
●	TF5M00CR-4	1/4"	Standard	R	•																•			•	•
●	TF5M00ER-4	1/2"	Standard	R	•																•			•	•
	10.00 MHz Shear Wave - Quick Change Transducers																								
○	TF10M0CG-4	1/4"	Standard	HG	•																•			•	•
○	TF10M0CR-4	1/4"	Standard	R	•																•			•	•

Each transducer can be easily identified by the disk on the top.



For couplant for Elcometer Transducers see page 8-62.



* Damping: **HG** - High Gain Damping Transducers, **R** - Resolution Transducer

Elcometer FD — Transducer Wedges



A range of versatile wedges available in 45°, 60° and 70° angles for use with Elcometer shear wave transducers.



Wedge - Standard Quick Change Transducers

Angle beam wedge designed for quick change transducers

Part Number	Probe Diameter	Angle	Suitable for FD700+	Suitable for FD700DL+
Wedge - Standard Quick Change Transducers				
TF9999C45-2	1/4"	45°	•	•
TF9999E45-2	1/2"	45°	•	•
TF9999C60-2	1/4"	60°	•	•
TF9999E60-2	1/2"	60°	•	•
TF9999C70-2	1/4"	70°	•	•
TF9999E70-2	1/2"	70°	•	•

Wedge - Snail Transducers

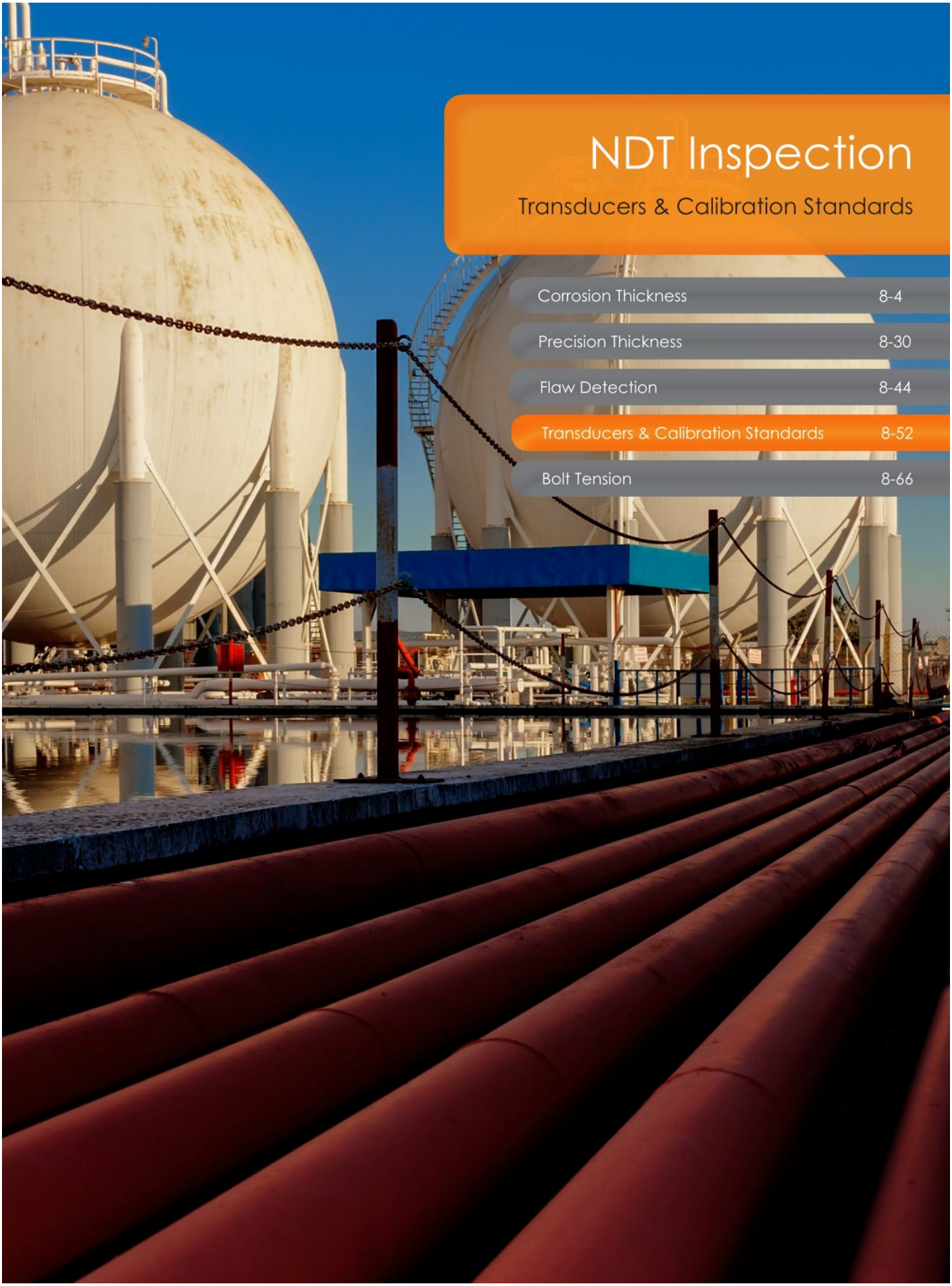
Angle beam wedge meeting American Welding society standards for use with standard shear wave transducers.

Part Number	Probe Diameter	Angle	Suitable for FD700+	Suitable for FD700DL+
Wedge - Snail Transducers				
TF9999FF45-1	5/8 x 5/8"	45°	•	•
TF9999FF60-1	5/8 x 5/8"	60°	•	•
TF9999FF70-1	5/8 x 5/8"	70°	•	•



For couplant for Elcometer Transducers see page 8-62.

*For use with high temperature transducers up to 398°C (750°F)



NDT Inspection

Transducers & Calibration Standards

Corrosion Thickness 8-4

Precision Thickness 8-30

Flaw Detection 8-44

Transducers & Calibration Standards 8-52

Bolt Tension 8-66

Elcometer Ultrasonic NDT Transducers

Elcometer NDT offer a state-of-the-art range of **Ultrasonic Gauge transducers** to meet your application's specific needs.

When selecting a transducer it is important to choose one which will meet the specific application's needs. The type of material to be tested, the measurement range, the shape of the substrate (curved or flat) and the size of the material should be considered when selecting the appropriate transducer.

Single Element

Single element transducers feature a single crystal that sends and receives the pulse and are made for high frequency use.





Dual Element

A dual element transducer consists of two crystal elements housed in the same case, separated by an acoustic barrier.

What connection does it have?

Potted: The transducer is strongly secured to the cable at the factory.

Microdot: The transducer is attached using two small screw type connectors, enabling replacement of the cable in case of accidental damage or wear.

All transducers are intelligent; when connected to the MTG or PTG range, the gauge instantly recognises what transducer has been attached.

Selecting the right transducer
Selecting the right transducer for your application is essential to maximise performance.

Ultrasonic NDT Transducers

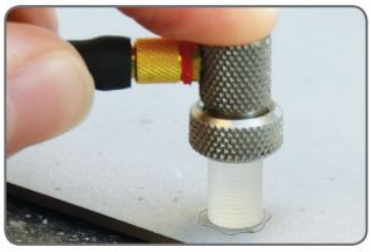
Elcometer

Different materials have different acoustic properties. In some a sound wave can travel easily, in others it is absorbed so achieving an accurate measurement can be difficult. To overcome this it is essential to choose the right frequency and diameter for your material.

High Frequency Transducers

Ideal for precision measurement.

High frequency transducers are ideal for precision measurement because the pulse they emit is highly focused, reducing the risk of return echoes outside of the measurement area. The high frequency and shorter wavelength also lends itself to measuring thin materials.



Available in a number of measurement frequencies

Low Frequency Transducers

Designed for materials that absorb sound.

Low frequency transducers are designed for materials that absorb sound like plastics or composites. The pulse penetrates deeply into the material ensuring a strong return echo and therefore a measurement. This high penetration also means that they are suitable for high material thicknesses.



Diameters and connection types to meet almost all applications

Larger Diameter Transducers

Precise results with better penetration characteristics.

Larger diameter probes feature larger crystals which transmit and receive the sound wave. A large crystal transmitter will produce a larger sound wave and a larger receiving crystal will be more sensitive. As a result, larger transducers tend to have better penetration characteristics than the smaller ones.



Designed to measure material thickness when access is restricted

Smaller Diameter Transducers

Ideal for hard to reach areas.

If this extended range is not required, the smaller transducers can be placed more precisely and in hard to reach areas such as narrow grooves in a material.



Dual and single element transducers available

Elcometer MTG — Material Thickness Transducers



The **MTG Transducer range** has intelligent automatic transducer recognition ensuring correct probe identification even when the transducer is changed.



Disk	Part Number	Probe Diameter	Probe Configuration	Damping*	ThruPaint™	Connector Type: Potted right angle	Connector Type: Microdot	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	Suitable for: MTG4	MTG6	MTG8
	2.25 MHz Dual Element Thickness Transducer																		
●	TXC2M25CP-2	1/4"	Right Angle	S		●		●	●			●					●	●	●
●	TXC2M25EP-2	1/2"	Right Angle	S		●		●	●			●					●	●	●
	3.50 MHz Dual Element Thickness Transducer																		
●	TXC3M50EP-1	1/2"	Right Angle	S		●		●	●			●					●	●	●
	5.00 MHz Dual Element Thickness Transducer																		
●	TXC5M00BP-4	3/16"	Right Angle	S		●				●			●	●			●	●	●
●	TXC5M00CP-4	1/4"	Right Angle	S		●				●			●	●			●	●	●
●	TXC5M00CP-10	1/4"	Right Angle	H	●	●				●			●	●			●	●	●
●	TXC5M00CP-8	1/4"	Hi Temp	S		●				●			●	●			●	●	●
●	TXC5M00EP-3	1/2"	Right Angle	S		●				●			●	●			●	●	●
	7.50 MHz Dual Element Thickness Transducer																		
●	TXC7M50BP-3	3/16"	Right Angle	S		●				●			●	●	●		●	●	●
●	TXC7M50CP-4	1/4"	Right Angle	S		●				●			●	●	●		●	●	●
●	TXC7M50CP-6	1/4"	Right Angle	H	●	●				●			●	●	●		●	●	●
	10.0 MHz Dual Element Thickness Transducer																		
○	TXC10M0BP-1	3/16"	Right Angle	S		●							●		●	●	●	●	●
○	TXC10M0CP-4	1/4"	Right Angle	S		●							●		●	●	●	●	●

Each transducer can be easily identified by the disk on the top.



* Damping: **S** - Standard undamped Transducer, **H** - Highly Damped Transducer
All transducers are supplied with a calibration certificate
To select another transducer from the one supplied with the gauge please remove TXC from the part number

Corrosion Detection Transducers

Elcometer CG

Elcometer offer a complete range of dual element **thickness transducers** for use with the **corrosion detection** gauges.



Suitable for:
CG70
CG100



Disk	Part Number	Probe Diameter	Probe Characteristic	Damping[1]	ThruPaint™	Connector Type: Potted	Microdot	Lemo	Top	Side	End	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	Suitable for: CG70	CG100	FD700+
	1.00 MHz Dual Element Thickness Transducer																						
●	TX1M00EP-2	1/2"	Standard	S		●				●		●	●		●						●	●	●
●	TX1M00EP-3	1/2"	Composite	S		●				●		●	●		●						●	●	●
	2.25 MHz Dual Element Thickness Transducer																						
●	TX2M25CP-2	1/4"	Standard	S		●				●		●	●			●					●	●	●
●	TX2M25CM-2	1/4"	Standard	S			●			●		●	●			●					●	●	●
●	TX2M25EP-2	1/2"	Standard	S		●				●		●	●			●					●	●	●
	5.00 MHz Dual Element Thickness Transducer																						
●	TX5M00BP-4	3/16"	Coating Thickness	CT	●	●				●				●			●	●			●	●	●
●	TX5M00CP-4	1/4"	Standard	S		●				●				●			●	●			●	●	●
●	TX5M00CP-10	1/4"	Standard	H	●	●				●				●			●	●			●	●	●
●	TX5M00CP-6	1/4"	Coating Thickness	CT	●	●				●				●			●	●			●	●	●
●	TX5M00CM-3	1/4"	Coating Thickness	CT	●		●			●				●			●	●			●	●	●
●	TX5M00CM-4	1/4"	Hi Temp[2]	H	●		●		●					●			●	●			●	●	●
●	TX5M00EP-3	1/2"	Standard	S		●				●				●			●	●			●	●	●
	7.50 MHz Dual Element Thickness Transducer																						
●	TX7M50BP-3	3/16"	Coating Thickness	CT	●	●				●				●			●	●	●		●	●	●
●	TX7M50CP-5	1/4"	Coating Thickness	CT	●	●				●				●			●	●	●		●	●	●
●	TX10M0CP-4	1/4"	Standard	S		●				●							●		●	●	●	●	●

Each transducer can be easily identified by the disk on the top.



[1] Damping: **S** - Standard undamped Transducer, **CT** - Damped Coating Thickness Transducer, **H** - Highly Damped Transducer
[2] High temperature probes suitable for measuring 482°C (900°F)

Elcometer UG — Underwater Transducers



Elcometer offer a range of **underwater material and coating thickness transducers** with dual elements, ideal for offshore inspections.



	Part Number	Probe Diameter	Element Type	Probe Characteristic	Damping[1]	Connector Type: ThruPaint™	Potted	Microdot	Lemo - UW[4]	Top	Side	End	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	UG20DL
	3.50 MHz Underwater Transducer																					
●	TX3M50EP-3	1/2"	Dual	Underwater	S	•	•			•			•	•			•					•
	5.00 MHz Underwater Transducer																					
●	TX5M00EP-8	1/2"	Dual	Underwater	S		•			•					•			•	•			•
●	TX5M00EP-9	1/2"	Dual	Underwater - 15m (50ft)	S		•			•					•			•	•			•

Each transducer can be easily identified by the disk on the top.



[1] Damping: **S** - Standard undamped Transducer

[2] Suitable for UG20DL only

Precision Thickness Transducers

Elcometer

When pinpoint accuracy is the key, the Elcometer **Precision Thickness Transducers** allow users to measure with precision.



Suitable for:
PTG6
PTG8



Disk	Part Number	Probe Diameter	Probe Configuration	Damping*	ThruPaint™	Connector Type: Potted right angle	Connector Type: Microdot	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	Suitable for: PTG6	PTG8
	15.0 MHz Single Element Transducer																	
●	TXC15M0CM	1/4"	Right Angle	S			•			•			•		•	•	•	•
	20.0 MHz Single Element Transducer																	
●	TXC20M0CM	1/4"	Right Angle	S			•			•			•		•	•	•	•



Suitable for:
PG70ABDL



Disk	Part Number	Probe Diameter	Element Type	Probe Characteristic	Damping*	Connector Type: ThruPaint™	Potted	Microdot	Lemo	Top	Side	End	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	PG70ABDL
	10.00 MHz Single Element Precision Transducer																					
O	TX10M0BM-1	3/16"	Si/El D/Line Pencil	1/16" Tip	S			•		•					•			•		•	•	•
	15.00 MHz Single Element Precision Transducer																					
●	TX15M0CM	1/4"	Si/El Delay Line	Standard	S			•			•				•			•		•	•	•

Each transducer can be easily identified by the disk on the top.



* Damping: **S** - Standard undamped Transducer

Elcometer FD — Single Element Transducers



Single Element Transducers are the common 0° transducers and are ideal for inspecting large, simple geometry materials.



Disk	Part Number	Probe Diameter	Probe Characteristic	Damping*	Connector Type: Microdot	Lemo	BNC	Top	Side	End	Cast Iron	Suitable for measuring: Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	All Metals	Common Metals	Rough Surfaces	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	Immersion & Bubbler Inspections	FD700+	FD700DL+
	1.00 MHz Single Element Contact Transducers																													
●	TF1M00C-1	1/4"	Finger Tip Composite	S	•				•			•									•									•	•
●	TF1M00E-1	1/2"	Finger Tip Composite	S	•				•			•									•									•	•
	3.50 MHz Single Element Contact Transducers																													
●	TF3M50E-1	1/2"	Finger Tip Composite	S	•				•			•									•									•	•
	5.00 MHz Single Element Contact Transducers																													
●	TF5M00CG-1	1/4"	Finger Tip	HG	•				•			•									•									•	•
●	TF5M00EG-1	1/2"	Finger Tip	HG	•				•			•									•									•	•
●	TX5M00GM	3/4"	Si/El Magnetic	S	•			•												•		•	•	•	•				•	•
	10.00 MHz Single Element Contact Transducers																													
○	TF10M0CG-1	1/4"	Finger Tip	HG	•				•			•									•									•	•
	15.00 MHz Single Element Contact Transducers																													
●	TF15M0AH-1	1/8"	Finger Tip Slim Line	H	•				•			•									•									•	•
	20.00 MHz Single Element Contact Transducers																													
●	TF20M0AH-1	1/8"	Finger Tip Slim Line	H	•				•			•									•									•	•

Each transducer can be easily identified by the disk on the top.



* Damping: **S** - Standard undamped Transducer, **H** - Highly Damped Transducer, **HG** - High Gain Damping Transducers

Shear Wave Transducers

Elcometer FD

Shear Wave Transducers are designed to be used with angle beam wedges for a powerful flaw detection solution. The transducer is secured to the wedge with screws.



Suitable for:
FD700+
FD700DL+





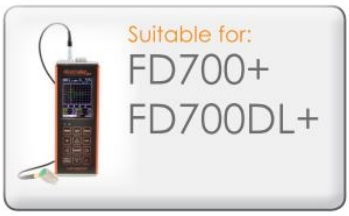
Disk	Part Number	Probe Diameter	Probe Characteristic	Damping*	Microdot	Suitable for measuring: Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	All Metals	Common Metals	Rough Surfaces	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	Immersion & Bubbler Inspections	FD700+	FD700DL+
	1.00MHz Shear Wave - Quick Change Transducers																								
●	TF1M00CG	1/4"	Composite	HG	•																•			•	•
●	TF1M00CR	1/4"	Composite	R	•																•			•	•
●	TF1M00ER	1/2"	Composite	R	•																•			•	•
	2.25 MHz Shear Wave - Quick Change Transducers																								
●	TF2M25CG-4	1/4"	Standard	HG	•																•			•	•
●	TF2M25CR-4	1/4"	Standard	R	•																•			•	•
	5.00 MHz Shear Wave - Quick Change Transducers																								
●	TF5M00CG-4	1/4"	Standard	HG	•																•			•	•
●	TF5M00EG-5	1/2"	Standard	HG	•																•			•	•
●	TF5M00CR-4	1/4"	Standard	R	•																•			•	•
●	TF5M00ER-4	1/2"	Standard	R	•																•			•	•
	10.00 MHz Shear Wave - Quick Change Transducers																								
○	TF10M0CG-4	1/4"	Standard	HG	•																•			•	•
○	TF10M0CR-4	1/4"	Standard	R	•																•			•	•

Each transducer can be easily identified by the disk on the top.



* Damping: **HG** - High Gain Damping Transducers, **R** - Resolution Transducer

Elcometer FD Transducer Wedges



A range of versatile wedges available in 45°, 60° and 70° angles for use with Elcometer shear wave transducers.



Wedge - Standard Quick Change Transducers

Angle beam wedge designed for quick change transducers

Part Number	Probe Diameter	Angle	Suitable for FD700+	Suitable for FD700DL+
Wedge - Standard Quick Change Transducers				
TF9999C45-2	1/4"	45°	•	•
TF9999E45-2	1/2"	45°	•	•
TF9999C60-2	1/4"	60°	•	•
TF9999E60-2	1/2"	60°	•	•
TF9999C70-2	1/4"	70°	•	•
TF9999E70-2	1/2"	70°	•	•

Wedge - Snail Transducers

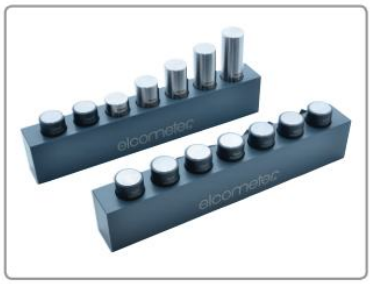
Angle beam wedge meeting American Welding society standards for use with standard shear wave transducers.

Part Number	Probe Diameter	Angle	Suitable for FD700+	Suitable for FD700DL+
Wedge - Snail Transducers				
TF9999FF45-1	5/8 x 5/8"	45°	•	•
TF9999FF60-1	5/8 x 5/8"	60°	•	•
TF9999FF70-1	5/8 x 5/8"	70°	•	•

Calibration Standards

Elcometer NDT

Calibration standards are available as a set or individually, allowing users to select the most appropriate thickness for their application. Elcometer calibration standards are manufactured from 4340 steel to a tolerance of ± 0.1% of the nominal thickness and are supplied complete with calibration certificates.



Part Number	Description
T920CALSTD-SET1	Calibration standard set; Nominal Thickness 2-30mm (0.08-1.18")* Comprising of; 2, 5, 10, 15, 20, 25 & 30mm (0.08, 0.20, 0.39, 0.59, 0.79, 0.98 & 1.18"), complete with holder & calibration certificate.
T920CALSTD-SET2	Calibration standard set; Nominal Thickness 40-100mm (1.57-3.94")* Comprising of; 40, 50, 60, 70, 80, 90 & 100mm (1.57, 1.97, 2.36, 2.76, 3.15, 3.54 & 3.94"), complete with holder & calibration certificate.
T920CALSTD-HLD	Calibration Holder; for thicknesses up to 100mm (3.94").
T920CALSTD-2	Individual Calibration Standard, Nominal Thickness 2mm (0.078")*
T920CALSTD-5	Individual Calibration Standard, Nominal Thickness 5mm (0.196")*
T920CALSTD-10	Individual Calibration Standard, Nominal Thickness 10mm (0.393")*
T920CALSTD-15	Individual Calibration Standard, Nominal Thickness 15mm (0.590")*
T920CALSTD-20	Individual Calibration Standard, Nominal Thickness 20mm (0.787")*
T920CALSTD-25	Individual Calibration Standard, Nominal Thickness 25mm (0.984")*
T920CALSTD-30	Individual Calibration Standard, Nominal Thickness 30mm (1.181")*
T920CALSTD-40	Individual Calibration Standard, Nominal Thickness 40mm (1.574")*
T920CALSTD-50	Individual Calibration Standard, Nominal Thickness 50mm (1.966")*
T920CALSTD-60	Individual Calibration Standard, Nominal Thickness 60mm (2.362")*
T920CALSTD-70	Individual Calibration Standard, Nominal Thickness 70mm (2.755")*
T920CALSTD-80	Individual Calibration Standard, Nominal Thickness 80mm (3.149")*
T920CALSTD-90	Individual Calibration Standard, Nominal Thickness 90mm (3.543")*
T920CALSTD-100	Individual Calibration Standard, Nominal Thickness 100mm (3.937")*

* Imperial values for information purposes only. Calibration standards are manufactured and measured in millimetres.

Elcometer NDT Couplant



Elcometer supplies a viscous gel to work on both horizontal and vertical surfaces.

The temperature range for regular couplant is -15 to 104°C (5 to 220°F).

The Elcometer high temperature gel has a range of up to 398°C (750°F) for use with high temperature transducers, ideal for measuring coatings in high temperature environments where regular couplant would 'melt'.

Technical Specification

Part Number	Description	Suitable for: CG70BDL	CG70ABDL	CG100B	CG100BDL	CG100ABDL	CG100ABDL+	UG20DL	PG70ABDL	FD700+	FD700DL+	BG80DL	BG80TDL
Couplant													
T92015701	Ultrasonic Couplant; 120ml (4fl oz) bottle	•	•	•	•	•	•		•	•	•	•	•
T92015701-5	Ultrasonic Couplant; 120ml (4fl oz) bottle, pack of 5	•	•	•	•	•	•		•	•	•	•	•
T92024034-7	Ultrasonic Couplant; 300ml (10fl oz) bottle	•	•	•	•	•	•		•	•	•	•	•
T92024034-8	Ultrasonic Couplant; 500ml (17fl oz) bottle	•	•	•	•	•	•		•	•	•	•	•
T92024034-3	Ultrasonic Couplant; 3.8l (1 US Gallon)	•	•	•	•	•	•		•	•	•	•	•
TC-24034-6	Underwater Gasket Lubricant, 6g							•					
T92024034-9	Ultrasonic Couplant - high temperature*; 60ml (2fl oz)	•	•	•	•	•	•		•	•	•		
T92024034-10	Ultrasonic Couplant - high temperature*; 60ml (2fl oz), pack of 2	•	•	•	•	•	•		•	•	•		

Accessories

Elcometer NDT

Delay Lines

Part Number	Description	Suitable for: CG70BDL	CG70ABDL	CG100B	CG100BDL	CG100ABDL	CG100ABDL+	UG20DL	PG70ABDL	FD700+	FD700DL+	BG80DL	BG80TDL
TD-24033-1	Cone Tip Delay Line: Acrylic; 1/8"								•	•	•		
TD-24033-2	Cone Tip Delay Line: Acrylic; 3/16"								•	•	•		
TD-24033-3	Cone Tip Delay Line: Graphite; 3/16"								•	•	•		
TD-24033-4	Delay Line Tip (Pencil): Acrylic; 1/16" Dia x 0.45" L								•	•	•		
TD-24033-5	Delay Line Tip (Pencil): Acrylic; 1/8" Dia x 0.45" L								•	•	•		
TD-24033-6	Delay Line Tip: Acrylic; 1/4" Dia x 1/2" L								•	•	•		
TD-24033-7	Delay Line Tip: Acrylic; 1/4" Dia x 3/8" L								•	•	•		
TD-24033-8	Delay Line Tip: Graphite; 1/4"								•	•	•		

Cables & Adaptors

Part Number	Description	Suitable for: CG70BDL	CG70ABDL	CG100B	CG100BDL	CG100ABDL	CG100ABDL+	UG20DL	PG70ABDL	FD700+	FD700DL+	BG80DL	BG80TDL
TL-24030-2	T/Cable: 1.2m (4') Single Lemo 00 to Lemo 00			•	•	•	•		•	•	•		
TL-24030-3	T/Cable: 1.2m (4') Single Lemo 00 to Microdot			•	•	•	•		•	•	•	•	•
TL-24030-9	T/Cable: 1.2m (4') Dual Lemo to M/dot, HT Armoured	•	•										
TL-24030-10	T/Cable: 3m (10') Single Lemo to Microdot											•	•
TL-24030-11	T/Cable: 6m (20') Single Lemo to Microdot Single											•	•
TL-24031	RS232 Cable 1.8m (6'); DB-9 to Lemo	•	•	•	•	•	•	•	•	•	•	•	•
TL-24032	USB to Serial Converter	•	•	•	•	•	•	•	•	•	•	•	•

Accessories

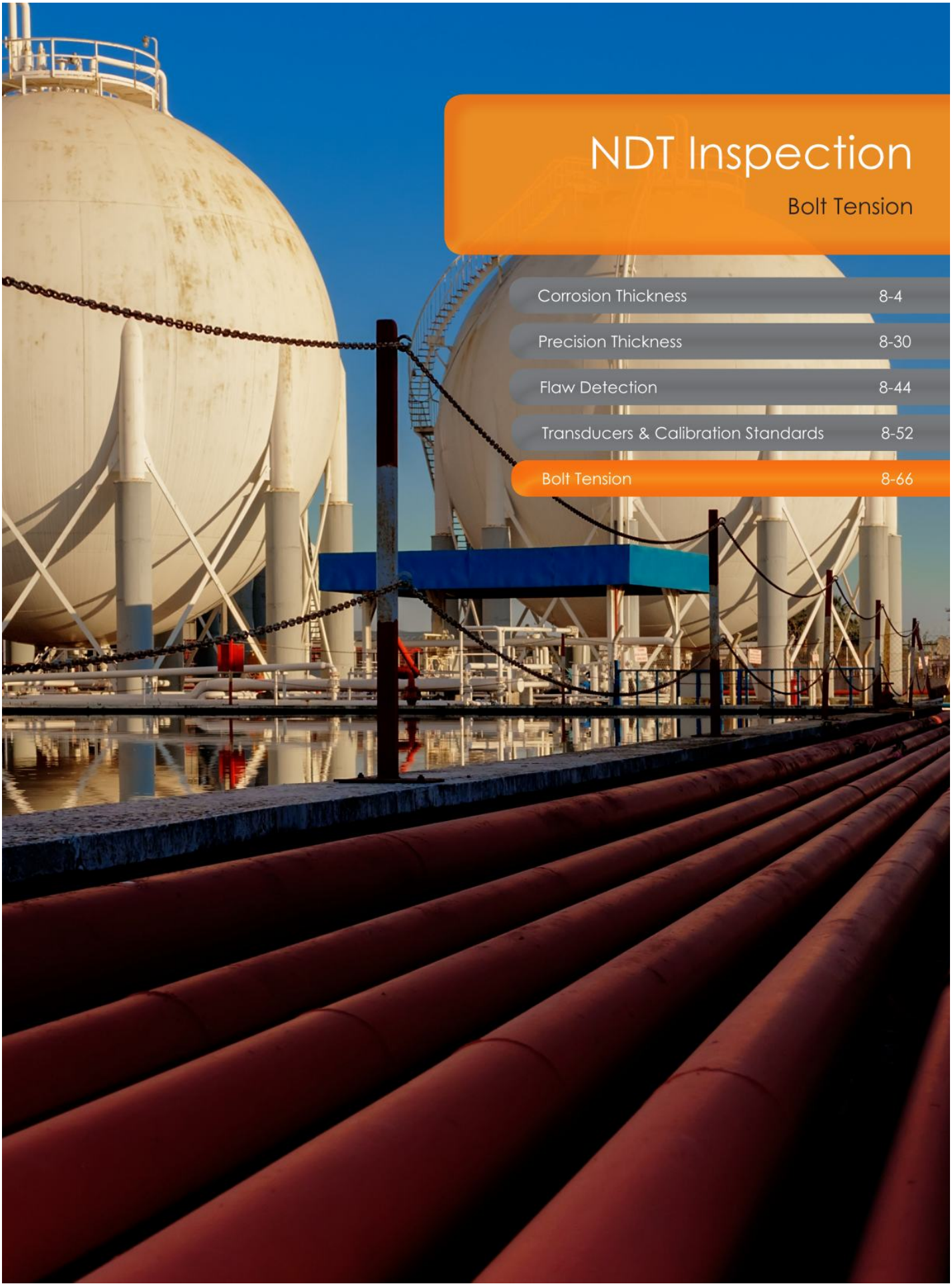
Part Number	Description	Suitable for: CG70BDL	CG70ABDL	CG100B	CG100BDL	CG100ABDL	CG100ABDL+	UG20DL	PG70ABDL	FD700+	FD700DL+	BG80DL	BG80TDL
TZ-24036	Temperature Sensor with 1.8m (6') Cable											•	•

* For use with high temperature transducers up to 398°C (750°F)

Elcometer MTG, PTG Material & Precision Thickness Gauges

Velocity Chart for the preset choice of 39 materials in the Elcometer 304 & 307

Elcometer Material Number	Material Description (Chemical Symbol/ Grouping)	Material Name	Sound Velocity (m/sec)	Sound Velocity (in/µsec)	Source of Value NPL = National Physics Laboratory ASNT = The American Society for Non destructive Testing Industry = Industry knowledge
1	Fe	Iron (soft)	5960	0.235	NPL
2	Fe	Iron Cast	4990	0.196	NPL
3	Al	Aluminium (7075-T6)	6350	0.250	ASNT
4	Ti	Titanium	6100	0.240	ASNT
5	Mg	Magnesium	5790	0.228	ASNT
6	Ni	Nickel	5630	0.222	ASNT
7	W	Tungsten	5180	0.204	ASNT
8	Cu	Copper	4660	0.183	ASNT
9	Zn	Zinc	4190	0.165	NPL
10	Ag	Silver	3600	0.142	Industry
11	Sn	Tin	3380	0.133	NPL
12	Pt	Platinum	3260	0.128	NPL
13	Au	Gold	3240	0.128	NPL
14	Cd	Cadmium	2780	0.109	NPL
15	Bi	Bismuth	2180	0.086	Industry
16	Pb	Lead	2160	0.085	ASNT
17	Cobalt-chromium Alloy	Stellite	6990	0.275	Industry
18	Iron Alloy	Steel (Carbon 1018)	5920	0.233	Industry
19	Iron Alloy	Steel (Alloy 4340)	5850	0.230	Industry
20	Nickle-chromium Alloy	Inconel (625)	5820	0.229	Industry
21	Silver Alloy	Stainless Steel, (Austentic 304)	5660	0.233	ASNT
22	Copper Alloy	Constantan	5180	0.204	NPL
23	Copper-nickel Alloy	German Silver	4760	0.187	Industry
24	Copper-zinc Alloy	Brass (Naval)	4430	0.174	ASNT
25	Non-metal	Glass (Quartz)	5930	0.233	ASNT
26	Non-metal	Glass (Crown)	5660	0.223	NPL
27	Non-metal	Glass (Flint)	5260	0.207	NPL
28	Non-metal	Porcelain	5840	0.230	Industry
29	Non-metal	Plexiglas	2760	0.109	Industry
30	Non-metal	Glass Fibre	2740	0.108	Industry
31	Non-metal	Nylon	2680	0.106	NPL
32	Non-metal	Epoxy Resin	2540	0.100	Industry
33	Non-metal	Polystyrene	2350	0.093	NPL
34	Non-metal	PVC	2330	0.092	NPL
35	Non-metal	Rubber (Butyl)	1830	0.072	Industry
36	Non-metal	Rubber (Natural)	1600	0.063	NPL
37	Non-metal	Polyurethane	1780	0.070	Industry
38	Non-metal	Teflon	1400	0.055	NPL
39	Non-metal	Water	1490	0.059	ASNT



NDT Inspection

Bolt Tension

Corrosion Thickness 8-4

Precision Thickness 8-30

Flaw Detection 8-44

Transducers & Calibration Standards 8-52

Bolt Tension 8-66

Elcometer BG80 Bolt Tension Monitor

The **Elcometer BG80** accurately measures elongation allowing the gauges to accurately measure time (nanoseconds), elongation, load, stress, and %strain of the bolt.



Bolt Tension Monitor

Elcometer BG80

The BG80 series are tension monitors that measure the change in length of a fastener when a load is applied to the fastener.

Within the elastic limit of the fastener, the change of length is proportional to the load applied, and therefore by measuring the change of length and knowing the physical properties of the fastener, the load on the fastener can be calculated.

Intelligent

User definable limits for pass/fail indication.

Set limits for pass/fail indication on individual reading or for each batch with audible & visual warnings.

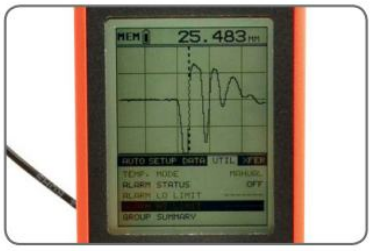


Up to 8,000 readings can be saved into the gauge memory

Customisable

Choose & customise the reading display.

With a choice of display and measurement modes, the user can select the most appropriate option for their needs; Elongation, Load, Stress, and %Strain, RF, Rectified, Large Digits with Limits Bar.



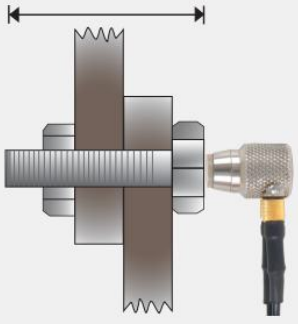
Set limits for audible and visual pass/fail indication

How do Bolt Tension Monitors work?

As a fastener is tightened it stretches (elongates) in length.

Manual torque wrenches measure the force applied when tightening a fastener, the accuracy can be affected by temperature, friction and resistance.

As BG80 & BG80TDL ultrasonically measures the change in length accurately determining the applied load of a fastener as it is tightened, they are not affected by these factors.



Elcometer BG80 Bolt Tension Monitor

Product Features

Display Mode	
Material thickness digits display	■
Measurement Mode	PE & PE with Gate
Measurement Rate	
Manual	4 readings per second
Limit Alarm Mode	■
Data logging	8,000 readings
Calibration Options	fixed, single & 2 point
Transducer Probe Type	single element
Transducer Frequency Range	1 - 10MHz
Display	1/8" VGA
Units (selectable)	mm or inches
LED Backlight	on / off / auto
Repeatability / Stability Indicator	■
Low Battery Indicator	■
Battery Save Mode	auto
Transducer Connector Type	LEMO
RS232 Interface	■

Technical Specification

Part Number	Description	Certificate
BG80TDL	Elcometer BG80TDL Bolt Tension Monitor	○
Transducer Probe Type	Single Element	
Measurement Range[1]		
Pulsed Echo (PE)	25.4 - 2440mm (1 - 96")	
Measurement Accuracy[1]	± 1% or ±0.1mm whichever is the greater	
Resolution	0.001mm (0.0001") or 0.0001mm (0.00001") switchable	
Reading Rate	4Hz (4 readings per second)	
Operating Temperature	-10 to 60ºC (14 to 140ºF)	
Data Output	RS232	
Power Supply	3 x AA batteries	
Battery Life[2]	150 hours	
Gauge Weight	383g (13.5oz) - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm (2.5 x 6.5 x 1.24")	
Packing List	Elcometer NDT BG80DL gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, DakView software, RS232/DB9 & USB/DB9 transfer cable	

[1] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[2] Approximate battery life, when in continuous Reading Mode at a reading rate of 4Hz. Rechargeable batteries may differ.

○ Test Certificate supplied as standard.

Bolt Tension Monitor Transducers

Elcometer BG80

Elcometer offer a full range of **Bolt Tension Monitor Transducers** to ultrasonically measure the actual elongation produced by tightening a threaded fastener.





Disk	Part Number	Probe Diameter	Element Type	Probe Characteristic	Damping*	Connector Type: Potted	Microdot	Lemo	Top	Side	End	Suitable for measuring: All Metals	Common Metals	Rough Surfaces	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	Immersion & Bubbler Inspections	Suitable for: BG80DL	BG80TDL
	5.00 MHz Bolt Gauge Transducers																					
●	TX5M00AM-3	1/8"	Si/El Magnetic	Standard	S		•		•			•									•	•
●	TX5M00CM-8	1/4"	Si/El Magnetic	Standard	S		•		•			•									•	•
●	TX5M00DM	3/8"	Si/El Magnetic	Standard	S		•		•			•									•	•
●	TX5M00EM-7	1/2"	Si/El Magnetic	Standard	S		•		•			•									•	•
	10.00 MHz Bolt Gauge Transducers																					
○	TX10M0AM-3	1/8"	Si/El Magnetic	Standard	S		•		•			•									•	•
○	TX10M0CM-5	1/4"	Si/El Magnetic	Standard	S		•		•			•									•	•

Each transducer can be easily identified by the disk on the top.



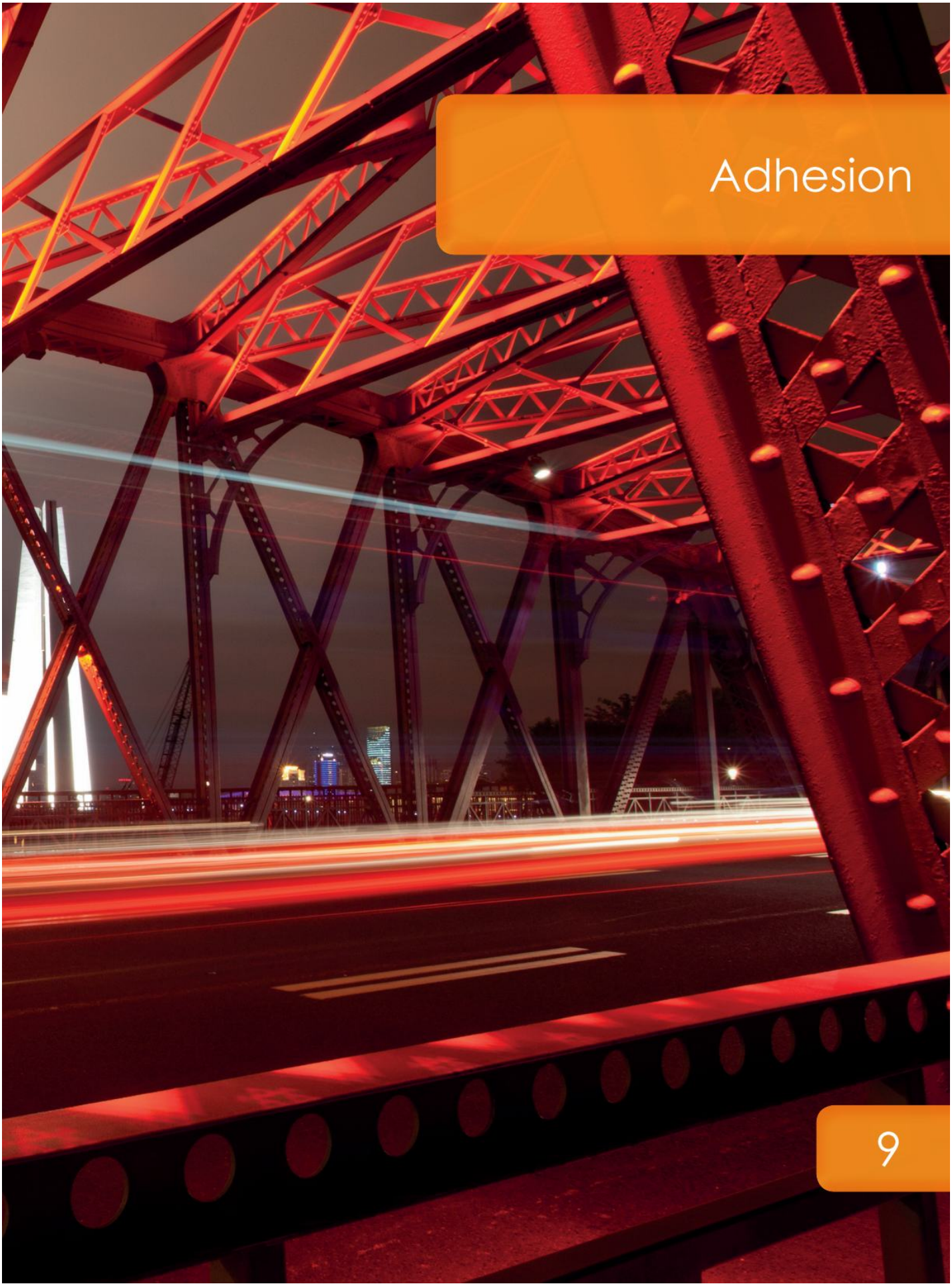
For couplant for Elcometer Transducers see page 8-62.



* Damping: **S** - Standard undamped Transducer

Notes


elcometer
Measure
PINHOLE &
POROSITY
Make holiday detection safer, easier and more reliable with the Elcometer 280 Holiday Detector.
See page 10-5



Adhesion

9

Adhesion



From the largest man-made structures to the smallest household appliances, most manufactured products have a protective or cosmetic coating. Premature failure of this coating can, at the very least, result in additional costs of rework.

Adhesion testing after the coating process will quantify the strength of the bond between substrate and coating, or between different coating layers or the cohesive strength of some substrates. Routine testing is used as part of inspection and maintenance procedures to help detect potential coating failures.

Adhesion Methods

Pull-Off Adhesion: simple to use, quantitative range giving a definitive adhesion value, ideal for the laboratory or field on flat or curved substrate applications. Tensile Dollies (or stubs) are glued to the coating and, when the adhesive has cured, the force required to pull the coating off the surface is measured.

Push Off Adhesion: a dolly is adhered to the coating. When the adhesive has cured, the dolly is pushed off the surface by the adhesion tester. The push-off design makes this method ideal for flat and curved surfaces.

Cross Hatch/Cross Cut: a fast, low cost, visual comparison method for paint and powder coatings up to a thickness of 250µm (10mils). The coating is cut into small squares, thereby reducing lateral bonding, and the adhesion assessed against ISO, ASTM or Corporate Standards.

When selecting an adhesion gauge, it is important to use the same inspection test methods throughout the inspection to ensure accurate comparisons.

Automatic Pull-Off Adhesion Gauge

Elcometer 510

The **Elcometer 510** Automatic Pull-Off Adhesion Gauge accurately measures the strength of the bond between the coating and the substrate.

Automatic hydraulic pump ensures smooth and continuous pressure application for consistent, repeatable results

Fully adjustable pull rates 0.1-1.4MPa/s (15-203psi) to meet National and International Standards

Store up to 60,000 readings with individual pull graphs in up to 2,500 alpha numerical batches, complete with attribute failure information

Hand-held, waterproof rugged design equivalent to IP64



User definable measurement range with an accuracy of ±1% of full scale:
10mm dolly: 100MPa / 14400psi
14.2mm dolly: 50MPa / 7200psi
20mm dolly: 25MPa / 3600psi
50mm dolly: 4MPa / 580psi

10, 14.2, 20 and 50mm diameter dolly options

User definable limits with unique pressure hold and release function

Intuitive & easy to use menu structure in multiple languages

STANDARDS:

ASTM C1583, ASTM D4541, ASTM D7234-12, AS/NZS 1580.408.5, BS 1881-207, DIN 1048-2, EN 1015-12, EN 12636, EN 13144, EN 1542, EN 24624, ISO 16276-1, ISO 4624, JIS K 5600 5-7, NF T30-606, NF T30-062

Elcometer 510 — Automatic Pull-Off Adhesion Gauge



Range of reusable dollies

Efficient

- Ideal for laboratory and field use
- 10, 14.2, 20 and 50mm (0.39, 0.56, 0.76 & 1.96") diameter reusable dollies
- Compatible with ElcoMaster® Software and ElcoMaster® Mobile App
- Measures on small, curved and flat surfaces



USB and Bluetooth® data output, compatible with ElcoMaster® Software

Powerful

- Suitable for use on metal, wood, concrete and other substrates
- Smooth load application up to 100MPa (14400psi)
- USB and Bluetooth® data output to iOS† or Android™ devices
- Stores up to 60,000 readings in 2,500 batches



Sealed, heavy duty and impact resistant.

Durable

- Sealed, heavy duty and impact resistant
- Dust and waterproof equivalent to IP64
- Suitable for use in harsh environments



An accuracy of ±1% of full scale

Accurate

- Measurement range up to 100MPa (14400psi) with an accuracy of ±1% of full scale
- Can be used in accordance with National & International Standards

Suitable for use in Cloud Computing

2 YEAR* WARRANTY

* The Elcometer 510 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

† Compatible with iPod, iPhone and iPad.

Automatic Pull-Off Adhesion Gauge

Elcometer 510

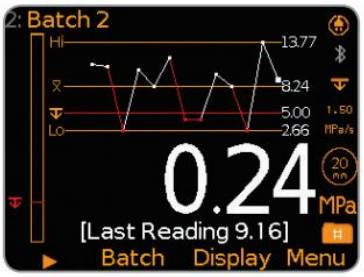
Key Features

Selectable Pull Rates



Automatic adhesion tester with selectable pull rates for 10, 14.2, 20 & 50mm diameter dollies.

Graphs & Statistics



View trend graphs or live statistics alongside the reading value.

Pull Rate Graphs



Individual user definable pull rate graphs can be saved with each reading.

Memory



Stores individual readings and pull rate graphs in up to 2,500 alpha numeric batches, together with date, time and attribute information.

Limits



Either pull to maximum or pull to preset limit. Unique time hold feature allows users to set a delay before pressure returns to zero.

Failure Attributes



Save cohesive and adhesive failure attributes alongside your adhesion pull data in accordance with National and International Standards.

Testing Coatings on Low Bond Strength Substrates

When testing coatings on low bond strength substrates such as concrete, wood or other fibrous materials, a larger surface area of dolly (50mm) is required to provide accurate, repeatable and reproducible results.

The Elcometer 510 is available as a Concrete Adhesion Tester Kit, or 50mm concrete accessory items (skirt, dolly, cutter) can be added to existing Elcometer 510 pull-off adhesion kits.



Elcometer 510 Automatic Pull-Off Adhesion Gauge

Key Features

Long Battery Life



Powered by either standard rechargeable batteries or AC mains*. Each battery charge performs up to 200 pulls. Battery recharge time <300 minutes.

Robust Case



Supplied in a robust plastic carry case for easy transportation to and around the job site.

Anchor Clamp



The optional magnetic anchor clamp ensures the actuator doesn't fall during tests on vertical surfaces or testing at height.

Range of Dollies



A range of interchangeable substrate skirt adaptors allow each gauge to be used with 10, 14.2, 20 or 50mm diameter reusable dollies, ideal for testing coatings on thin, thick, flat or convex substrates.

Wireless



Using wireless Bluetooth® communication link the gauge to an Android™ or iPhone mobile device. Live GPS coordinates from your mobile device can be added to reports and emailed instantly.

Data Management



Transfer data to your PC via USB or Bluetooth® for further analysis with ElcoMaster® software or view live pull rate graphs in ElcoMaster® Software during the test.

Adhesion Verification Unit for Verification in the Field



The Elcometer 510 gauge's inbuilt Adhesion Verification feature allows users to connect the gauge to the Elcometer AVU to verify gauge accuracy in the field.

See page 9-24 for more information.



* Model T only.

Automatic Pull-Off Adhesion Gauge

Elcometer 510

Assessing The Results - Failure Attributes

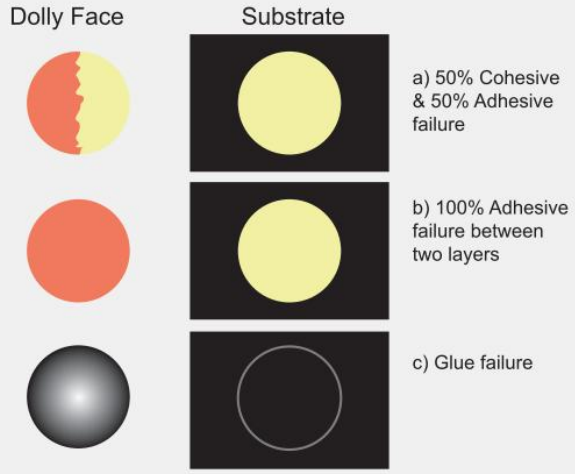
Many National and International Standards, including ISO 4624 & ASTM D4541, require the user to record not only the pull-off force but also the nature of the failure. This is done by examining the bottom of the dolly and assessing the failure. In 'Advanced' Mode on the Elcometer 510 it is possible to select the 'Attributes' feature (Menu/Set up/Gauge Mode/Advanced) allowing the nature of the fracture to be recorded against each reading and stored within the batch.

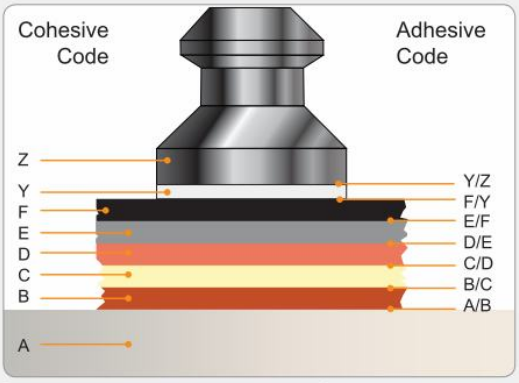
Examining The Dolly

a) Cohesive Failure: The coating fails within the body of a coating layer leaving the same coating on the surface and on the dolly face.

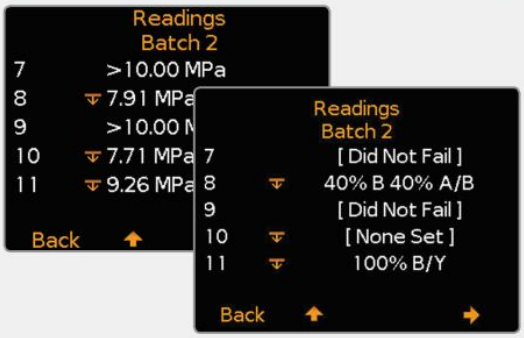
b) Adhesive Failure: Failure occurs at the interface between layers (intercoat) where one pulls away from the other. The "coating" on the dolly face will not be the same as that on the test area.

c) Glue Failure: When no coating is present on the dolly it must be recorded as a failure of the glue. This may be due to incorrect or insufficient mixing of the component parts of the adhesive, incompatibility between the adhesive/coating/dolly/test surface.





Cohesive Failure Layer[1]		Adhesive Failure Layers	
Code	Description	Code	Description
A	Substrate	A/B	Substrate & Layer 1
B	Layer 1	B/C	Layer 1 & Layer 2
C	Layer 2	C/D	Layer 2 & Layer 3
D	Layer 3	D/E	Layer 3 & Layer 4
E	Layer 4	E/F	Layer 4 & Layer 5
F	Layer 5	F/Y	Layer 5 & Glue
Y	Glue	Y/Z	Glue & Dolly



The data is saved in the batch and can be viewed at any time displayed as

##.## MPa[2] **N% A, M% A/B**, where;

##.## MPa[2]	= Pull Force in MPa or other measurement units (psi, Newtons or Nmm^{-2})
N%	= Cohesive failure percentage[3]
A	= Cohesive failure layer
M%	= Adhesion failure percentage[3]
A/B	= Intercoat adhesive failure layers

[1] The number of layers can be user defined for each batch via Batch/New Batch/Number of Layers. This will affect the number of layers available for selection during attribute recording. The maximum number of layers available is five, excluding the substrate and glue.

[2] Or equivalent units. [3] To the nearest 10%, in line with International Standards.

Elcometer 510 Automatic Pull-Off Adhesion Gauge

Create instant reports with ElcoMaster® Software

What you do with the collected data is just as important as taking the readings themselves.

ElcoMaster® Software is a fast, easy to use software solution for all your data management and quality assurance needs, preparing professional inspection reports at the click of a button.



Whether you are out in the field or on the factory floor, using the ElcoMaster® Software Mobile App users can;

- Store live readings directly on to a mobile device and save them into batches.
- View the pull rate graph in real-time for the duration of the test.
- Add attribute data to each individual batch reading.
- Add photographs of the dolly and test surface to each individual batch reading at the click of a button.
- Plot individual readings on to a location map, photograph or diagram.
- Inspection data can be transferred from mobile to PC for further analysis and reporting.
- Generate instant .pdf report for submission.

Combine different inspection parameters (such as dry film thickness, surface profile, salt contamination, climate or adhesion) together with images, notes and other project specific information into customised reports.

Data transferred from the gauge to ElcoMaster® Software includes;

- Adhesion Measurements
- Date & Time
- Cohesive/Adhesive Failure Attributes
- Dolly size
- Pull rate graph
- Pull to Limit/Max
- Limit values
- Limit Hold Time
- Cutting Device
- Number of Layers
- Skirt Type/Support Ring Dimensions
- Batch Information & Statistics
- Calibration Information
- Calibration Verification Date/Time



Automatic Pull-Off Adhesion Gauge

Elcometer 510

Product Features

	Model S	Model T
Repeatable & reproducible measurements	■	■
Easy to use menu structure; *in multiple languages*	■	■
Tough, impact, waterproof & dust resistant; *equivalent to IP64*	■	■
Bright LCD colour screen; *with ambient light sensor*	■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*	■	■
Calibration certificate	■	■
2 year gauge warranty[1]	■	■
Automatic rotating display; *0°, 180°*	■	■
Data output via USB (Live readings - and batch)	■	■
Data output via Bluetooth®		■
PC command; *start & stop gauge from a PC with live readings (USB only)*		■
Switchable Units (MPa, psi, N, Nmm^{-2})	■	■
On-Screen Statistics (*η, x, σ, Hi, Lo, CV%, N>hi limit*[2])	■	■
Pull Rate Indicator	■	■
Trend Graph	■	■
Pull Rate Graph *(Load v Time)*		■
Interchangeable Dolly Selection; *10, 14.2, 20 & 50mm*	■	■
User Selectable Pull Rates; (Model S & Model T Standard Mode) *10mm: 1.00, 2.00, 3.00, 4.00, 5.00 MPa/s 125, 200, 400, 600, 725psi/s* *14.2mm: 0.4, 0.7, 1.4, 2.0, 2.5 MPa/s 60, 100, 200, 300, 360psi/s* *20mm: 0.2, 0.3, 0.7, 1.0, 1.2 MPa/s 30, 50, 100, 150, 180psi/s* *50mm: 0.04, 0.08, 0.12, 0.16, 0.20 MPa/s 5, 8, 16, 24, 30psi/s*	■	■
User Selectable Pull Rates; (Model T Advanced Mode) *10mm: 0.40 - 5.60 MPa/s 58 - 812psi/s in 0.1MPa / 1psi steps* *14.2mm: 0.20 - 2.80 MPa/s 29 - 403psi/s in 0.1MPa / 1psi steps* *20mm: 0.10 - 1.40 MPa/s 15 - 203psi/s in 0.1MPa / 1psi steps* *50mm: 0.02 - 0.22 MPa/s 2 - 32psi/s in 0.01MPa / 0.1psi steps*		■
User Selectable Limit & Limit Hold Time		■
Gauge Memory; *maximum number of readings*	60	60,000[3]
Number of Batches *(Alpha Numeric - Model T)*	1	2,500
Attribute Modes to meet National & International Standards		■
Display Modes		
Readings, Selected Stats & Run Chart (last 20 readings)	■	■
Pull Rate Graphs		■
Batch Review		■
Power; *Battery (B), AC Mains Power (M)*	B	B, M
USB Cable & ElcoMaster® Software CD	■	■
Power Cable with Multi International Plug Adaptor *(UK, EU, US, AUS)*		■
Plastic Transit Case	■	■
Date & Time		■
In Field Adhesion Calibration Verification Mode	■	■

[1] The Elcometer 510 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. [2] Model T only. [3] When 'Rate Graph' is enabled, the number of readings which can be stored depends on the graph resolution selected.

Elcometer 510 Automatic Pull-Off Adhesion Gauge

Technical Specification

Part Number	Description			Certificate
F510-20S	Elcometer 510 Model S Automatic Adhesion Gauge; 20mm Kit			•
F510-20T	Elcometer 510 Model T Automatic Adhesion Gauge; 20mm Kit			•
F510-50S	Elcometer 510 Model S Automatic Adhesion Gauge; 50mm Concrete Kit			•
F510-50T	Elcometer 510 Model T Automatic Adhesion Gauge; 50mm Concrete Kit			•
Pressure Accuracy	±1% of full scale	Pull Rate Accuracy	±(2.5% + 0.3 seconds)	
Pressure Resolution	0.01MPa (1psi)	Pull Rate Resolution	0.01MPa/s (1psi/s)	
Dolly Diameter	**10mm (0.39")**	**14.2mm (0.56")**	**20mm (0.76")**	**50mm (1.96")**
Operating Range	8 - 100 MPa (1200 - 14400psi)	4 - 50 MPa (600 - 7200psi)	2 - 25 MPa (300 - 3600psi)	0.3 - 4 MPa (50 - 580psi)
Pull Rate Range	0.4 - 5.6MPa/s (58 - 812psi/s)	0.2 - 2.8MPa/s (29 - 403psi/s)	0.1 - 1.4MPa/s (15 - 203psi/s)	0.02 - 0.22MPa/s (2 - 32psi/s)
Gauge Dimensions	260 x 100 x 66mm (6.3 x 3.9 x 2.6")			
Actuator Height[1]	85mm (3.4")	85mm (3.4")	85mm (3.4")	110mm (4.3")
Instrument Weight[1]	2.9kg (6.4lb)	2.9kg (6.4lb)	2.9kg (6.4lb)	3.1kg (8.3lb)
Kit Weight	-	-	6.1kg (13.5lb)	7.3kg (16.1lb)
Power Supply	8x AA batteries (16 rechargeable batteries supplied complete with charger) or AC mains power (Model T only)			
Battery Life	~200 pulls per charge up to 25MPa (3600psi) at 1MPa/s (150psi/s), recharge time <5 hours			
Packing List: 20mm Kit	Elcometer 510 Adhesion Tester with 20mm dollies (x10), standard skirt for 20mm dollies, 20mm dolly cutter handle, 20mm dolly cutter, Araldite standard two part epoxy adhesive (2x 15ml tubes), abrasive pad, shoulder harness, carry case, 16x AA NiMH rechargeable batteries & charger (UK, EU, US, AUS), mains power supply (UK, EU, US, AUS) (Model T), ElcoMaster® Software CD & USB cable, calibration certificate and operating instructions.			
Packing List: 50mm Kit	Elcometer 510 Adhesion Tester with 50mm dollies (x6), standard skirt for 50mm dollies, 50mm dolly cutter arbor, 50mm dolly cutter, Araldite standard two part epoxy adhesive (2x 15ml tubes), abrasive pad, shoulder harness, carry case, 16x AA NiMH rechargeable batteries & charger (UK, EU, US, AUS), mains power supply (UK, EU, US, AUS) (Model T), ElcoMaster® Software CD & USB cable, calibration certificate and operating instructions.			

Accessories

Dolly Diameter	Pack of 10[2]	Pack of 100	Standard Skirt	Thin Substrate Skirt	Cutter Handle/ Arbor	Dolly Cutter
10mm (0.39")	T5100010AL-10	T5100010AL-100	T9991420S	-	-	-
14.2mm (0.56")	T9990014AL-10	T9990014AL-100	T9991420S	T9990014T	T9991420H	T9990014CT
20mm (0.76")	T9990020AL-10	T9990020AL-100	T9991420S	T9990020T	T9991420H	T9990020CT
50mm (1.96")	T9990050AL-4	-	T9990050S	-	T9990050H	T9990050CT
50mm (1.96") Stainless Steel	T9990050SS-4	-	T9990050S	-	T9990050H	T9990050CT

Part Number	Description
T99923797	Magnetic Anchor Clamp - holds actuator securely during tests on vertical surfaces
T99912906	Araldite Standard Two Part Epoxy Adhesive, 2x 15ml Tubes
T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99923103	Dolly Cleaning Heating Tongs - US 110V

• Calibration Certificate supplied as standard. [1] Including Actuator with Standard Skirt fitted. [2] 50mm (2") dollies are supplied in packs of 4.

Automatic Pull-Off Adhesion Gauge

Elcometer 510

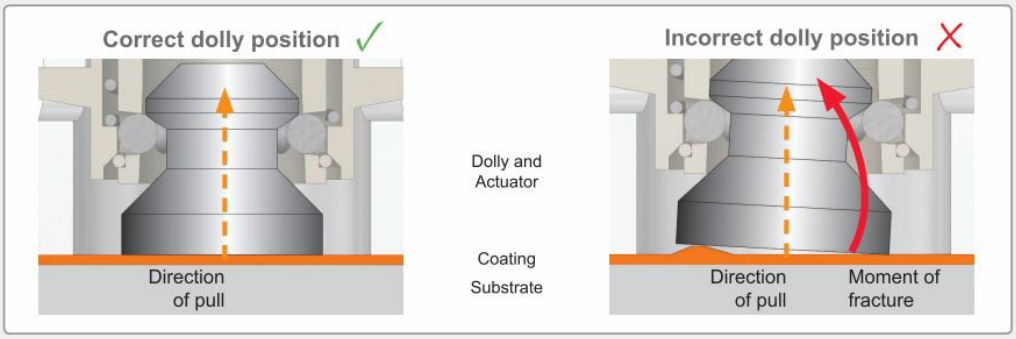
Pull-Off Adhesion Tests - Preventing Adhesive and Cohesive Failures

Preparing the surface and dolly

1. Select an appropriate test area which is flat and has sufficient area to attach the adhesion gauge.
2. Abrade the dolly and surface, clean both to remove any dust - minimising the risk of an 'adhesive' failure.

Fixing the dolly

3. Mix the adhesive correctly and apply a uniform adhesive film over the entire dolly face.
4. Test Standards require that the dolly is pulled off perpendicularly to the test surface. The dolly must therefore be adhered on to a prepared flat test surface (see images below). Apply an even pressure to the dolly to ensure that the dolly face is parallel to the test surface.
5. Remove any excess adhesive from around the dolly and allow to fully cure. Tape may be required when applying dollies to vertical surfaces during the cure process.
6. If required, once the dolly has fully cured, score the coating around the dolly using the dolly cutter provided.
7. Attach the gauge actuator to the dolly and begin test.



Assessment of the Adhesion Test

For a valid pull test the coating must cover at least 50% of the area of the dolly face. If the glue fails and no coating is present on the dolly, or it covers less than 50% of the dolly face area, the pull-test is invalid and should be repeated.

When the coating has failed within the layer leaving the same coating on both the dolly and the test panel it is known as a *'cohesive failure'*.

'Adhesive failures' occur when either the coating has failed at the interface with another coating (leaving a coating on the dolly and another coating on the substrate), or when the coating has failed at the substrate (leaving the coating on the dolly and the substrate bare).

NOTE: If the glue fails at a value above the specification then it can be reported that the adhesion exceeded the specification for this individual test.

Coating Adhesion Testing on Concrete




Adhesive Failure


Partial Coating Failure


Coating Failure


Concrete Failure

Elcometer 506 Pull-Off Adhesion Tester

The **Elcometer 506** Pull-Off Adhesion Testers allow the user to accurately measure the strength of the bond between the coating and the substrate.

STANDARDS:
ASTM D4541, ASTM D7234, AS/NZS 1580.408.5, BS 1881-207, DIN 1048-2, EN 12636, EN 13144, EN 1542, EN 24624, ISO 16276-1, ISO 4624, JIS K 5600-5-7, NF T30-606, NF T30-062



Hand-held, ergonomic and fully portable - ideal for on-site adhesion testing

Measurement range up to 50MPa (7250psi) with an accuracy of ±1% of full scale

Rotating crank handle applies an even uniform load up to 50MPa (7250psi)

Quick connect coupling for 14.2, 20 and 50mm diameter dollies

2 YEAR* WARRANTY

Pull-Off Adhesion Tester

Elcometer 506

Powerful

- Suitable for use on metal, wood, concrete and other substrates
- Rugged & lightweight - ideal for frequent testing
- Smooth load application up to 50MPa (7250psi)



Digital and analogue gauges available for harsh and hazardous environments

Flexible

- Easy to use hand-held design
- Ideal for laboratory and field use
- 14.2, 20 and 50mm (0.56, 0.76 & 1.96") diameter reusable dollies
- Measures on small, curved and flat surfaces



Safety harness clip prevents accidental damage of surrounding areas during test on vertical surfaces

Accurate

- Measurement range up to 50MPa (7250psi) with an accuracy of ±1% of full scale



Actuator skirts for a range of substrate thicknesses and bond strengths, on flat or curved surfaces

Durable

- Sealed, heavy duty and impact resistant
- Dust and waterproof equivalent to IP65
- Suitable for use in harsh environments



Sealed, heavy duty and impact resistant

* The Elcometer 506 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

Elcometer 506 Pull-Off Adhesion Tester

Technical Specification

Part Number	Description	Certificate
F506-20A	Elcometer 506 Analogue Adhesion Tester Kit; 20mm	●
F506-20AC	Elcometer 506 Analogue Adhesion Tester Kit; 20mm - Certified	○
F506-20D	Elcometer 506 Digital Adhesion Tester Kit; 20mm	●
F506-20DC	Elcometer 506 Digital Adhesion Tester Kit; 20mm - Certified	○
F506-50D	Elcometer 506 Digital Adhesion Tester Kit; 50mm	●
F506-50DC	Elcometer 506 Digital Adhesion Tester Kit; 50mm - Certified	○

Accuracy	±1% of full scale		
Pressure Rating	26MPa (3800psi)		
	14.2mm (0.56") Dolly	**20mm (0.76") Dolly**	**50mm (1.96") Dolly**
Operating Range	4 - 50MPa (600 - 7200psi)	2 - 25MPa (300 - 3600psi)	0.3 - 4MPa (50 - 580psi)
Scale Resolution	Analogue: 0.1MPa (10psi) Digital: 0.01MPa (1psi)	Analogue: 0.1MPa (10psi) Digital: 0.01MPa (1psi)	Analogue: 0.05MPa (5psi) Digital:0.01MPa (1psi)
Instrument Length	290mm (11.5")	290mm (11.5")	290mm (11.5")
Actuator Height (skirt fitted)	85mm (3.4")	85mm (3.4")	110mm (4.3")
Instrument Weight	1.8kg (4lb)	1.8kg (4lb)	2.0kg (4.4lb)
Kit Weight	4kg (8.8lb)	4kg (8.8lb)	5.2kg (11.5lb)
Battery Type	2x AA batteries (digital gauge only)		Battery Life: 2000 hours
Packing List:			
20mm Kit	Elcometer 506 Adhesion Tester with 20mm dollies (x10), standard skirt for 20mm dollies, 20mm dolly cutter handle, 20mm dolly cutter, Araldite standard two part epoxy adhesive (2x 15ml tubes), abrasive pad, carry case, 2x LR6 (AA) batteries (Digital Gauge only), test certificate and operating instructions.		
50mm Kit	Elcometer 506 Adhesion Tester with 50mm dollies (x6), standard skirt for 50mm dollies, 50mm dolly cutter arbor, 50mm dolly cutter, Araldite standard two part epoxy adhesive (2x 15ml tubes), abrasive pad, carry case, 2x LR6 (AA) batteries (Digital Gauge only), test certificate and operating instructions.		

Accessories

Dolly Diameter	Pack of 10[1]	Pack of 100	Standard Skirt	Thin Substrate Skirt	Dolly Cutter Handle	Dolly Cutter
14.2mm (0.56")	T9990014AL-10	T9990014AL-100	T9991420S	T9990014T	T9991420H	T9990014CT
20mm (0.76")	T9990020AL-10	T9990020AL-100	T9991420S	T9990020T	T9991420H	T9990020CT
50mm (1.96")	T9990050AL-4	-	T9990050S	-	T9990050H	T9990050CT
50mm (1.96") Stainless Steel	T9990050SS-4	-	T9990050S	-	T9990050H	T9990050CT

Part Number	Description
T99923797	Magnetic Anchor Clamp - holds actuator securely during tests on vertical surfaces
T99912906	Araldite Standard Two Part Epoxy Adhesive, 2x 15ml Tubes
T99923924	Elcometer AVU Adhesion Verification Unit - see page 9-24 for further information
T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99923103	Dolly Cleaning Heating Tongs - US 110V

The Elcometer 506 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com. ● Test Certificate supplied as standard. ○ Calibration Certificate supplied as standard. [1] 50mm (2") dollies are supplied in packs of 4.

Pull-Off Adhesion Tester

Elcometer 106

The Elcometer 106 Adhesion Tester is easy to operate and is a fully portable Type II adhesion gauge which provides a numerical value for adhesion strength.

Hand-held, ergonomic and fully portable - ideal for on-site adhesion testing

Rotating handwheel applies an even uniform load up to 22MPa (3200psi)

Quick connect coupling for 20 and 40mm diameter dollies

Available in 5 scale ranges to test the adhesion on coatings on a variety of substrates



STANDARDS:

AS 1580.408.5, ASTM D 4541, AS/NZS 1580.408.5, EN 13144, EN 24624, ISO 4624, ISO 16276-1, JIS K 5600-5-7, NF T30-062, NF T30-606

Elcometer 106 Pull-Off Adhesion Tester



Applications include paint or plasma spray on bridge decking, coatings on steel, aluminium, concrete etc.

- Supplied in a carry case - ideal for site tests
- Hand operated - no power supply necessary
- Includes a cutter for EN13144 and ISO 4624 tests

Technical Specification

Part Number	Description	Range MPa (N/mm²)	Range kg/cm²	Range psi	Certificate
F106----5	Elcometer 106 Adhesion Tester - Scale 5	0 - 0.2	0 - 2	0 - 30	○
F106----1	Elcometer 106 Adhesion Tester - Scale 1	0 - 3.5	0 - 35	0 - 500	○
F106----2	Elcometer 106 Adhesion Tester - Scale 2	0 - 7.0	0 - 70	0 - 1000	○
F106----3	Elcometer 106 Adhesion Tester - Scale 3	0 - 15	0 - 150	0 - 2000	○
F106----4	Elcometer 106 Adhesion Tester - Scale 4	0 - 22	0 - 220	0 - 3200	○
Dimensions	Scales 1, 2, 5: 175 x 76mm (7 x 3") Scales 3 and 4: 185 x 76mm (7.5 x 3")				
Dolly Diameter	20mm (0.76")	Dolly Area	314mm² (0.49sq inch)		
Gross weight of Kit	Scale 1, 2 and 5: 2.8kg (6.2lb)	Scale 3: 4.2kg (9.3lb)	Scale 4: 4.5kg (9.9lb)		
Packing List	Elcometer 106 Pull-Off Adhesion Tester, pack of 20 dollies, Araldite adhesive, base support ring, magnetic dolly clamp, dolly cutter, carry case and operating instructions				

Accessories

T1062895-10	Spare Dollies 20mm (0.76") Diameter (Pack of 10)
T1062895-	Spare Dollies 20mm (0.76") Diameter (Pack of 100)
T1062914-	Large Dollies 40mm (1.52") Diameter (Pack of 5)
T1062915-	Large Base Ring for 40mm (1.52") Dollies
T99923924	Elcometer AVU Adhesion Verification Unit - see page 9-24 for further information
T99912906	Araldite Standard Two Part Epoxy Adhesive, 2x 15ml Tubes
T99914009	20mm (0.76") Dolly Cutter

Test Method

A test dolly is bonded to the coating using an adhesive. The Elcometer 106 houses a spring arrangement which applies a lift force to the dolly as the tension is increased.

When the coating is pulled off the surface, an indicator on the scale shows the numerical value of adhesion expressed in terms of the force per unit area required to remove the dolly.

Inspection of the dolly face is required to determine the failure mode.

○ Optional Calibration Certificate available.

Adhesion Tester for Coatings on Concrete

Elcometer 106/6

The **Elcometer 106/6** Adhesion Tester has been specifically designed to measure coatings on concrete.



Rotating a hexagonal wrench applies an even uniform load up to 3.5MPa (500psi)

50mm (2") diameter dollies for testing coatings on concrete

Hand-held, ergonomic and fully portable - ideal for on-site adhesion testing

Dolly Cutting Tool available to isolate the coating according to ASTM standard test method

STANDARDS:

ASTM D 7234, BS 1881-207, DIN 1048-2, EN 1542, EN 12636

Elcometer 106/6 Adhesion Tester for Coatings on Concrete



Operating in a similar way to the regular Elcometer 106 Adhesion Tester, the Elcometer 106/6 uses a 50mm (2") diameter dolly for testing coatings on concrete.

The Elcometer 106/6 is fully portable and supplied in a carry case - making it ideal for on site tests.

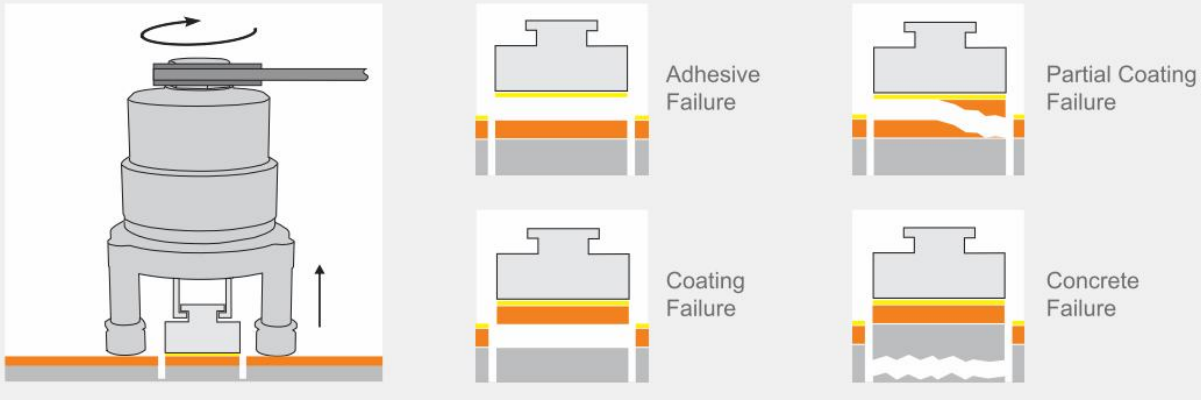
Technical Specification

Part Number	Description	Certificate
F106----6	Elcometer 106 Coatings on Concrete Adhesion Tester - Scale 6	○
Range	0 - 3.5MPa (N/mm²) 0 - 500psi	
Dimensions	105 x 210mm (4 x 8")	
Gross weight of Kit	5.7kg (12.6lb)	
Packing List	Elcometer 106/6 Coatings on Concrete Adhesion Tester, 5x 50mm (2") dollies, support ring, Araldite adhesive, ratchet spanner, carry case and operating instructions	

Accessories

T10618570	50mm (2") Diameter Dollies (Pack of 5)	T99912906	Araldite Standard Two Part Epoxy Adhesive, 2 x 15ml Tubes
KT001910P122	50mm (2") Diameter Dolly Cutting Tool		

Coating Adhesion Testing on Concrete



○ Optional Calibration Certificate available.

Digital Push Off Adhesion Tester

Elcometer 508

The extremely versatile **Elcometer 508** Type III* adhesion tester can be used for many adhesion testing requirements on flat or curved (concave and convex) surfaces such as pipelines and tanks.



Compatible with standard, convex and concave dollies

Hand-held, ergonomic and fully portable - ideal for on-site adhesion testing

Measurement range up to 25MPa (3630psi) with a full scale accuracy of ±1.5%

Rotating crank handle applies smooth loading from 0 up to 25MPa (3630psi)

Quick connect coupling for easy connection to the dolly

2 YEAR* WARRANTY

STANDARDS:
ASTM D 4541, ISO 16276-1, NF T30-606

*Type III in accordance with ASTM D 4541

Elcometer 508 Digital Push Off Adhesion Tester

Powerful

- Suitable for use on flat, concave & convex surfaces
- Rugged & lightweight
- Smooth load application up to 25MPa (3630psi)

Durable

- Sealed, heavy duty & impact resistant
- Dust & waterproof equivalent to IP65
- Suitable for use in harsh environments

Flexible

- Easy to use hand-held design
- Ideal for field use on tanks & pipelines
- Reusable stainless steel dollies
- MPa / psi switchable

Accurate

- Measurement range up to 25MPa (3630psi)
- Full scale accuracy of ±1.5%
- Maximum hold - displays the highest value reached

Technical Specification

Part Number		Description	Certificate
UK 240V/EUR 220V	US 110V		
F508-DD	F508-DC	Elcometer 508 Digital Push Off Adhesion Tester	•
Dolly Size	Outside Diameter	19.4mm (0.76")	
	Inside Diameter	3.7mm (0.15")	
	Area	284mm² (0.44sq inch)	
Scale Range		0 - 26MPa (0 - 3800psi)	
Operating Range		2 - 25MPa (290 - 3630psi)	
Scale Resolution		0.01MPa (1psi)	
Accuracy		±1.5% of full scale	
Power Supply		2x AA alkaline dry batteries (rechargeable batteries can be used)	
Weight		Gauge: 1.7kg (3.7lb) Kit: 4.5kg (9.9lb)	
Instrument Length		290mm (11.5") Coupling Height: 200mm (8")	
Packing List		Elcometer 508, transit case, 5 flat dollies, 5 dolly plugs, MC1500 quick curing adhesive, dolly cleaning tool, 2x LR6 (AA batteries), operating instructions and calibration certificate	

Accessories

Part Number	Description	Part Number	Description
T9999646-	Standard Flat Dolly (x1)	-	Concave & Convex Dollies available upon request
T99911135	Cyanoacrylate Adhesive	T9994586-	Dolly Cleaning Tool
T99911136	Dolly Plug (x5)	T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99914009	Dolly Cutter	T99923103	Dolly Cleaning Heating Tongs - US 110V

* The Elcometer 508 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

• Calibration Certificate supplied as standard.

Hydraulic Adhesion Tester

Elcometer 108

Ideal for tanks or pipelines, the **Elcometer 108** Hydraulic Adhesion Tester is an extremely versatile Type III adhesion tester which can be used for many applications, even on flat or curved surfaces.



Compatible with standard, convex and concave dollies to test on flat or curved surfaces.

Hand-held, ergonomic and fully portable - ideal for on-site adhesion testing

Measurement range up to 25MPa (3630psi) with a full scale accuracy of ±3%

Rotating crank handle applies smooth loading from 0 up to 25MPa (3630psi)

Quick connect coupling for easy connection to the dolly

STANDARDS:
ASTM D 4541, ISO 16276-1, NF T30-606

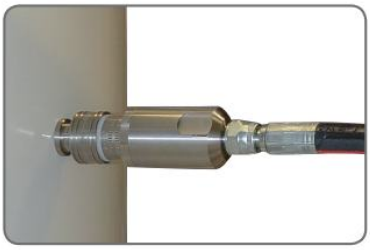
Elcometer 108 Hydraulic Adhesion Tester



Digital and analogue gauges available for harsh and hazardous environments

Powerful

- Suitable for use on flat, concave & convex surfaces
- Rugged & lightweight
- Smooth load application up to 25MPa (3630psi)



Safety coupling sleeve prevents accidental damage of surrounding areas during test on vertical surfaces

Flexible

- Ideal for laboratory and field use
- Reusable stainless steel dollies
- MPa / psi switchable



A wide range of curved dollies available, each designed for a specific range of curvature

Accurate

- Measurement range up to 50MPa (7250psi) with an accuracy of ±3% of full scale
- Maximum hold - displays the highest value reached



Sealed, heavy duty and impact resistant

Durable

- Sealed, heavy duty and impact resistant
- Dust and waterproof equivalent to IP65
- Suitable for use in harsh environments

Hydraulic Adhesion Tester

Elcometer 108

Technical Specification

Part Number UK 240V/EUR 220V	Part Number US 110V	Description	Certificate
F108---1D	F108---1C	Elcometer 108/1 Hydraulic Adhesion Tester - Analogue Dial Gauge	○
F108---2D	F108---2C	Elcometer 108/2 Hydraulic Adhesion Tester - Digital Gauge	○
Operating Range		Analogue: 0 - 18MPa (0 - 2600psi) Digital: 0 - 25MPa (0 - 3630psi)	
Analogue Instrument Accuracy		±1MPa Metric Scale; 150psi Imperial Scale	
Digital Instrument Accuracy		±3% or 60psi (whichever is the greater)	
Dolly Size	Outside Diameter	19.4mm (0.76”)	
	Inside Diameter	3.7mm (0.15”)	
	Area	284mm² (0.44sq inch)	
Packing List		Elcometer 108, ABS carry case, 5 flat dollies, 5 nylon plugs, MC1500 quick curing adhesive, dolly cleaning tool, 2x LR6 (AA batteries) (Digital gauge only) and operating instructions	

Accessories

T99911135	Cyanoacrylate Adhesive
T9999646-	Standard Flat Dolly 19.4mm (0.76”)
T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99923103	Dolly Cleaning Heating Tongs - US 110V

Concave & Convex dollies are available upon request

○ Calibration Certificate available.

Elcometer AVU — Adhesion Verification Unit (AVU)



The Elcometer AVU has been designed to provide users with the means to confirm the accuracy of their pull-off adhesion gauge.

Due to its robust design the Elcometer AVU is suitable for use on site or in the laboratory and allows users to verify or self-certify their pull-off adhesion gauges.

A range of dolly adaptors are available for testing the Elcometer 106, Elcometer 506 and Elcometer 510 adhesion gauges. Adaptors are also available for testing other manufacturers' gauges.

Attach the appropriate dolly adaptor to the AVU, connect your adhesion gauge, apply load and compare the adhesion tester value to the reading on the AVU Display.

Features include:
- Max hold and live reading display
- MPa / psi switchable units
- Backlit display
- Automatic switch off

The Elcometer AVU is supplied with either a test certificate or full calibration certificate, suitable for self-certification.

Technical Specification

Part Number	Description	Certificate
T99923924	Elcometer AVU Adhesion Verification Unit	●
T99923924C	Elcometer AVU Adhesion Verification Unit - Certified	○
Range	0-30MPa (0-4000psi)	
Resolution	0.01MPa (1psi)	
Accuracy	±0.1MPa (±14.5psi)	
Battery Type	2x AA batteries	
Gauge Dimensions	165 x 155 x 105mm (6.5 x 6.1 x 4.1")	
Gauge Weight	3kg (6.6lbs)	
Packing List	Elcometer AVU, Elcometer 506/510 20mm (0.76") dolly adaptor, test or calibration certificate (as appropriate), 2x AA batteries, carry case and operating instructions	

Accessories

T99923935	Elcometer 506 & 510 Dolly Adaptor; 20 & 14.2mm (0.76 & 0.56") Skirts
T99923936	Elcometer 506 & 510 Dolly Adaptor; 50mm (2.0") Skirt
T99923937	Elcometer 106 Dolly Adaptor; Scales 1 to 4
T99923938	Elcometer 106 Dolly Adaptor; Scale 6
T99923939	AT-M & AT-A Adhesion Gauge Dolly Adaptor
T99923986	PAT Adhesion Gauge Dolly Adaptor

● Test Certificate supplied as standard.
○ Calibration Certificate supplied as standard.

Cross Hatch Cutter

Elcometer 107

The Elcometer 107 Cross Hatch Cutter provides an instant assessment of the quality of the bond to the substrate.



- Robust design with a large non slip grip ideal for field or laboratory test
- A quick change, four sided cutter allows adhesion testing on a wide range of coating thicknesses (1mm, 1.5mm, 2mm and 3mm)
- Available as a basic kit or as a full kit supplied with either ASTM or ISO adhesive tape
- Ideal for thin, thick or tough coatings on all surfaces

STANDARDS:

AS 3894.9, AS 1580.408.4, ASTM D 3359-B, BS 3900-E6, ECCA T6, EN 13523-6, ISO 2409, ISO 16276-2, JIS K 5600-5-6, NF T30-038

Elcometer 107 Cross Hatch Cutter



Due to its rugged construction the Elcometer 107 Cross Hatch Cutter is ideal to assess the quality of the bond of thin, thick or tough coatings to a substrate on different types of surfaces.

With a range of interchangeable cutter blades available with different cutter spacings, the Elcometer 107 Cross Hatch Cutter can be used to test to a variety of standard methods.

The Elcometer 107 is available as either a Basic Kit or as a Full Kit which includes a brush, magnifier (x6 magnification) and either ISO or ASTM adhesive tape.

Technical Specification

Part Number	Description	Cutter Type	Coating Thickness		Certificate
F10713222-1	Elcometer 107 Basic Kit	6 x 1mm	0 - 60µm	0 - 2.4mils	○
F10713348-6	Elcometer 107 Full Kit with ISO Tape	6 x 1mm	0 - 60µm	0 - 2.4mils	○
F10713348-1	Elcometer 107 Full Kit with ASTM Tape	6 x 1mm	0 - 50µm	0 - 2.0mils	○
F10713222-2	Elcometer 107 Basic Kit	11 x 1mm	0 - 50µm	0 - 2.0mils	○
F10713348-2	Elcometer 107 Full Kit with ASTM Tape	11 x 1mm	0 - 50µm	0 - 2.0mils	○
F10713222-3	Elcometer 107 Basic Kit	11 x 1.5mm	0 - 90µm*	0 - 3.5mils*	○
F10713222-4	Elcometer 107 Basic Kit	6 x 2mm	50 - 125µm	2.0 - 5.0mils	○
F10713348-9	Elcometer 107 Full Kit with ISO Tape	6 x 2mm	61 - 120µm	2.4 - 4.7mils	○
F10713348-4	Elcometer 107 Full Kit with ASTM Tape	6 x 2mm	50 - 125µm	2.0 - 5.0mils	○
F10713222-5	Elcometer 107 Basic Kit	6 x 3mm	121 - 250µm	5.0 - 10mils	○
Packing List	**Basic Kit:** Robust handle, cutter, hexagonal wrench, presentation storage case and instructions (together with Classification of Adhesion Test Results chart) **Full Kit:** Robust handle, cutter, hexagonal wrench, instructions (together with Classification of Adhesion Test Results chart), magnifier (x6 magnification), brush and adhesive tape (either ASTM or ISO tape), all in a plastic ABS carry case				

Accessories

		Methods			
Part Number	Description	ISO	ASTM	AS	Certificate
T99913700-1	6 x 1mm Four sided cutter blade	•	•		○
T99913700-2	11 x 1mm Four sided cutter blade		•		○
T99913700-3	11 x 1.5mm Four sided cutter blade				○
T99913700-4	6 x 2mm Four sided cutter blade	•	•		○
T99913700-5	6 x 3mm Four sided cutter blade	•			○
K0001539M001	Adhesive Tape (1 roll) ASTM D 3359		•		
K0001539M002	Adhesive Tape (1 roll) ISO 2409	•			
T9998894-	Adhesive Tape (2 rolls) ASTM D 3359		•		
T9999358-	Adhesive Tape (2 rolls) ISO 2409	•			

* Approximate Thickness

○ Optional Calibration Certificate available.

Cross Hatch Adhesion Tester

Elcometer 1542

The Elcometer 1542 is ideal for measuring the cross hatch adhesion of coatings up to 250µm (9.8mils) on flat surfaces and test panels.

Measure on large or small panels by quickly changing the position of the guide wheel using the hexagonal wrench provided.

Each cutter wheel consists of 8 cutting faces. When one face becomes worn, rotate the cutting wheel to the next face.

The Elcometer 1542 is available with three different cutter spacings 1, 2 & 3mm for a range of coating thickness (see table below).

The Elcometer 1542 is available on its own (Basic Kit) or as a Full Kit which includes a brush, magnifier & ISO or ASTM adhesive tape. There are also Advanced Kits which include all three (1, 2 & 3mm) cross hatch adhesion testers, together with either ISO or ASTM adhesive tape.



STANDARDS:
AS 3894.9, AS 1580.408.4, ASTM D 3359-B, BS 3900-E6, ECCA T6, EN 13523-6, ISO 2409, ISO 16276-2, JIS K 5600-5-6, NF T30-038

Technical Specification

Part Number	Description	Cutter Type	Coating Thickness		Certificate
K1542M001	Elcometer 1542 Basic Kit	6 x 1mm	0 - 60µm	0 - 2.4mils	○
K1542M002	Elcometer 1542 Basic Kit	6 x 2mm	50 -125µm	2 - 5.0mils	○
K1542M003	Elcometer 1542 Basic Kit	6 x 3mm	121 - 250µm	4.8 - 9.8mils	○
K1542M001-I	Elcometer 1542 Full Kit - ISO Tape	6 x 1mm	0 - 60µm	0 - 2.4mils	○
K1542M002-I	Elcometer 1542 Full Kit - ISO Tape	6 x 2mm	50 -125µm	2.0 - 5.0mils	○
K1542M003-I	Elcometer 1542 Full Kit - ISO Tape	6 x 3mm	121 - 250µm	4.8 - 9.8mils	○
K1542M001-A	Elcometer 1542 Full Kit - ASTM Tape	6 x 1mm	0 - 60µm	0 - 2.4mils	○
K1542M002-A	Elcometer 1542 Full Kit - ASTM Tape	6 x 2mm	50 - 125µm	2 - 5.0mils	○
K1542M204-I	Elcometer 1542 Advanced Kit - ISO Tape	6 x 1, 2, 3mm	0 - 250µm	0 - 9.8mils	○
K1542M204-A	Elcometer 1542 Advanced Kit - ASTM Tape	6 x 1, 2, 3mm	0 - 250µm	0 - 9.8mils	○
Packing List	**Basic Kit:** 1x Elcometer 1542 Cross Hatch Tester*, cutter angle adjustment tool, hexagonal wrench, transit case & user guide **Full Kit:** Basic Kit plus: brush, magnifier (x6 magnification) & ISO or ASTM adhesive tape **Advanced Kit:** 3x Elcometer 1542 Cross Hatch Testers (1, 2 & 3mm), cutter angle adjustment tool, hexagonal wrench, brush, magnifier (x6 magnification), ISO or ASTM adhesive tape, transit case & user guide				

Accessories

		Methods			
Part Number	Description	ISO	ASTM	AS	Certificate
KT1542P001	6 x 1mm Cross Hatch Cutter Wheel	•			○
KT1542P002	6 x 2mm Cross Hatch Cutter Wheel	•	•	•	○
KT1542P003	6 x 3mm Cross Hatch Cutter Wheel	•			○
K0001539M001	Adhesive Tape (1 roll) ASTM D 3359	T9998894-	Adhesive Tape (2 rolls) ASTM D 3359		
K0001539M002	Adhesive Tape (1 roll) ISO 2409	T9999358-	Adhesive Tape (2 rolls) ISO 2409		
T10713356	Magnifier (x6 magnification)	T99913357	Cross Hatch Brush		

* 6 x 1mm, 6 x 2mm or 6 x 3mm cutter dependent on Part Number.
○ Optional Calibration Certificate available.

Elcometer 1540 Cross Cut Tester



The Elcometer 1540 is a simple instrument for quickly determining the adhesion of a large variety of paints up to 50µm (2mils) thickness.

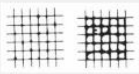
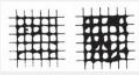
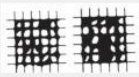
Made from steel, it has 11 tapered teeth with 1mm spacing. Two sets of lines are cut at right angles to obtain a pattern of 100 squares.

Results are determined by the table below.

Technical Specification

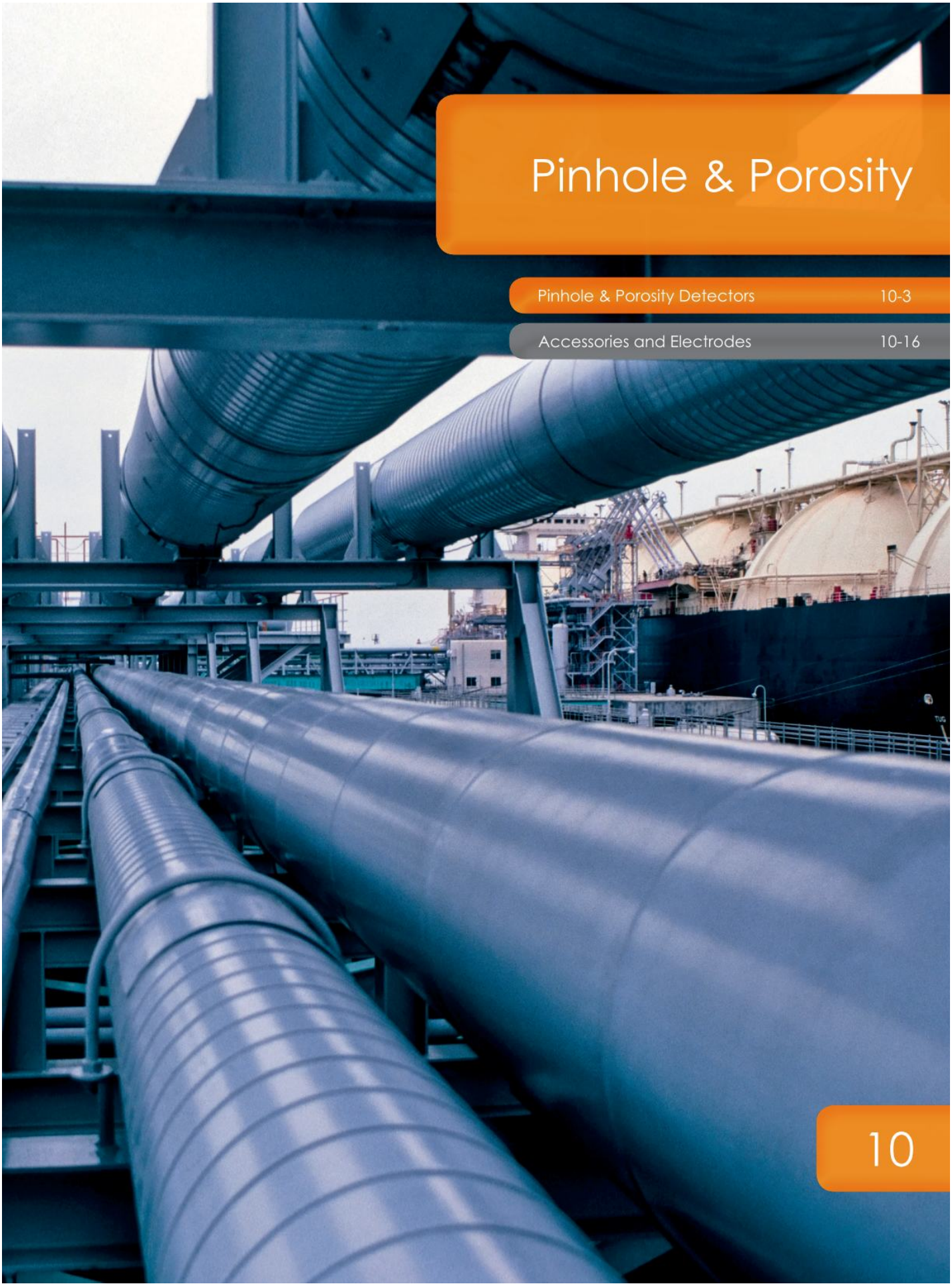
Part Number	Description	Certificate
K0001540M001	Elcometer 1540 Cross Cut Tester (11 x 1mm)	○

Classification of Cross Hatch Test Results

Surface	Typical description of result	ISO	ASTM
	The edges of the cuts are completely smooth, none of the squares of the lattice is detached.	0	5B
	Detachment of small flakes of the coating at the intersections of the cuts. A cross cut area not significantly greater than 5%, is affected.	1	4B
	The coating has flaked along the edges and/or at the intersections of the cuts. A cross cut area significantly greater than 5%, but not significantly greater than 15%, is affected.	2	3B
	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross cut area significantly greater than 15%, but not significantly greater than 35%, is affected.	3	2B
	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross cut area significantly greater than 35%, but not significantly greater than 65%, is affected.	4	1B
	Any degree of flaking that cannot be classified even by classification 4 (1B).	5	0B

Images and descriptions based on information published in ISO2409 and ASTM D 3559-B

○ Optional Calibration Certificate available.



Pinhole & Porosity

Pinhole & Porosity Detectors 10-3

Accessories and Electrodes 10-16

10

Pinhole & Porosity



Premature corrosion of a substrate is usually due to a coating failure. A major cause is the presence of flaws in the finished coating.

Collectively referred to as porosity, the main types of flaws are:

Runs & Sags: coatings move under gravity leaving a thin dry film.

Cissing: when a coating does not re-flow to cover the voids generated by air bubbles being released from the surface of a coating.

Cratering: if the substrate is wet or the coating has poor flow characteristics, voids are created in the coating.

Pinholes: caused by air entrapment which is then released from the surface, or by the entrapment of particulates (dust, sand etc.) which do not stay in place.

Over Coating: if too much coating is applied, as it cures internal stresses of the coating can cause it to crack.

Under Coating: uncoated areas, or where the coating flows away from edges or corners of a substrate or welds. Insufficient coating over a rough surface profile may also leave the peaks of the profile exposed.

There are essentially three flaw detection methods in our range:

Wet Sponge Technique/Pinhole Detector: a low voltage is applied to a moist sponge. When the sponge moves over a coating flaw, liquid penetrates to the substrate and completes an electrical circuit, setting off the alarm. The wet sponge technique is suitable for measuring insulating coatings less than 500µm (20mils) on conductive substrates, and is ideal for powder coatings and other coatings where the user does not wish to damage the coating.

High Voltage Technique: the high voltage, or porosity technique, can be used to test coatings up to 25mm (1") thick and is ideal for inspecting pipelines and other protective coatings. Coatings on concrete can also be tested using this method.

A power supply generates a high voltage DC or pulsed DC to a probe. As the probe passes over a flaw, a spark at the contact point sets off the alarm. This technique is suitable for locating the types of flaws described above, although care is required on thin coatings.

UV Pinhole Detection: UV light can be used as a low cost, quick method of detecting pinholes in coatings. A base coat containing a UV fluorescing additive is applied. When the UV flashlight shines on the coating, areas where the base coat is not covered fluoresce, identifying the location of the pinhole.

Pinhole Detector

Elcometer 270

The **Elcometer 270** sets the standard for wet sponge, high quality, low voltage detectors which are supplied with a wide range of accessories to meet your requirements.



- User selectable voltages: 9V, 67.5V or 90V
- Automatic internal voltage check ensures that the selected voltage can be achieved
- Easy release, snag proof cables - available in 4m (13'2") & 10m (32'10") lengths
- Visual and audible alarms indicate a pinhole
- A wide range of wand accessories available
- Each unit can be converted into a separate wand with a base unit using the separate wand adaptor

STANDARDS:

AS 3894.2, ASTM D 5162-A, ASTM G6, ASTM G62-A, BS 7793-2, ISO 8289-A, ISO 14654, JIS K 6766, NACE RP 0188, NACE SP 0188, NACE TM0384

Elcometer 270 Pinhole Detector

Accessories



Standard wand T27016867
A universal flat sponge to suit almost all applications

Spare flat sponge set Pack of 3 sponges; T27018050
150 x 60 x 25mm (6 x 2.3 x 1")



Roller sponge wand T27016960
Ideal for large flat surface inspection

Spare roller sponge T27018051



Telescopic wand adaptor T27016998
with belt clip - extends to 1m(39"), ideal for floors or high areas

Separate wand adaptor T27016999
with belt clip - converts the gauge into a separate pinhole detector



Extension piece T27016965
420mm (16.5") extensions to expand operators reach. Additional extension pieces can be connected to each other



Pinhole Inspector's Kit T27018191
The complete pinhole detection kit. Each kit is supplied with:
1 x separate wand handle & lead
1 x roller wand
1 x 10m (32') signal return cable
2 x extension pieces
1 x telescopic extension
1 x belt clip
1 x bottle of wetting agent
3 x AA batteries
1 x spare flat sponge
1 x spare roller sponge
The kit does not include the main instrument; just add the model number to the order



Return cable - 4m (13') T99916954
supplied as standard, complete with crocodile clip and connection plug

Return cable - 10m (32') T99916996
supplied on a drum, complete with clip and connection plug



Wetting agent T27018024
50ml (1.7floz) bottle - helps aid the fast detection of pinholes. Just add to the water used to dampen the sponge

Technical Specification

Model	Elcometer 270/3	Elcometer 270/4	Certificate
Part Number	D270----3	D270----4	
Part Number with Certificate	D270----3C	D270----4C	•
Voltage	9V and 90V	9V, 67.5V and 90V	
Coating Range (Max)	500µm (20mils)	500µm (20mils)	
Sensitivity	9V: 90kΩ ±5% 90V: 400kΩ ±5%	9V: 90kΩ ±5% 67.5V: 125kΩ ±5% 90V: 400kΩ ±5%	
Battery Life (continuous use)	9V: up to 200 hours 90V: up to 80 hours	9V: up to 200 hours 67.5V: up to 100 hours 90V: up to 80 hours	
Battery Type	3x AA batteries (rechargeable batteries can also be used, but battery life will be reduced by up to 75%)		
Accuracy of Setting	±5%		
Dimensions	Without wand 210 x 42 x 37mm (8.3 x 1.7 x 1.5")		
	Standard wand 175mm (6.9") long (including sponge)		
Weight	610g (21oz) including wand, cable and batteries		
Packing List	Pinhole Detector, standard wand and flat sponge, 4m (13' 2") return lead with crocodile clip, 3x AA (LR1600) batteries and operating instructions		

• Calibration Certificate supplied as standard.

Pulsed DC Holiday Detector

Elcometer 280

The **Elcometer 280** is a 'stick type' holiday detector which has been designed to make pulsed DC high voltage holiday detection safer, easier and more reliable than ever before.



Flashing display, bright LED and a user adjustable volume alarm indicates detection of a holiday

0.5 - 35kV range (user selectable) for detecting porosity in coatings up to 25mm (1") thick

Safety trigger integrated inside the handle cuts power if released

Ideal for testing clean, damp, dirty or slightly conductive coatings

Voltage calculator automatically sets the correct voltage from your coating thickness value

Internal jeep tester ensures that the selected voltage equals the test voltage

STANDARDS:

AS 3894.1, ANSI/AWWA C203, ANSI/AWWA C214, ASTM D4787, ASTM D5162, ISO 2746, ISO 29601, JIS G 3491, JIS G 3492, NACE RP0274, NACE SP0188, NACE SP0490, NACE TM0186, NACE TM0384

Elcometer 280 Key Features



Red LED indicates high voltage ON

Earth signal return lead disconnected icon

Porosity Detector overload icon
indicates that the unit cannot obtain selected voltage with current accessory / coating combination

Calculation softkey
select the relevant standard and coating thickness value

Voltage adjustment softkey

Waterproof buzzer

Blue LED flashes as holidays are detected

Holiday detected icon

Battery symbol indicating remaining charge

Voltage selected

Porosity standard in use
used in conjunction with setting the coating thickness within the Voltage Calculator

Menu softkey

Voltage level achieved at probe



Specialised extended ribbing
designed to standard EN61010, ribs provide additional protection to the user during use



Integrated safety trigger switch
switches off the high voltage if released

Quick release battery pack
fully charged in 4 hours, provides 30+ hours of continuous use*

Earth return lead socket
including ¼ turn lock/release to ensure connection during testing

Rubberised second hand grip
provides greater control and balance during testing



Large, waterproof buttons
for easy use - even in gloves

Shoulder harness point
strap can be quickly clipped on as required

Clear, backlit LCD display
shows all relevant information, even in dark environments

High Voltage ON/OFF
separate button minimises risk of accidental switch on

* the battery life is dependant on selected voltage and load applied - see Technical Specification for more information

Pulsed DC Holiday Detector

Elcometer 280

Powerful

The high voltage pulsed DC technique is used to detect holidays in coatings - even if the coating is damp, dirty or slightly conductive.



Right angled wire brush probe

Safe

Featuring a two stage safety switch, bright LED's and screen icons which signify when the high voltage is on. It is designed with extended ribbing to protect the user from spark creep.



Internal circular wire pipe brush probe

User Friendly

Balanced, ergonomic design, complete with shoulder strap allows long periods of continuous use.



Band brush probes

Versatile

Using the wide range of probe accessories, users can detect porosity/holidays in coatings up to 25mm (1") thick.



External 'C-type' wire brush

Tough

Rugged, shockproof and water resistant, each unit is designed for use even in the harshest of environments.





Right angled rubber probe



Rolling Springs

Elcometer 280 Pulsed DC Holiday Detector

Technical Specification

Description	Model S	Model T	Certificate
Elcometer 280 Pulsed DC Holiday Detector Inspection Kit	D280-S-KIT	D280-T-KIT	○
Elcometer 280 Pulsed DC Holiday Detector	D280-S----	D280-T----	○
Rugged, Shockproof & Water Resistant	■	■	
Integrated Safety Trigger Switch	■	■	
Quick Release Battery Pack	■	■	
Internal Jeep Tester	■	■	
Integrated Voltage Calculator		■	
Pulsed DC High Voltage Range	0.5kV - 35kV		
Voltage Adjustment	User adjustable: 0.5 - 1kV: 10 Volt steps, 1 - 35kV: 100V steps		
High Voltage Output Accuracy	±5% or ±50V below 1000 Volts		
Pulse Repetition Rate	~30Hz		
Operating Temperature	0°C to 50°C (32°F to 120°F)		
Power Supply	Rechargeable Battery pack; battery fully charged within 4 hours		
Typical Battery Life	Battery life is dependant upon selected voltage and load applied; 12" (DN305) Rolling Spring: 30 hours at 10kV; 12 hours at 35kV 40" (DN1016) Rolling Spring: 22 hours at 10kV; 8 hours at 35kV		
Instrument Case Dimensions	PC ABS case; (l x w x h): 603 x 219 x 193mm (23.7 x 8.6 x 7.6")		
Weight (no probes attached)	3.0kg (6.6lb) - including battery pack		
Packing List	**Elcometer 280 Pulsed DC Holiday Detector** Gauge (Model S or T), 5m (16') trailing signal return lead, battery pack, battery charger with UK, EUR, US and AUS plugs, shoulder strap and operating instructions **Elcometer 280 Pulsed DC Holiday Detector Inspection Kit** Gauge (Model S or T), 5m (16') trailing signal return lead, battery pack (2 supplied with Model T), battery charger with UK, EUR, US and AUS plugs, stainless steel rolling spring holder (supplied with Model T only), 250mm (9.8") probe extension shaft, shoulder strap and operating instructions - packed in a light weight, rugged, wheeled transit case - ideal for transportation		

Accessories

Lightweight, rugged, wheeled transit case - ideal for gauge transportation, with additional space to house up to 20m (66') of phosphor bronze or 6m (30') of stainless steel rolling spring	T28022769
Grounding mats are ideal for testing on ungrounded pipes. The conductive rubber mat is wrapped around the coated pipe and connected to both the grounding pin (supplied separately) and the signal return lead.	
750mm (29.5") long - for pipe diameters up to 9" (NPS)/ 229mm (DN)	T28022637-1
1500mm (59") long - for pipe diameters up to 18" (NPS)/ 457mm (DN)	T28022637-2
2500mm (98.5") long - for pipe diameters up to 30" (NPS)/ 762mm (DN)	T28022637-3
3500mm (137.5") long - for pipe diameters up to 42" (NPS)/ 1067mm (DN)	T28022637-4
Grounding pin; 60cm (23.5") long x 0.2cm (0.75") diameter	T28022748
Trailing signal return lead, 5m (16')	T28022622
10m (32') earth lead, clips each end (for use with the grounding mat)	T28022749
10m (32') earth lead, clip / Elcometer 280 connector (for use with the grounding mat)	T28022750



For a full range of rolling springs, rubber or wire brush probes and other accessories see page 10-16

○ Optional Calibration Certificate available.

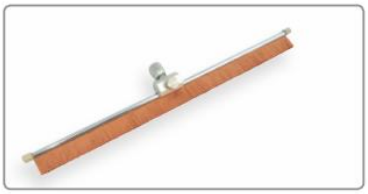
Holiday Detector

Elcometer 266

The **Elcometer 266** revolutionises High Voltage DC testing of coatings porosity detection making it safer, easier and more reliable than ever before.



Elcometer 266 Holiday Detector



Right angled wire brush probe

Powerful

The Elcometer 266 can be used to test porosity on coatings up to 7.5mm (300mils) thick and is ideal for inspecting coatings on pipelines and other protective coatings.



Internal circular wire pipe brush probe

Safe

Featuring a dual safety switch on the handle to avoid accidental switch on and specialised ribbing provides superior protection.



Band brush probes

User Friendly

The voltage calculator automatically sets the correct voltage from your coating thickness value. No need to use look up tables.



External 'C-type' wire brush

Versatile

To change maximum voltage range, select a different handle; 5kV, 15kV or 30kV DC or 30kV DC continuous.



Right angled rubber probe

Easy to Use

Bright LEDs on the handle, as well as a loud audible alarm, clearly indicates if the gauge is on (Red) and when a spark is detected (Blue).



Rolling Springs

Holiday Detector

Elcometer 266



Interchangeable DC probe handles[1]

Part Number	Description
T26620033-1	DC5 (0.5 - 5kV)
T26620033-2	DC15 (0.5 - 15kV)
T26620033-3	DC30 (0.5 - 30kV)
T26620033-4	DC30S (0.5 - 30kV)



Integrated voltage calculator

Enter the test standard & the coating thickness then the gauge will automatically programme the correct voltage



Testing has never been safer

Ribbing provides additional user protection - specifically designed to meet EN 61010



Second hand grip is available

Ideal for testing pipes and tank floors with 2 hands - without compromising safety

Part Number	Description
T26620081	Second Hand Grip



Removeable, quick charge batteries

Fully charge the battery pack in 4 hours, within the gauge or separately, for up to 40 hours of continuous testing

Part Number	Description
T99923482	Rechargeable lithium ion battery pack



Universal probe adaptors

Enables the Elcometer 266 to work with all major holiday detector's accessories.

Technical Specification

Description	Part Number[2]			Certificate
Elcometer 266*	D266----4			○
High Voltage Output Accuracy	±5% or ±50V below 1000 Volts			
Operating Temperature	0°C to 50°C (32°F to 120°F)			
Power Supply	Rechargeable Battery Pack; battery fully charged within 4 hours			
Measured Current Flow Accuracy	±5% of full scale ;	0 - 100µA maximum Output Current		
Typical Battery Life - Backlight Off (On)	DC5: 40 (20) hours	DC15: 20 (15) hours	DC30: 10 (8) hours	
Instrument Case Dimensions	Waterproof, ABS case;	520 x 370 x 125mm (20.5 x 14.5 x 5")		
Weight	Base unit (including battery pack): 1.2kg (2.7lb)	Handle: 0.6kg (1.3lb)		
Packing List	Elcometer 266 DC Holiday Detector, battery pack, curly connection cable for high voltage handle, 10m (32') signal return lead, battery charger with UK, EUR, US and AUS plugs, band brush, shoulder strap, tough plastic carry case and operating instructions			

Probe Handles*

The Elcometer 266 does not include the probe handle; please select the required handle from the list below.

Part Number	Description	Voltage Range	Certificate
T26620033-1	Elcometer 266 Probe Handle Voltage	DC5 (0.5 - 5kV)	○
T26620033-1C	Elcometer 266 Probe Handle Certified	DC5 (0.5 - 5kV)	
T26620033-2	Elcometer 266 Probe Handle Voltage	DC15 (0.5 - 15kV)	○
T26620033-2C	Elcometer 266 Probe Handle Certified	DC15 (0.5 - 15kV)	
T26620033-3	Elcometer 266 Probe Handle Voltage	DC30 (0.5 - 30kV)	○
T26620033-3C	Elcometer 266 Probe Handle Certified	DC30 (0.5 - 30kV)	
T26620033-4	Elcometer 266 Probe Handle Voltage (Continuous Voltage)	DC30S (0.5 - 30kV)	○
T26620033-4C	Elcometer 266 Probe Handle Certified (Continuous Voltage)	DC30S (0.5 - 30kV)	
T26620081	Second Hand Grip		

* The Elcometer 266 main instrument and the Elcometer 266 probe handles are supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

○ Optional Calibration Certificate available.

Elcometer 236 Holiday Detector

The **Elcometer 236** Holiday Detector provides high voltage porosity testing to detect pits, flaws, holes, etc. in a wide variety of non-metallic coatings.



- Standard and telescopic handles available for hard to reach areas
- Available in 2 versions; 15 and 30kV; fully adjustable in 100 Volt steps
- Integrated neon bulb in the handle, together with buzzer indicate when a holiday has been located
- Adjustable sensitivity allows use on partially conductive surfaces
- A wide range of probe brushes and springs available

STANDARDS:

ANSI/AWWA C213, AS 3894.1, ASTM C 536, ASTM C 537, ASTM D 4787, ASTM D 5162-B, ASTM G 62-B, BS1344-11, DIN 55670, EN 14430, ISO 2746, ISO 29601, JIS K 6766, NACE RP0274, NACE RP0188, NACE RP0190, NACE RP0490, NACE SP0188, NACE SP0490

Holiday Detector

Elcometer 236

The Elcometer 236 provides the user with complete control of voltage and sensitivity settings and is available in 2 versions, 15kV and 30kV.

Each unit is supplied in a convenient carry case which also holds the probe handle and an additional (optional) external rechargeable battery pack which doubles the testing time available.

Due to its unique design, the probe handle can be replaced with a telescopic probe handle - extending the measurement reach up to almost 4m (13'), ideal for testing on large/high structures.



Technical Specification

	Elcometer 236 15kV	Elcometer 236 30kV	Certificate
Part Number	D236--15KV	D236--30KV	○
Part Number with Certificate	D236--15KVC	D236--30KVC	●
Voltage Output	0.5 - 15kV in 100V steps	0.5 - 30kV in 100V steps	
Display Resolution	0.01kV	0.1kV	
Approximate Thickness Range	0 - 3.75mm (0 - 150mils)	0 - 7.5mm (0 - 300mils)	
Alarms	Audible & Visual		
Power Supply	12V internal rechargeable battery		
Battery Life (approximate)	10/12 hours continuous use, 20/24 hours with the optional external battery pack		
Dimensions	200 x 170 x 70mm (6 x 7 x 3")		
Weight	2.8kg (6lb 3oz)		
Packing List	Elcometer 236, probe handle and lead, band brush probe, 2m (79") & 10m (394") signal return/earth leads, battery charger with 3 mains cables (UK, EUR and US), carry case, transit case and operating instructions		

Accessories

T23622790-1	Telescopic probe handle, 600 - 1200mm (24 - 47")
T23622790-2	Telescopic probe handle, 1800 - 3600mm (71 - 142")
T236139031	2m (6.5') earth signal return lead
T236139032	10m (32') earth signal return lead
T23615550	External battery pack (doubles operational use between charges)

For a full range of rolling springs, rubber or wire brush probes and other accessories see page 10-16



○ Optional Calibration Certificate available.

● Calibration Certificate supplied as standard.

Elcometer 260 UV Pinhole Flashlight







STANDARDS:
ASTM E2501

The Elcometer 260 UV Pinhole Flashlight is battery powered and housed in a rugged aluminium case providing a quick, low cost method of testing coatings for pinholes.

Featuring a 3-Watt purple light emitting diode, the Elcometer 260 UV flashlight has a beam wavelength of 405nm (±5nm), which the human eye perceives as a purple light.

Designed with a specialised diffuser lens that emits a smooth beam image (with no streaks, hot spots or dark spots) and used with National Surface Treatment Centre approved safety glasses for improved contrast, the Elcometer 260 UV flashlight provides optimum integrity and reliability of the visual inspection.

The Elcometer 260 UV flashlight can detect pinholes from both the base and top coats. A UV reflective additive is applied to the base coat. When inspecting the fluorescent base coat look for black spots or grey areas that indicate pinholes. When inspecting the non-fluorescent top coat, look for glowing spots that indicate pinholes in the topcoat (shining through from the base coat).

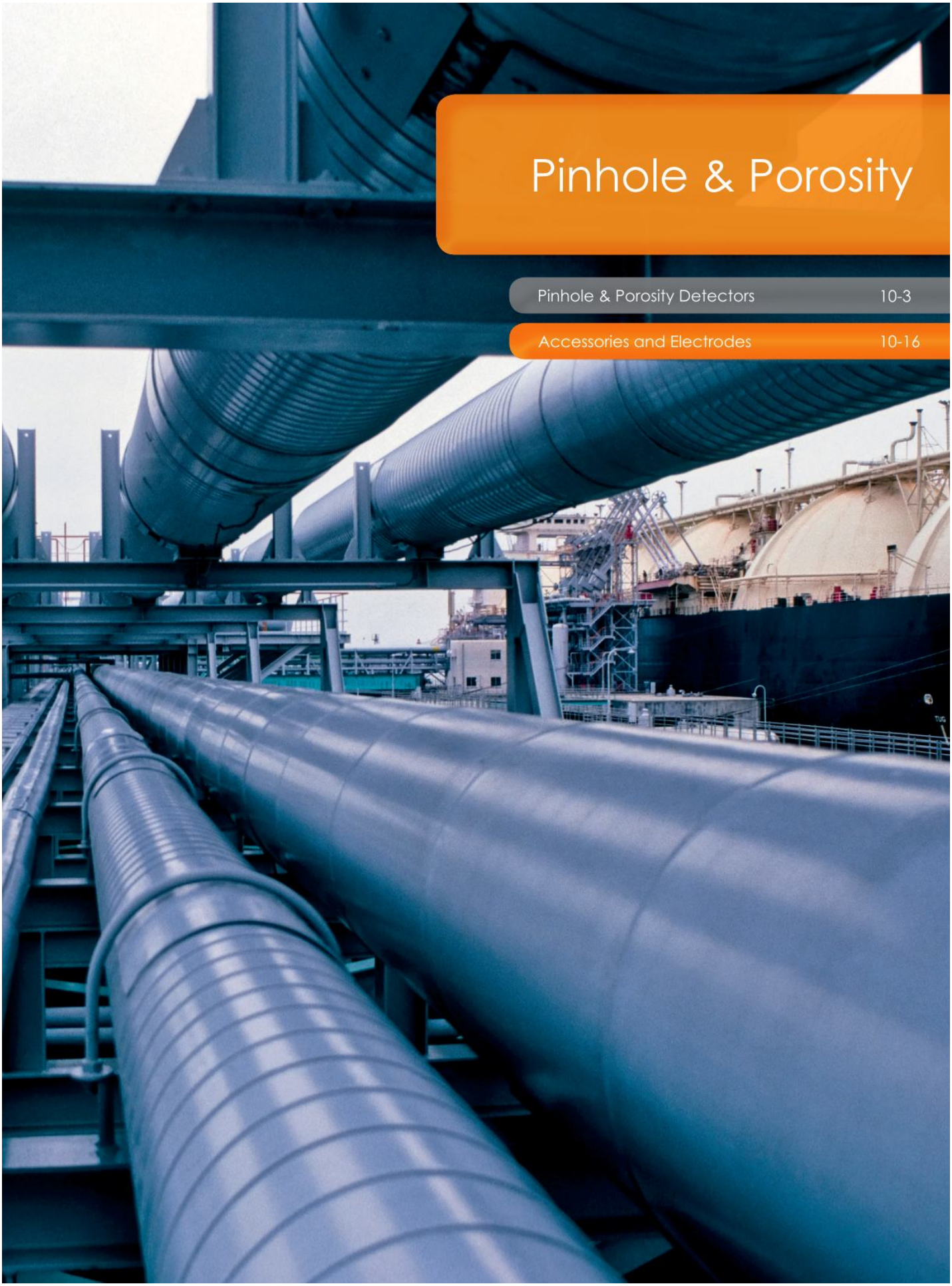
- Low cost and easy to use: Use UV reflecting base coat and shine the purple light on to the surface. Any fluorescence identifies pinholes
- Rugged: Manufactured from aluminium alloy and O'ring sealed to protect it from moisture and dust
- Portable and secure: Battery powered and features a recessed click-on/push off button to prevent accidental activation during transport or storage.

Technical Specification

Part Number	D260----2
Lens Type	Dual element diffuser
Power Output	3 Watt
Beam Wavelength	405nm ±5nm
Flashlight Casing	Hard anodised aluminium
Battery Type	2x CR123A batteries
Battery Life	6 hours (continuous use)
Dimensions	150 x 35mm (6 x 1.4")
Weight	173g (6.1oz)
Packing List	Elcometer 260 UV Pinhole Flashlight, UV protective glasses, nylon belt holster, 2x CR123A batteries, operating instructions

Accessories

T26020140	UV Protective Glasses
T26020141	2x Replacement 123A batteries



Pinhole & Porosity

Pinhole & Porosity Detectors 10-3

Accessories and Electrodes 10-16

Elcometer 236, 266 & 280 High Voltage Holiday Detector Accessories

Batteries, Chargers & Earth Signal Return Leads



Part Number	Description	Compatible with		
		Elcometer 236	Elcometer 266	Elcometer 280
T23615550	External rechargeable battery pack	■		
T23613907	Battery charger & mains lead (UK 240V)	■		
T23613908	Battery charger & mains lead (EU 220V)	■		
T23613909	Battery charger & mains lead (US 110V)	■		
T99923482	Rechargeable battery pack		■	■
T99919999	Battery Charger with UK, EUR, US and AUS plugs		■	■



T236139031	Earth signal return lead, 2m (6.5')	■		
T236139032	Earth signal return lead, 10m (32')	■		
T99916954	Earth signal return lead, 4m (13')		■	
T99916996	Earth signal return lead, 10m (32')		■	
T28022750	10m (32') earth lead, clip / Elcometer 280 connector			■
T28022622	Trailing signal return lead, 5m (16')			■

Telescopic Probes, Probe Extension Rods



T23622790-1	Telescopic probe handle, 0.6 - 1.20m (24 - 47")	□		
T23622790-2	Telescopic probe handle, 1.8 - 3.60m (71 - 142")	□		
T99919988-3	Probe extension rod, 250mm (9.8")	□	■	■
T99919988-1	Probe extension rod, 500mm (20")	□	■	■
T99919988-2	Probe extension rod, 1000mm (39")	□	■	■

Accessory Adaptors Allows other manufacturer's accessories to fit Elcometer models



T99920084	Adaptor for models: AP, APS, AP/S1, AP/S2, AP/W, 10/20, 14/20,10, 20 & 20S	□	■	■
T99920083	Adaptor for models: P20, P40, P60, 780, 785 & 790	□	■	■
T99920252	Adaptor for models: PHD 1-20 & PHD 2-40	□	■	■
T99922747	Adaptor for models: 4S, 4.0, 8.0, 35	□	■	■
T99920082	Adaptor for current range to fit old accessories	■	■	■
T99922768	Adaptor for Elcometer 136 and older 236 models	■		

Band brush probes



T99919975	Band brush probe	□	■	■
T99922751	Phosphor bronze brush probe	□	■	■

□ Older Elcometer 236 models may require adaptor piece T99922768

High Voltage Holiday Detector Accessories

Elcometer 236, 266 & 280

Wire Brush Probes, flat brush, internal and external pipe brush probes

Part Number	Description			Compatible with		
				Elcometer 236	Elcometer 266	Elcometer 280
		Width				
T99920022-1	Right angled wire brush probe	0.25m	9.8”	□	■	■
T99920022-2	Right angled wire brush probe	0.50m	19.7”	□	■	■
T99920022-3	Right angled wire brush probe	1.00m	39”	□	■	■
T99926621	Spare wire brush electrode	0.25m	9.8”	■	■	■
T99926622	Spare wire brush electrode	0.50m	19.7”	■	■	■
T99926623	Spare wire brush electrode	1.00m	39”	■	■	■
		Diameter				
T99920071-1	Internal circular wire pipe brush probe	38mm	1.5”	□	■	■
T99920071-2	Internal circular wire pipe brush probe	51mm	2.0”	□	■	■
T99920071-3	Internal circular wire pipe brush probe	64mm	2.5”	□	■	■
T99920071-4	Internal circular wire pipe brush probe	76mm	3.0”	□	■	■
T99920071-5	Internal circular wire pipe brush probe	89mm	3.5”	□	■	■
T99920071-6	Internal circular wire pipe brush probe	102mm	4.0”	□	■	■
T99920071-7	Internal circular wire pipe brush probe	114mm	4.5”	□	■	■
T99920071-8	Internal circular wire pipe brush probe	127mm	5.0”	□	■	■
T99920071-9	Internal circular wire pipe brush probe	152mm	6.0”	□	■	■
T99920071-10	Internal circular wire pipe brush probe	203mm	8.0”	□	■	■
T99920071-11	Internal circular wire pipe brush probe	254mm	10”	□	■	■
T99920071-12	Internal circular wire pipe brush probe	305mm	12”	□	■	■
T99920071-13	Internal circular wire pipe brush probe	356mm	14”	□	■	■
T99920071-14	Internal circular wire pipe brush probe	406mm	16”	□	■	■
T99920071-15	Internal circular wire pipe brush probe	508mm	20”	□	■	■
T99920071-16	Internal circular wire pipe brush probe	610mm	24”	□	■	■
T9993766-	Spare circular wire brush electrode	38mm	1.5”	■	■	■
T9993767-	Spare circular wire brush electrode	51mm	2.0”	■	■	■
T9993768-	Spare circular wire brush electrode	64mm	2.5”	■	■	■
T9993769-	Spare circular wire brush electrode	76mm	3.0”	■	■	■
T9993770-	Spare circular wire brush electrode	89mm	3.5”	■	■	■
T9993771-	Spare circular wire brush electrode	102mm	4.0”	■	■	■
T9993772-	Spare circular wire brush electrode	114mm	4.5”	■	■	■
T9993773-	Spare circular wire brush electrode	127mm	5.0”	■	■	■
T9993774-	Spare circular wire brush electrode	152mm	6.0”	■	■	■
T9993775-	Spare circular wire brush electrode	203mm	8.0”	■	■	■
T9993776-	Spare circular wire brush electrode	254mm	10”	■	■	■
T9993777-	Spare circular wire brush electrode	305mm	12”	■	■	■
T9993778-	Spare circular wire brush electrode	356mm	14”	■	■	■
T9993779-	Spare circular wire brush electrode	406mm	16”	■	■	■
T9993780-	Spare circular wire brush electrode	508mm	20”	■	■	■
T9993781-	Spare circular wire brush electrode	610mm	24”	■	■	■





□ Older Elcometer 236 models may require adaptor piece T99922768

Elcometer 236, 266 & 280 High Voltage Holiday Detector Accessories

Wire Brush Probes, band brush, flat brush, internal and external pipe brush probes



Part Number	Description	Outside Diameter (OD) DN	Outside Diameter (OD) NPS	Compatible with Elcometer 236	Compatible with Elcometer 266	Compatible with Elcometer 280
T99922752	'C-type' wire brush holder† (order C-type brush from the list below)			□	■	■
T99922907	'C-type' wire brush support handle*			□	■	■



T99922745-1	External 'C-type' wire brush	150 - 250mm	6 - 9"	■	■	■
T99922745-2	External 'C-type' wire brush	250 - 350mm	9 - 12"	■	■	■
T99922745-3	External 'C-type' wire brush	350 - 450mm	12 - 16"	■	■	■
T99922745-4	External 'C-type' wire brush	450 - 550mm	16 - 20"	■	■	■
T99922745-5	External 'C-type' wire brush	550 - 650mm	20 - 24"	■	■	■
T99922745-6	External 'C-type' wire brush	650 - 750mm	24 - 28"	■	■	■
T99922745-7	External 'C-type' wire brush	750 - 850mm	28 - 32"	■	■	■
T99922745-8	External 'C-type' wire brush	850 - 950mm	32 - 36"	■	■	■
T99922745-9	External 'C-type' wire brush	950 - 1050mm	36 - 40"	■	■	■
T99922745-10	External 'C-type' wire brush	1050 - 1150mm	40 - 44"	■	■	■

† Wire brush holder supplied separately (T99922752)
* Wire brush support handle ideal for two handed use or second person for large diameters

Conductive Rubber Probes



		Width				
T99920022-11	Right angled rubber probe	250mm	9.8"	□	■	■
T99920022-12	Right angled rubber probe	500mm	19.7"	□	■	■
T99920022-13	Right angled rubber probe	1000mm	39"	□	■	■
T99920022-14	Right angled rubber probe	1400mm	55"	□	■	■
T99926731	Spare rubber electrode	250mm	9.8"	■	■	■
T99926732	Spare rubber electrode	500mm	19.7"	■	■	■
T99926733	Spare rubber electrode	1000mm	39"	■	■	■
T99926734	Spare rubber electrode	1400mm	55"	■	■	■

Rolling Springs Holders

T99920086	Phosphor bronze rolling spring holder Order the relevant phosphor bronze spring(s) from the list on page 10-19	□	■	■
T99922746	Stainless steel rolling spring holder Order the relevant stainless steel spring(s) from the list on page 10-19	□	■	■

□ Older Elcometer 236 models may require adaptor piece T99922768

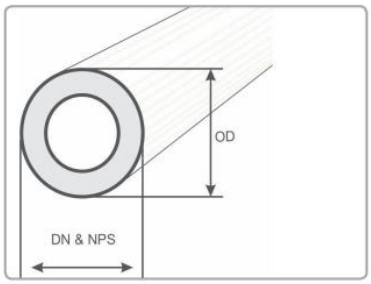
High Voltage Holiday Detector Accessories

Elcometer 236, 266 & 280

Rolling Springs Available in phosphor bronze or stainless steel

Each spring is supplied with an easy-release coupling piece, allowing users to quickly connect and disconnect the rolling spring from stanchions, pillars, etc.

Please note that rolling springs are not supplied with a spring holder. Please order the appropriate rolling spring holder separately.







Rolling springs are available in 2 versions, phosphor bronze round spring and 304 stainless steel box section spring. The 19mm (0.75") diameter phosphor bronze springs are almost 3 times lighter than the 34mm (1.33") diameter stainless steel springs.

Rolling Spring Dimensions		Nominal Pipe Size		Pipe Outside Diameter (OD)			
Part Number		DN	NPS	millimeters (mm)		inches (")	
Phosphor Bronze	Stainless Steel	(mm)	(inches)	min OD	max OD	min OD	max OD
T99920438-15A	-	40	1.5	48	54	1.9	2.1
T99920438-15B	-			54	60	2.1	2.4
T99920438-20A	-	50	2.0	60	66	2.4	2.6
T99920438-20B	-			66	73	2.6	2.9
T99920438-25A	T99922744-25A	65	2.5	73	80	2.9	3.1
T99920438-25B	T99922744-25B			80	88	3.1	3.5
T99920438-30A	T99922744-30A	80	3.0	88	95	3.5	3.7
T99920438-30B	T99922744-30B			95	100	3.7	3.9
T99920438-35A	T99922744-35A	90	3.5	100	108	3.9	4.3
T99920438-35B	T99922744-35B			108	114	4.3	4.5
T99920438-40A	T99922744-40A	100	4.0	114	125	4.5	4.9
T99920438-45A	T99922744-45A	114	4.5	125	136	4.9	5.4
T99920438-45B	T99922744-45B			136	141	5.4	5.6
T99920438-50A	T99922744-50A	125	5.0	141	155	5.6	6.1
T99920438-50B	T99922744-50B			155	168	6.1	6.6
T99920438-60A	T99922744-60A	152	6.0	168	180	6.6	7.1
T99920438-60B	T99922744-60B			180	193	7.1	7.6
T99920438-70A	T99922744-70A	178	7.0	193	213	7.6	8.4
T99920438-70B	T99922744-70B			213	219	8.4	8.6
T99920438-80A	T99922744-80A	203	8.0	219	240	8.6	9.4
T99920438-90A	T99922744-90A	229	9.0	240	264	9.4	10.4
T99920438-100A	T99922744-100A	254	10.0	264	290	10.4	11.4
T99920438-110A	T99922744-110A	279	11.0	290	320	11.4	12.6
T99920438-120A	T99922744-120A	305	12.0	320	350	12.6	13.8
T99920438-140A	T99922744-140A	356	14.0	350	375	13.8	14.8
T99920438-140B	T99922744-140B			375	400	14.8	15.7

□ Older Elcometer 236 models may require adaptor piece T99922768

Elcometer 236, 266 & 280 High Voltage Holiday Detector Accessories

Rolling Springs Available in phosphor bronze or stainless steel





Rolling springs are available in 2 versions, phosphor bronze round spring and 304 stainless steel box section spring. The 19mm (0.75") diameter phosphor bronze springs are almost 3 times lighter than the 34mm (1.33") diameter stainless steel springs.

Rolling Spring Dimensions

Part Number		Nominal Pipe Size		Pipe Outside Diameter (OD)			
		DN	NPS	millimeters (mm)		inches (")	
Phosphor Bronze	Stainless Steel	(mm)	(inches)	min OD	max OD	min OD	max OD
T99920438-160A	T99922744-160A	406	16.0	400	435	15.7	17.1
T99920438-160B	T99922744-160B			435	450	17.1	17.7
T99920438-180A	T99922744-180A	457	18.0	450	500	17.7	19.7
T99920438-200A	T99922744-200A	508	20.0	500	550	19.7	21.7
T99920438-220A	T99922744-220A	559	22.0	550	600	21.7	23.6
T99920438-240A	T99922744-240A	610	24.0	600	650	23.6	25.6
T99920438-260A	T99922744-260A	660	26.0	650	700	25.6	27.6
T99920438-280A	T99922744-280A	711	28.0	700	750	27.6	29.5
T99920438-300A	T99922744-300A	762	30.0	750	810	29.5	31.9
T99920438-320A	T99922744-320A	813	32.0	810	860	31.9	33.9
T99920438-340A	T99922744-340A	864	34.0	860	910	33.9	35.8
T99920438-360A	T99922744-360A	914	36.0	910	960	35.8	37.8
T99920438-380A	T99922744-380A	965	38.0	960	1010	37.8	39.8
T99920438-400A	T99922744-400A	1016	40.0	1010	1060	39.8	41.7
T99920438-420A	T99922744-420A	1067	42.0	1060	1110	41.7	43.7
T99920438-440A	T99922744-440A	1118	44.0	1110	1160	43.7	45.7
T99920438-460A	T99922744-460A	1168	46.0	1160	1210	45.7	47.6
T99920438-480A	T99922744-480A	1219	48.0	1210	1270	47.6	50.0
T99920438-500A	T99922744-500A	1270	50.0	1270	1320	50.0	52.0
T99920438-520A	T99922744-520A	1321	52.0	1320	1370	52.0	53.9
T99920438-540A	T99922744-540A	1372	54.0	1370	1425	53.9	56.1

Other sizes are available upon request. Please contact your nearest distributor for more information.

Grounding Mats

Grounding mats are ideal for testing on ungrounded pipes. The conductive rubber mat is wrapped around the coated pipe and connected to both the grounding pin (supplied separately) and the signal return lead.





Part Number	Description	Outside Diameter (OD)		Compatible with		
		DN	NPS	Elcometer 236	Elcometer 266	Elcometer 280
T28022637-1	Grounding Mat	up to 229mm	up to 9"			■
T28022637-2	Grounding Mat	up to 457mm	up to 18"			■
T28022637-3	Grounding Mat	up to 762mm	up to 30"			■
T28022637-4	Grounding Mat	up to 1067mm	up to 42"			■
T28022748	Grounding pin; 60cm (23.5") long					■
T28022749	10m (32') earth lead, clips each end					■
T28022750	10m (32') earth lead, clip / Elcometer 280 connector					■

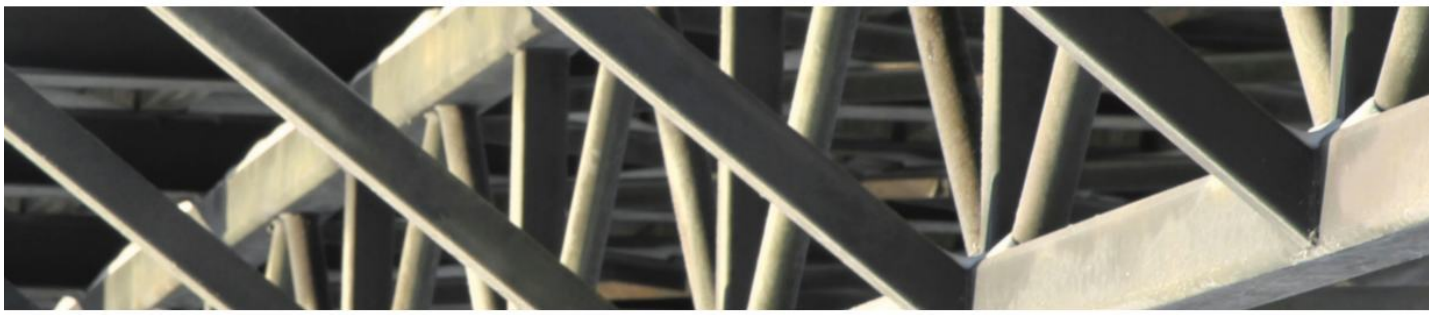
□ Older Elcometer 236 models may require adaptor piece T99922768



Inspector's Accessories

11

Inspector's Accessories



Elcometer offers a full range of accessories specifically for the coatings inspector, these include:

Inspection Mirrors: it may be necessary to take a detailed look at a specific area where you cannot get to. In this case an inspection mirror is required.

Magnifiers & Microscopes: for close up investigations, the inspector may require magnification of the surface for a clearer understanding.

Torches/Flashlight: in dark or shaded areas such as in ballast tanks or on large production sites, further investigation may require additional light.

Publications: inspection manuals for general coating defects or those specific to pipeline inspection.

Pictorial Surface Standards for blast cleaning incorporating standards for BS, ISO, SIS, and SSPC.

The Macaw's Pipeline Defects is a text book specific to pipelines and contains information on pipeline coatings.

Inspection Mirrors

Elcometer 131

Ideal for inspecting difficult to access areas - inside pipes, behind corners, underneath inspection tanks, and other inaccessible or awkward areas.

Combined with the full range of test equipment from Elcometer, these high quality, robust mirrors help to provide a detailed examination of the component or project under inspection.



Technical Specification

Part Number	Description
H131---1A	Elcometer 131/1A Telescopic Inspection Mirror
Dimensions	Extends from 520mm (20.5") to 1500mm (59") Mirror diameter: 63mm (2.5")
Weight	650g (1.43lb)
Packing List	Elcometer 131 Inspection Mirror



Part Number	Description
H131---1B	Elcometer 131/1B Telescopic Inspection Mirror
Dimensions	Extends from 165mm (6.5") to 925mm (36") Mirror diameter: 57mm (2.25")
Weight	100g (0.22lb)
Packing List	Elcometer 131 Inspection Mirror



Part Number	Description
H131---1C	Elcometer 131/1C Telescopic Inspection Mirror
Dimensions	Extends from 165mm (6.5") to 750mm (29.5") Mirror diameter: 82mm (3.25")
Weight	100g (0.22lb)
Packing List	Elcometer 131 Inspection Mirror



Part Number	Description
H131---2A	Elcometer 131/2A Illuminated Inspection Mirror (Battery Type 2x LR14 C)
Dimensions	Mirror diameter: 63mm (2.5")
Weight	650g (1.43lb)
Packing List	Elcometer 131 Inspection Mirror

Elcometer 137 Illuminated (x10) Magnifier



From time to time a closer inspection of a surface is required to ascertain the exact conditions of the material's profile, cleanliness etc.

The Elcometer 137 illuminated magnifier is the ideal product for the job as many environments can be in low light or dark areas - ballast tanks, oil and gas tanks, etc.

- Lightweight, battery powered, portable magnifier
- Ideal for viewing surface comparators
- x10 magnification for close surface inspection
- Scaled lens for easy measurement of surface features

Technical Specification

Part Number	Description
H137----1	Elcometer 137 Illuminated Magnifier
Battery Type	3x LR14 (C)
Dimensions	33 x 215mm (1.3 x 8.5")
Weight	236g (0.52lb)
Packing List	Elcometer 137 Illuminated Magnifier and operating instructions

Elcometer 7210 Pocket (x30) Microscope



The Elcometer 7210 is pocket size making it an extremely practical microscope for site inspections.

Having x30 magnification and an inbuilt light source, the Elcometer 7210 Pocket Microscope is the ideal choice for close up investigation of defects and surface cleanliness.

Technical Specification

Part Number	Description
KT007210M001	Elcometer 7210 Pocket Microscope
Battery Type	2x AA batteries
Dimensions	140 x 50 x 22mm (5.5 x 2 x 0.9")
Weight	68g (0.14lb)
Packing List	Elcometer 7210 Pocket Microscope, 2x AA batteries and operating instructions

Illuminated (x50) Microscope

Elcometer 900

The Elcometer 900 is a very simple, graduated x50 microscope with internal illumination.

This allows the user to quickly determine the width by counting the number of graduated reticules on the scaled lens and then calculating the value.



Technical Specification

Part Number	Description		
W90018568-D	Elcometer 900 Microscope		
Battery Type	1x AAA battery		
Dimensions	120 x 43 x 115mm (4.7 x 1.7 x 4.5")	Weight	145g (0.31lb)
Packing List	Elcometer 900 Illuminated Microscope and operating instructions		

Safety Torch / Flash Light

Elcometer 132

The Elcometer 132 Safety Torch / Flash Light is CE marked to the ATEX directive and IECEx. Certified for safe use in Zones 1 and 2 potentially explosive gas, vapour and mist atmosphere, where a T6 or T4 class permits, and Zones 21 and 22 dust atmospheres, with certified maximum surface temperatures of 65°C or 95°C.

Many environments can have low light, dark areas or explosive gas present; ballast tanks, oil and gas tanks, etc. It is imperative for safety reasons to be able to inspect the coating adequately with sufficient light.



Technical Specification

Part Number	Description
H132---1A	Elcometer 132 Safety Torch/Flash Light
Battery Type	2x LR20 (D)
Dimensions	200 x 60mm (7.8 x 2.4")
Weight	150g (5.3oz) without batteries
Packing List	Elcometer 132 Safety Torch/Flash Light and operating instructions

Elcometer 144 Paint Safe Marker Pens



Paint Safe Marker Pens are used to highlight visual areas of non conformance, providing a clear indication of areas where rework or other processes need to be carried out.

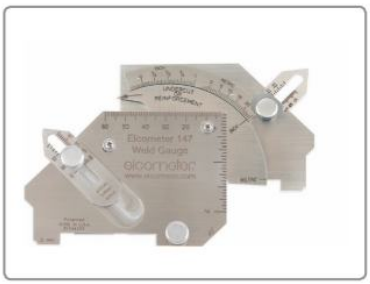
The Safinah Marker pen has been specially selected for use as an inspection marker for all types of large steel fabrications which include both coated or uncoated ships and offshore structures.

The black permanent ink marker pen is ideal for marking in the most sensitive areas.

Technical Specification

Part Number	Description
H144----1	Elcometer 144 Paint Safe Marker Pens (pack of 5)

Elcometer 147 Weld Gauge



The Elcometer 147 Weld Gauge measures many aspects of welds in both Metric and Imperial:

- angle of preparation 0 to 60°
- misalignment (high - low)
- fillet weld throat size
- fillet weld length
- 2mm (0.79") edge roundness test
- excess weld metal (capping size)
- depth of undercut
- depth of pitting
- general linear measurements up to 60mm (2")

Technical Specification

Part Number	Description
H147----1	Elcometer 147 Weld Gauge
Angle of Preparation Scale	0 - 60° in 5° divisions
Misalignment Scale	0 - 25mm in 1mm divisions and 0 - 1" in 1/16" divisions
Fillet Leg & Excess Weld Scale	0 - 25mm in 1mm divisions and 0 - 1" in 1/16" divisions
Fillet Throat Scale	0 - 20mm in 1mm divisions and 0 - 3/4" in 1/16" divisions
Undercut Scale	0 - 4mm in 1mm divisions and 0 - 1/4" in 1/16" divisions
Dimensions	100 x 68mm (3.9 x 2.7")
Weight	154g (5.4oz)
Packing List	Elcometer 147 Weld Gauge and instruction card



For Pictorial Surface Standards see page 2-12

Elcometer Fitz's Atlas 2 of Coatings Defects

Fitz

The Elcometer Fitz's Atlas 2 of Coating Defects (EFA) takes the reader through a comprehensive range of problems and discusses each in detail.

EFA provides the User with a greater understanding of the defect, the probable cause and possible solutions. With in excess of 180 colour photographs, the user can quickly gain an insight into the coatings industry and the possible pitfalls.

Sections:

- Welding Faults: welds, cracks, surface porosity, undercut
- Surface Conditions: surface preparation, oil contamination, skip weld
- Coatings Defects: a comprehensive list of possible defects including blistering, bloom, chalking, cracking, erosion, fish eyes, orange peel
- Microcopy: blisters, bubbles, delamination, pinholes, voids, weed fouling
- Marine Fouling: animal fouling, barnacles, molluscs, weed or algae fouling



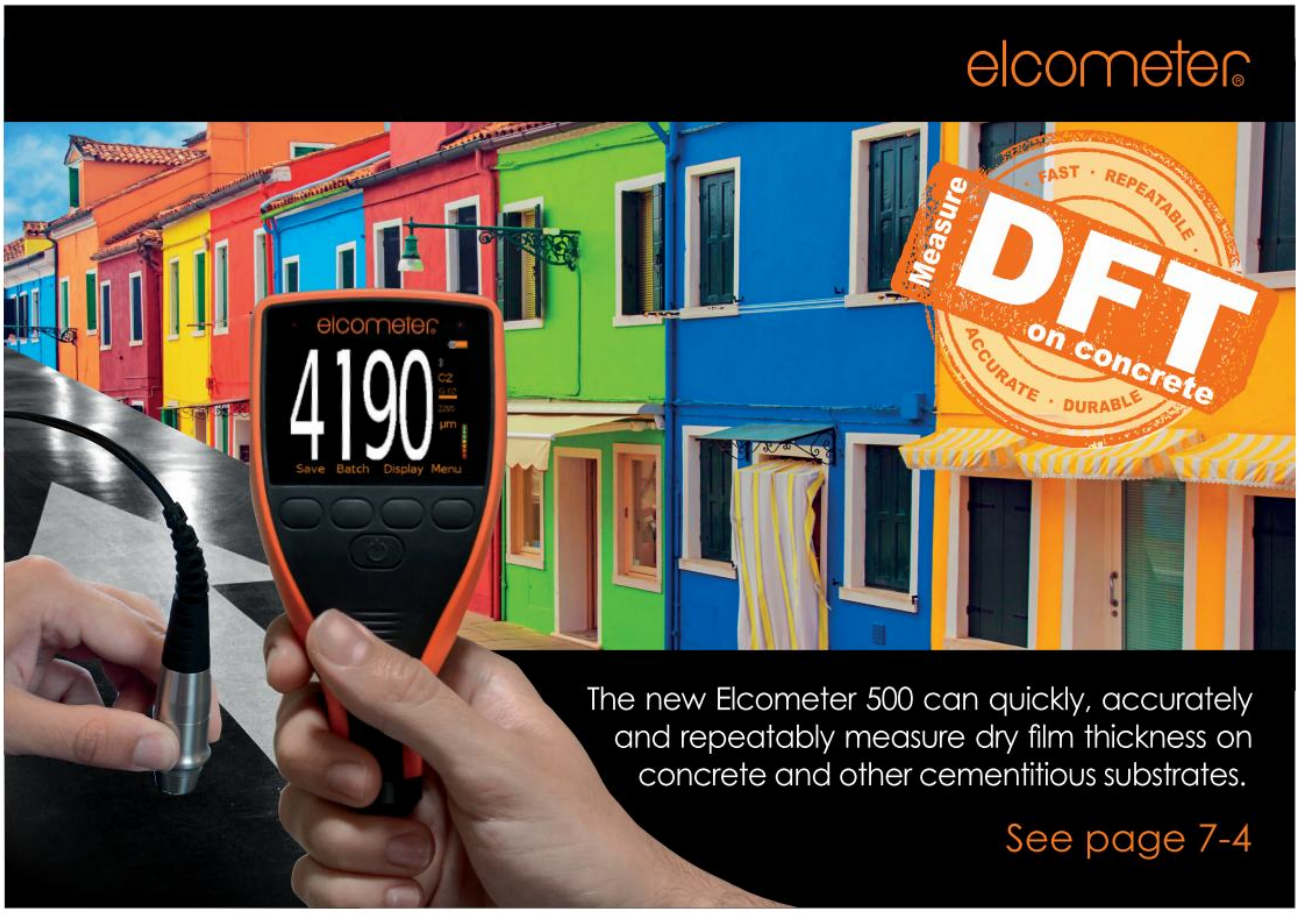


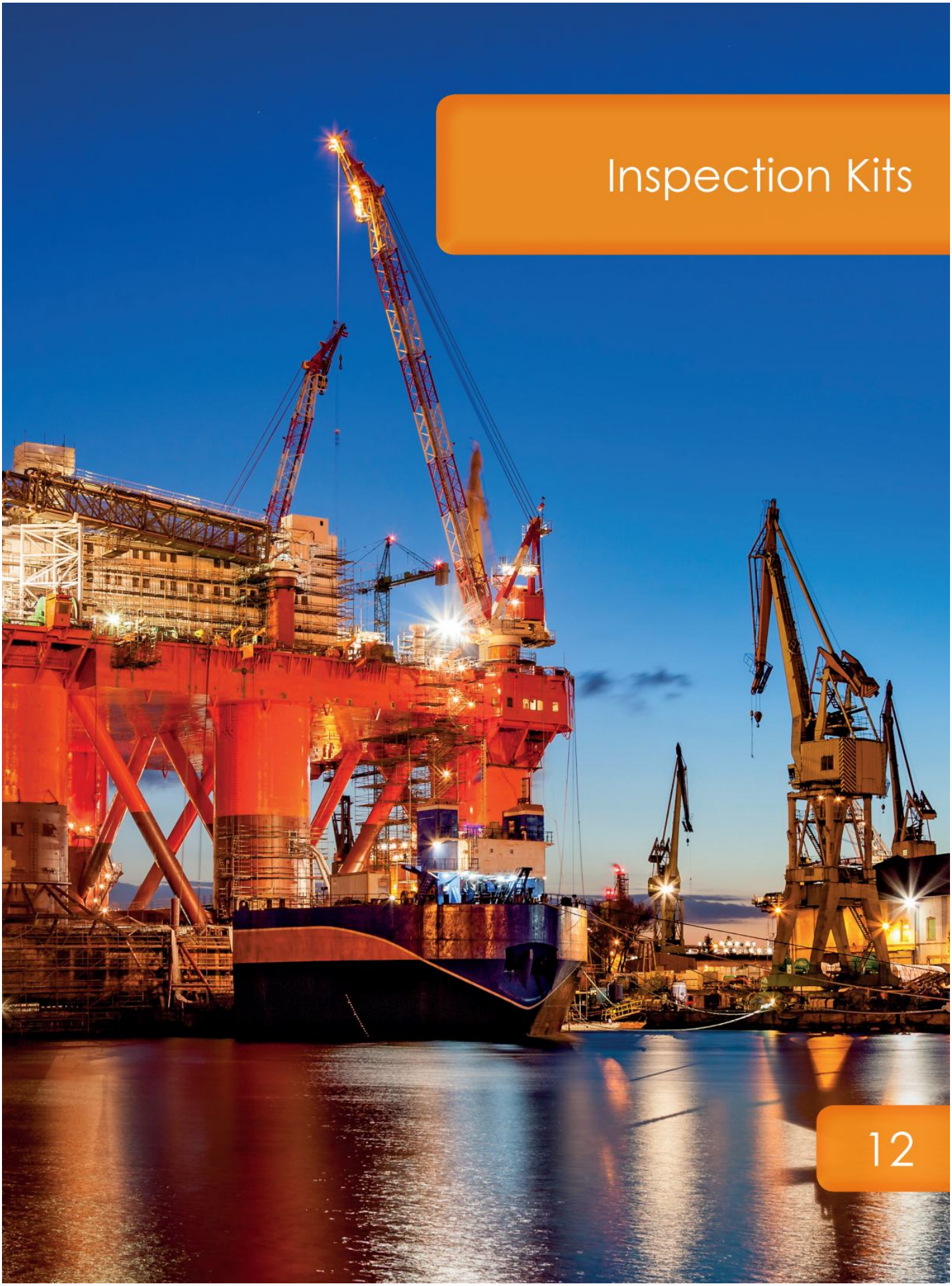


Technical Specification

Part Number	Description
H99916043	Elcometer Fitz's Atlas 2 of Coating Defects
Dimensions	223 x 220 x 70mm (9 x 8.6 x 3")
Weight	0.45kg (1lb)

Notes


elcometer
Measure
DFT
on concrete
FAST · REPEATABLE
ACCURATE · DURABLE
elcometer
4190
Save Batch Display Menu
The new Elcometer 500 can quickly, accurately and repeatably measure dry film thickness on concrete and other cementitious substrates.
See page 7-4



Inspection Kits

12

Inspection Kits



Elcometer offers one of the widest range of inspection equipment available. Our products are used across numerous industry sectors. In all cases, there is always a need to undertake a number of specific inspections during quality control assessments - as one parameter can affect another.

One inspection parameter can affect another, for example the thickness of an applied coating can affect properties such as adhesion, gloss, colour and porosity.

Elcometer has put together a number of inspection kits which are both product and industry specific - combining those gauges from our range into one robust carry case, ideal for transporting to and from the inspection site.

Elcometer inspection kits are available for the following:

- Digital Inspection
- Blasting Inspection
- Protective Coating Inspection
- Automotive Inspection
- Qualicoat & Powder Inspection
- Surface Contamination
- Soluble Salt & Ion Specific Inspection
- Pinhole & Holiday Detection
- Heating, Ventilation & AC Duct Inspection

These kits can be customised to meet your particular requirements, please contact your distributor for further information.

Digital Inspection Kits

Elcometer



These digital inspection kits have been specifically designed to undertake the three principal inspection requirements in the Protective and Industrial Coatings Industry – climate, surface profile and dry film thickness. Ideal for 'paperless' quality assurance systems the kits come complete with the ElcoMaster® Data Mangement Software for professional reporting and analysis.

Two inspection kits are available (Basic & Top) to meet your specific needs.

Measurement parameters include:
- Surface profile
- Climatic conditions
- Coating thickness

Bluetooth® wireless technology

compatible with ElcoMaster®

STANDARDS:

AS 2331.1.4, AS 3894.3-B, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 4417-B, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6B, BS 3900-C5-6A, BS 5411-11, BS 5411-3, BS 5599, DIN 50981, BS 7079-B4, DIN 50984, ECCA T1, EN 13523-1, IMO MSC.215(82), IMO MSC.244 (83), ISO 1461, ISO 19840, ISO 2063, ISO 2360, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, ISO 2808-12, ISO 8502-4, JIS K 5600-1-7, NF T30-124, SANS 5772, SS 184159, SSPC PA 2, US Navy PPI 63101-000, US Navy NSI 009-32

Contents

Model	Description	Basic Kit	Top Kit	Page
Elcometer 224	Integral Digital Surface Profile Gauge	Model B	Model T	2-15
Elcometer 319	Digital Dewpoint Meter	Standard	Top	4-3
Elcometer 319	External Magnetic Surface Probe		■	4-7
Elcometer 456	Ferrous/FNF Separate Coating Thickness Gauge	Model B	Model T	7-10
Elcometer 456	Ferrous/FNF Standard Separate Probe: Scale 1	■	■	7-22
Elcometer 456	Ferrous/FNF PINIP Probe: Scale 1	□	□	7-22
ElcoMaster®	Data Management Software and USB Cable		■	1-2

Technical Specification

Part Number	Description
YKIT-DIGITAL-B	Elcometer Basic Digital Inspection Kit (F)
YKIT-DIGITAL-T	Elcometer Top Digital Inspection Kit (F)
YKIT-DIGITALFNF-B	Elcometer Basic Digital Inspection Kit (FNF)
YKIT-DIGITALFNF-T	Elcometer Top Digital Inspection Kit (FNF)

□ Space in kit to fit, but not supplied. Order separately if required.

Elcometer Blasting Inspection Kits



The Elcometer Blasting Inspection Kit is a surface preparation inspection kit providing a range of inspection equipment to test surface profile and surface contamination of blasted profiles.

An Elcometer 456 Gauge and probe can also be supplied. (Order separately if required.)

Measurement parameters include:

- Surface assessment
- Blast equipment inspection
- Surface profile
- Surface contamination

STANDARDS:

AS 3894.5, AS 3894.6-A, AS 3894.6-C, AS 3894.6-D, ASTM D 2200, ASTM D 4417-A, ASTM D 4417-B, ASTM D 4417-C, BS 7079-C5, IMO MSC.215(82), IMO MSC.244(83), ISO 8501-1, ISO 8502-3, ISO 8502-5, ISO 8502-6, ISO 8502-9, ISO 8503-1, ISO 8503-2, ISO 8503-5, NACE RP0287, SANS 5772, SS 55900, SSPC Guide 15, SSPC VIS 1, SSPC VIS 2, SSPC VIS 3, SSPC VIS 4, SSPC VIS 5, US Navy NSI 009-32, US Navy PPI 63101-000

Contents

Model	Description	Kit 1	Kit 2	Page
Elcometer 128	Pictorial Standards[1]	■	■	2-12
Elcometer 102	Needle Pressure Gauge	■	■	2-9
Elcometer 103	Blast Nozzle Gauge	■	■	2-9
Elcometer 125	Surface Comparator, Grit	■		2-23
Elcometer 125	Surface Comparator, Shot	■		2-23
Elcometer 122	Testex Tape, Coarse	■		2-22
Elcometer 122	Testex Tape, Extra Coarse	■		2-22
Elcometer 124	Testex Dial Thickness Gauge	■		2-23
Elcometer 224	Surface Profile Separate Gauge, Model T		■	2-15
Elcometer 224	Standard Separate Probe		■	2-20
Elcometer 142	Dust Tape Test Kit		■	2-48
Elcometer 134	Chlor*Test Surface Testing Kit	■	■	2-45
Elcometer 134	Chlor*Test Abrasive Testing Kit	■	■	2-3
Elcometer 134	Chlor*Test Water Testing Kit	■	■	2-3
Elcometer 138	Bresle Salt Kit[2]		■	2-39
Elcometer 138/2	Surface Contamination Kit		■	2-43
ElcoMaster®	Data Management Software & USB Cable		■	1-2

[1] Swedish Rust Standard ISO 8501, SIS055900 supplied in Metric Kit US Standard SSPC VIS 1-01 and VIS-3 supplied in Imperial Kit
[2] Supplied with Elcometer 135C Bresle Test Patches (x50)

Technical Specification

Part Number Metric	Imperial	Description
YKIT-BLAST-1M	YKIT-BLAST-1E	Elcometer Blasting Inspection Kit 1
YKIT-BLAST-2M	YKIT-BLAST-2E	Elcometer Blasting Inspection Kit 2
Dimensions	Kit 1	495 x 420 x 175mm (19.49 x 16.54 x 6.89”)
	Kit 2	575 x 475 x 205mm (22.64 x 18.70 x 8.07”)

Protective Coating Inspection Kits 1, 2 & 3

Elcometer

The Elcometer Protective Coatings Inspection Kits 1, 2 & 3 provide the tools required for the on-site inspection of a coating, including surface profile, dewpoint, relative humidity, both wet and dry film thickness and adhesive testing.

Available as metric or imperial kits and housed in a sturdy, lightweight carry case, the Elcometer Protective Coatings Inspection Kits are invaluable to the operator in the field to ensure the coating is, or has been, applied correctly.



Protective Inspection Kit 1
An entry level inspection kit containing profile, climate, wet and dry film thickness gauges.



Protective Inspection Kit 2
Like the Protective Inspection Kit 1 but with the addition of the Elcometer 224 digital surface profile gauge with data collection functionality and the Elcometer 319 digital dewpoint meter. Reports via ElcoMaster® Software can include data from both profile and climate inspections as well as dry film thickness.



Protective Inspection Kit 3
A comprehensive digital inspection kit providing gauges with data collection functionality for profile, climatic conditions and dry film thickness.

It comes complete with ElcoMaster® Software with Bluetooth® communication to PC and Android™ Mobile Apps for instant data analysis and reporting for paperless quality assurance.

Measurement parameters include:
- Surface profile
- Surface temperature
- Climatic conditions
- Coating thickness
- Adhesion

Bluetooth® wireless technology

compatible with ElcoMaster®

STANDARDS:

AS 1580.408.4, AS 2331.1.4, AS 3894.3-B, AS 3894.9, AS/NZS 1580.107.3, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 3359-B, ASTM D 4414-A, ASTM D 4417-B, ASTM D 4417-C, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6B, BS 3900-C5-6A, BS 3900-C5-7B, BS 3900-E6, BS 7079-C5, BS 5411-11, BS 5411-3, BS 5599, BS 7079-B4, DIN 50981, DIN 50984, ECCA T1, ECCA T6, EN 13523-1, EN 13523-6, IMO MSC.215(82), IMO MSC.244(83), ISO 1461, ISO 16276-2, ISO 19840, ISO 2063, ISO 2360, ISO 2409, ISO 2808-1A, ISO 2808-6A, ISO 2808-6B, ISO 2808-7B, ISO 2808-7C, ISO 2808-7D, ISO 2808-12, ISO 8502-4, ISO 8503-5, JIS K 5600-1-7, JIS K 5600-5-6, NACE RP0287, NF T30-038, NF T30-124, NF T30-125, SANS 5772, SS 184159, SSPC PA 2, US Navy NSI 009-32, US Navy PPI 63101-000

Elcometer Protective Coating Inspection Kits 1, 2 & 3

Contents

Model	Description	Kit 1	Kit 2 Standard	Kit 2 Top	Kit 3 Standard	Kit 3 Top	Page
Elcometer 122	Testex Tape, Coarse & Extra Coarse	■	■	■			2-22
Elcometer 124	Thickness Gauge	■	■	■			2-23
Elcometer 224	Digital Surface Profile Gauge		Model B Integral	Model T Separate	Model B Integral	Model T Separate	2-15
Elcometer 224	Standard Separate Probe			■		■	2-20
Elcometer 212	Digital Thermometer °C (°F) with Surface Probe	■					4-10
Elcometer 116	Whirling Hygrometer °C (Metric), Sling Hygrometer °F (Imperial)	■					4-8
Elcometer 114	Dewpoint Calculator	■					4-8
Elcometer 319	Digital Dewpoint Meter		Standard	Top	Standard	Top	4-3
Elcometer 112	Hexagonal Wet Film Comb 25 - 3000µm (1 - 120mils)	■	■	■			6-3
Elcometer 115	Wet Film Comb (Set of 4)				■	■	6-4
Elcometer 456	Integral Digital Coating Thickness Gauge, 0 - 1500µm (0 - 60mils)	Ferrous Model B					7-32
Elcometer 456	Separate Digital Coating Thickness Gauge		Ferrous Model S	Ferrous Model S	Dual FNF Model T	Dual FNF Model T	7-10
Elcometer 456	Standard Separate Probe, 0 - 1500µm (0 - 60mils)		Ferrous	Ferrous	Dual FNF	Dual FNF	7-22
Elcometer 107	Cross Hatch Full Kit[1]	■	■	■	■	■	9-26
ElcoMaster®	Data Management Software & USB Cable		■	■	■	■	1-2

[1] Kit 1: supplied with 6 x 1mm and 6 x 2mm cutters, Kits 2 & 3 Metric: supplied with 6 x 2mm cutter, Kits 2 & 3 Imperial: supplied with 6 x 1mm cutter

Technical Specification

Part Number Metric	Imperial	Description	Certificate
YKIT-PROTECTIVE-1M	YKIT-PROTECTIVE-1E	Elcometer Protective Inspection Kit 1	●
YKIT-PROTECTIVE-2SM	YKIT-PROTECTIVE-2SE	Elcometer Protective Inspection Kit 2 Standard	●
YKIT-PROTECTIVE-2TM	YKIT-PROTECTIVE-2TE	Elcometer Protective Inspection Kit 2 Top	●
YKIT-PROTECTIVE-3SM	YKIT-PROTECTIVE-3SE	Elcometer Protective Inspection Kit 3 Standard	●
YKIT-PROTECTIVE-3TM	YKIT-PROTECTIVE-3TE	Elcometer Protective Inspection Kit 3 Top	●
Dimensions	Kit 1	456 x 384 x 110mm (17.95 x 15.12 x 4.33”)	
	Kit 2	456 x 384 x 127mm (17.95 x 15.12 x 5.00”)	
	Kit 3	456 x 384 x 127mm (17.95 x 15.12 x 5.00”)	

If the kit that you require is not listed above, Elcometer will be happy to discuss your requirements and create one to suit your particular needs.

● Certified kit available

Protective Coating Inspection Kit 4

Elcometer

The Elcometer Protective Coatings Inspection Kit 4 provides a range of test equipment to help an inspector assess a substrate prior to the application of a coating.



Measurement parameters include:

- Surface inspection
- Weld inspection
- Surface cleanliness
- Climatic conditions
- Surface profile
- Coating thickness

Bluetooth® wireless technology

compatible with ElcoMaster®

STANDARDS:

AS 2331.1.4, AS 3894.3-B, AS 3894.6-A, AS 3894.6-C, AS 3894.9, AS/NZS 1580.107.3, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 2200, ASTM D 4414-A, ASTM D 4417-C, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6A, BS 3900-C5-6B, BS 5411-11, BS 5411-3, BS 5599, BS 7079-B4, BS 7079-C5, DIN 50981, DIN 50984, ECCA T1, EN 13523-1, IMO MSC.215(82), IMO MSC.244(83), ISO 1461, ISO 19840, ISO 2063, ISO 2360, ISO 2808-12, ISO 2808-1A, ISO 2808-6A, ISO 2808-6B, ISO 2808-7B, ISO 2808-7C, ISO 2808-7D, ISO 8501-1, ISO 8502-3, ISO 8502-4, ISO 8502-6, ISO 8502-9, ISO 8503-5, JIS K 5600-1-7, NACE RP0287, NF T30-124, NF T30-125, SANS 5772, SS 184159, SS 55900, SSPC Guide 15, SSPC PA 2, SSPC VIS 1, SSPC VIS 2, SSPC VIS 3, SSPC VIS 4, SSPC VIS 5, US Navy NSI 009-32, US Navy PPI 63101-000

Contents

Model	Description	Kit 4	Page
Elcometer 128	Pictorial Standards[1]	■	2-12
Elcometer 131/1C	Telescopic Inspection Mirror	■	11-3
Elcometer 144	Paint Safe Marker Pens (Pack of 3)	■	11-6
Elcometer 147	Weld Gauge	■	11-6
Elcometer 142	Dust Tape Test Kit	■	2-48
Elcometer 138	Bresle Salt Kit[2]	■	2-39
Elcometer 319	Digital Dewpoint Meter with Magnetic Surface Probe	Top	4-3
Elcometer 224	Integral Digital Surface Profile Integral Gauge	Model T	2-15
Elcometer 112	Hexagonal Wet Film Comb: 25 - 3000µm (1 - 120mils)	■	6-3
Elcometer 456	Separate Digital Coating Thickness Gauge with F2 Standard Probe	Ferrous Model T	7-10
ElcoMaster®	Data Management Software & USB Cable	■	1-2

Technical Specification

Part Number Metric	Imperial	Description	Certificate
YKIT-PROTECTIVE-4M	YKIT-PROTECTIVE-4E	Elcometer Protective Coatings Kit 4	●
Dimensions		495 x 420 x 175mm (19.49 x 16.54 x 6.89")	

[1] Swedish Rust Standard ISO 8501, SIS055900 supplied in Metric Kit, US Standard SSPC VIS 1-01 and VIS-3 supplied in Imperial Kit
[2] Supplied with Elcometer 135C Bresle Test Patches (x50)

● Certified kit available

Elcometer Protective Coating Inspection Kit 5



A more comprehensive kit than kits 1-4, the Elcometer Protective Coatings Inspection Kit 5 expands the range of instruments available to the protective coatings inspector.

Measurement parameters include:

- Material thickness
- Surface inspection
- Weld inspection
- Surface cleanliness
- Surface profile
- Climatic conditions
- Coating thickness
- Adhesion

Bluetooth® wireless technology

compatible with ElcoMaster®

STANDARDS:
AS 1580.108.2, AS 1580.408.4, AS 2331.1.4, AS 3894.3-B, AS 3894.6-A, AS 3894.6-C, AS 3894.6-D, AS 3894.9, AS/NZS 1580.107.3, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 2200, ASTM D 3359-B, ASTM D 4138-A, ASTM D 4414-A, ASTM D 4417-C, ASTM D 7091, ASTM E 376, ASTM E 797, ASTM G 12, BS 3900-C5-5B, BS 3900-C5-6A, BS 3900-C5-6B, BS 3900-E6, BS 5411-11, BS 5411-3, BS 5599, BS 7079-B4, BS 7079-C5, DIN 50981, DIN 50984, DIN 50986, ECCA T1, ECCA T6, EN 13523-1, EN 13523-6, EN 15317, IMO MSC.215(82), IMO MSC.244(83), ISO 1461, ISO 16276-2, ISO 19840, ISO 2063, ISO 2360, ISO 2409, ISO 2808-12, ISO 2808-1A, ISO 2808-5B, ISO 2808-6A, ISO 2808-6B, ISO 2808-7B, ISO 2808-7C, ISO 2808-7D, ISO 8501-1, ISO 8502-3, ISO 8502-4, ISO 8502-6, ISO 8502-9, ISO 8503-5, JIS K 5600-1-7, NACE RP0287, NF T30-038, NF T30-123, NF T30-124, NF T30-125, SANS 5772, SS 184159, SS 55900, SSPC Guide 15, SSPC PA 2, SSPC VIS 1, SSPC VIS 2, SSPC VIS 3, SSPC VIS 4, SSPC VIS 5, US Navy NSI 009-32, US Navy PPI 63101-000

Contents

Model	Description	Kit 5	Page
Elcometer MTG2	Material Thickness Gauge	■	8-4
Elcometer 128	Pictorial Standards[1]	■	2-12
Elcometer 131/1C	Telescopic Inspection Mirror	■	11-3
Elcometer 137	Illuminated Magnifier	■	11-4
Elcometer 144	Paint Safe Marker Pens (Pack of 3)	■	11-6
Elcometer 147	Weld Gauge	■	11-6
Elcometer 142	Dust Tape Test Kit	■	2-48
Elcometer 138	Bresle Salt Kit[2]	■	2-39
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Elcometer 122	Testex Tape, Coarse & Extra Coarse	■	2-22
Elcometer 124	Thickness Gauge	■	2-23
Elcometer 224	Digital Surface Profile Separate Gauge & Standard Probe	Model T	2-15
Elcometer 319	Digital Dewpoint Meter, with Magnetic Surface Probe	Top	4-3
Elcometer 112	Hexagonal Wet Film Comb: 25 - 3000µm (1 - 120mils)	■	6-3
Elcometer 456	Separate Digital Coating Thickness Gauge with F2 Standard Probe	Ferrous Model T	7-10
Elcometer 121	Paint Inspection Gauge with Cross Hatch Cutters 6 x 1, 2 & 3mm and ISO (ASTM) Adhesive Tape	Top	7-51
ElcoMaster®	Data Management Software & USB Cable	■	1-2

Technical Specification

Part Number Metric	Part Number Imperial	Description	Certificate
YKIT-PROTECTIVE-5M	YKIT-PROTECTIVE-5E	Elcometer Protective Coatings Inspection Kit 5	●
Dimensions		575 x 475 x 205mm (22.64 x 18.70 x 8.07")	

[1] Swedish Rust Standard ISO 8501, SIS055900 supplied in Metric Kit, US Standard SSPC VIS 1-01 and VIS-3 supplied in Imperial Kit
[2] Supplied with Elcometer 135C Bresle Test Patches (x50)

● Certified kit available

Protective Coating Inspection Kit 6

Elcometer

The Elcometer Protective Coatings Inspection Kit 6 is a comprehensive kit which incorporates all the key gauges and inspection accessories required to assess a structure before, during and after coating has been applied.



Measurement parameters include:

- Material thickness
- Surface inspection
- Weld inspection
- Surface cleanliness
- Surface profile
- Climatic conditions
- Coating thickness
- Adhesion
- Pinhole detection

Bluetooth® wireless technology

compatible with ElcoMaster®

STANDARDS:
AS 1580.108.2, AS 1580.408.4, AS 2331.1.4, AS 3894.2, AS 3894.3-B, AS 3894.6-A, AS 3894.6-C, AS 3894.6-D, AS 3894.9, AS/NZS 1580.107.3, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 2200, ASTM D 3359-B, ASTM D 4138-A, ASTM D 4414-A, ASTM D 4417-C, ASTM D 5162-A, ASTM D 7091, ASTM E 376, ASTM E 797, ASTM G 12, ASTM G6, ASTM G62-A, BS 3900-C5-5B, BS 3900-C5-6A, BS 3900-C5-6B, BS 3900-E6, BS 5411-11, BS 5411-3, BS 5599, BS 7079-B4, BS 7079-C5, BS 7793-2, DIN 50981, DIN 50984, DIN 50986, ECCA T1, ECCA T6, EN 13523-1, EN 13523-6, EN 15317, IMO MSC.215(82), IMO MSC.244(83), ISO 1461, ISO 14654, ISO 16276-2, ISO 19840, ISO 2063, ISO 2360, ISO 2409, ISO 2808-12, ISO 2808-1A, ISO 2808-5B, ISO 2808-6A, ISO 2808-6B, ISO 2808-7B, ISO 2808-7C, ISO 2808-7D, ISO 8289-A, ISO 8501-1, ISO 8502-3, ISO 8502-4, ISO 8502-6, ISO 8502-9, ISO 8503-5, JIS K 5600-1-7, JIS K 6766, NACE RP0188, NACE RP0287, NACE SP0188, NACE TM0384, NF T30-038, NF T30-123, NF T30-124, NF T30-125, SANS 5772, SS 184159, SS 55900, SSPC Guide 15, SSPC PA 2, SSPC VIS 1, SSPC VIS 2, SSPC VIS 3, SSPC VIS 4, SSPC VIS 5, US Navy NSI 009-32, US Navy PPI 63101-000

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Elcometer 128	Pictorial Standards[1]	■	2-12
Elcometer 131/1C	Telescopic Inspection Mirror	■	11-3
Elcometer 137	Illuminated Magnifier	■	11-4
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Elcometer 456	Separate Digital Coating Thickness Gauge with F2 Standard Probe	Ferrous Model T	7-10
Elcometer 121	Paint Inspection Gauge (Top) with Cross Hatch Cutters 6 x 1, 2 & 3mm & ISO (ASTM) Adhesive Tape	Top	7-58
Elcometer 270	Pinhole Detector (9 , 67.5 & 90V)	■	10-3

Technical Specification

Part Number Metric	Imperial	Description	Certificate
YKIT-PROTECTIVE-6M	YKIT-PROTECTIVE-6E	Elcometer Protective Coatings Kit 6	●
Dimensions	575 x 475 x 205mm (22.64 x 18.70 x 8.07")		

[1] Swedish Rust Standard ISO 8501, SIS055900 supplied in Metric Kit, US Standard SSPC VIS 1-01 and VIS-3 supplied in Imperial Kit
[2] Supplied with Elcometer 135C Bresle Test Patches (x50)

● Certified kit available

Elcometer Automotive Inspection Kit



Produced specifically for the automotive aftermarket and Insurance Assessors, 3rd party consultants, body shops and used car sales, these kits provide an instant measure of the coating thickness of panels. To enable close inspection of bodywork an illuminated magnifer is supplied.

Measurement parameters include:
- Surface temperature
- Surface inspection
- Coating thickness

STANDARDS:
AS/NZS 1580.108.1, ASTM B 499, ASTM D 7091, ASTM E 376, ISO 2360, ISO 2808-12, ISO 2808-7C, ISO 2808-7D, NF T30-124

Contents

Model	Description	Kit 1	Kit 2	Page
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Elcometer 311	Automotive Paint Meter	■	■	7-42
Elcometer 214L	Infrared Digital Laser Thermometer		■	4-12

Individual Instruments can be used in accordance with many other tests.
Please see individual Product Information Pages for details.

Technical Specification

Part Number	Description
YKIT-AUTOMOTIVE-1	Elcometer Automotive Inspection Kit 1
YKIT-AUTOMOTIVE-2	Elcometer Automotive Inspection Kit 2
Dimensions	310 x 260 x 80mm (12.2 x 10.2 x 3.1”)
Weight	Kit 1: 1kg (2.2lb) Kit 2: 1.5kg (3.3lb)

Powder Coating Inspection Kit

Elcometer

The Powder Coating Inspection Kit covers all eventualities in the powder inspection process, Elcometer has produced this kit to enable the inspection of powder coatings on all surfaces.

The digital Elcometer 415 is suitable for measuring the coating thickness on smooth surfaces and the Elcometer 1542, designed for testing the adhesion of the coating, are also included.

Measurement parameters include:

- Surface inspection
- Coating thickness
- Adhesion



STANDARDS:

AS 1580.408.4, AS/NZS 1580.108.1, ASTM B 499, ASTM D 7091, ASTM E 376, ISO 2360, ISO 2808-12, ISO 2808-7C, ISO 2808-7D, NF T30-124

Contents

Model	Description	Page
Elcometer 137	Illuminated Magnifier (x10)	12-3
Elcometer 415	Powder Coating Thickness Gauge	8-20
Elcometer 1542	Cross Hatch Cutter 6 x 2mm with ISO or ASTM Adhesive Tape	10-21

Individual Instruments can be used in accordance with many other tests.
Please see individual Product Information Pages for details.

Technical Specification

Part Number ISO Kit	ASTM Kit	Description
YKITPOWDER-1M	YKITPOWDER-1E	Elcometer Powder Coatings Inspection Kit
Dimensions		360 x 300 x 120mm (12.2 x 10.2 x 3.1”)
Weight		580g (1.27lb)

Elcometer

Qualicoat Powder Coating Inspection Kit



The Qualicoat Organisation brings together the ideals of several National Coating Associations into one quality label for powder coatings on aluminium architectural components. Qualicoat has established Specifications defining minimum requirements for plant, test equipment, coating materials and finished products.

Within this quality label, Qualicoat identifies a range of inspection requirements to be undertaken with regards to the quality control of powder coated products.

The Elcometer Qualicoat Powder Coating Inspection Kit provides the various test instrumentation required to meet the high standards of this organisation.

Measurement parameters include:

- Appearance
- Impact & deformation
- Oven temperature
- Coating thickness
- Adhesion

Bluetooth® wireless technology

compatible with ElcoMaster®

Contents

Model	Description	Basic	Top	Page
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Elcometer 1615	Base Unit and Tube Assembly	■	■	21-7
Elcometer 1615	Kit B: ISO 6272/2 and BS 6496	■	■	21-9
Elcometer 1620	Manual Cupping Tester with Digital Gauge	■	■	21-6
Elcometer 215	Oven Data Logger and Kit*	Standard	Top	5-3
Elcometer 415	FNF Integral Digital Coating Thickness Gauge for smooth surfaces	■		7-39
Elcometer 456	FNF Separate Digital Coating Thickness Gauge		Model T	7-10
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Elcometer 1542	Cross Cut Set 6 x 1, 2, 3mm with ISO and ASTM Adhesive Tape	■	■	9-27

Individual Instruments can be used in accordance with many other tests.
Please see individual Product Information Pages for details.

Technical Specification

Part Number Basic	Top	Description
YKITQUALICOAT-1B	YKITQUALICOAT-1T	Elcometer Qualicoat Powder Coatings Inspection Kit

* A wide range of k-type temperature probes is available. These are not supplied in the Qualicoat Kits and must be ordered separately.

Surface Contamination Kit

Elcometer 138/2

Measuring the level of contaminants on a surface prior to application of the coating is essential to ensure the quality of the coating and that its optimum lifetime is achieved.

If the coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly re-coating and high maintenance costs.

The Elcometer 138/2 Surface Contamination Kit provides the user with a means for testing invisible surface contaminants including:

- pH
- chloride ions
- iron
- salts







STANDARDS:
AS 3894.6-A, AS 3894.6-D, SSPC Guide 15

Technical Specification

Part Number	Description	Certificate
E138----2	Elcometer 138/2 Surface Contamination Kit	•
Measuring Range	pH: 0pH to 14pH Iron: 3,10, 25, 50, 100, 250, 500mg/l Fe^2 Chloride: 30- 600µg/cm^2 (30 - 600ppm) Cl	
Dimensions	300 x 220 x 75mm (11 x 8.6 x 3")	
Weight	2.1kg (4.62lb)	
Packing List	100x pH test strips, 100x Iron test strips, 40x Chloride test strips, 50x Elcometer 135C Bresle test patches, 3 x 5ml (0.17fl oz) syringes, 3x needles, 30ml (1fl oz) plastic beaker, carry case and operating instructions	

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Pack of 25)
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)
T13818517	3 x 5ml (0.17fl oz) Syringes
T13818518	3x Needles
T13818519	Plastic Beaker, 30ml (1fl oz)
T13827259	Pure Distilled Water, 250ml (8.5fl oz) Bottle
T13820562	100x pH Test Strips
T13820563	100x Iron Test Strips
T13820564	40x Chloride Test Strips

• Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

Elcometer 138 Bresle Salt Kit



STANDARDS:
AS 3894.6-A, IMO MSC.215 (82), IMO MSC.244 (83), ISO 8502-6, ISO 8502-9, SSPC Guide 15, US Navy NSI 009-32, US Navy PPI 63101-000

It is essential that the level of contaminants on a surface is measured prior to application of the coating to ensure the quality of the coating and that its optimum lifetime is achieved.

If the coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly re-coating and high maintenance costs.

The Elcometer 138 Bresle Kit includes the Elcometer 138 Conductivity Meter. This lightweight, portable conductivity meter accurately measures the salinity of the test samples.

The sensor cartridge can be easily replaced when necessary and displays conductivity in a range of units including: S/cm, S/m, ppm and % salinity.

Technical Specification

Part Number	Description	Certificate
E138-1C	Elcometer 138 Bresle Salt Kit with Elcometer 135C Bresle Test Patches	•
E138-1	Elcometer 138 Bresle Salt Kit with Elcometer 135B Bresle Patches	
Measurement Range	0 mS/cm to 19.9 mS/cm and 0 S/m to 1.99 S/m	
Accuracy	2% full scale ±1 digit (see Elcometer 138 for full specification)	
Dimensions	346 x 292 x 84mm (13.6 x 11.5 x 3.3") Weight 1.1kg (2lb 7oz)	
Packing List	Box of 25 Elcometer 135C Bresle Test Patches (E138-1C) or Elcometer 135B Bresle Patches (E138-1), Elcometer 138 Conductivity Meter, 14ml (0.47fl oz) bottle of standard 1.41 mS/cm calibration solution, 14ml (0.5fl oz) bottle of moistening solution, 250ml (8.5fl oz) bottle of pure distilled water, 3 x 5ml (0.17fl oz) syringes, 3x blunt needles, 30ml (1fl oz) plastic beaker, 2x CR2032 batteries, carry case and operating instructions	

Accessories

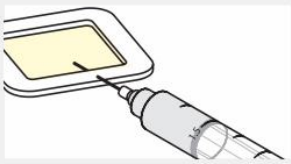
E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)	T13823928	Replacement Conductivity Sensor
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)	T13818517	3 x 5ml (0.17fl oz) Syringes
E135----B	Bresle Patches (Box of 25)	T13818518	3x Needles
T13827259	Pure Distilled Water 250ml (8.5fl oz) Bottle	T13818519	Plastic Beaker 30ml (1fl oz)
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution – 6 x 14ml (0.47fl oz) Bottles		

Measuring Salt Contamination using the Bresle method in accordance with ISO 8502-6/ISO 8502-9



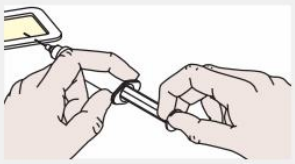
Remove protective backing and foam centre from the patch.

Apply the patch to surface and press firmly around perimeter to achieve a complete seal - ensuring that a minimum amount of air is trapped within the test compartment.



Fill the syringe with 3.0ml of pure distilled water.Insert the syringe into the patch through its foam perimeter, at a 30° angle, so that it passes through the foam into the test compartment.

Inject the water into the test compartment. If necessary remove the remaining air within the compartment.



During an agreed period of time, without removing the needle - withdraw and re-inject the solution back into the patch, at least four times.



At the end of the period extract as much solution as possible.

Remove the syringe from the patch and measure the conductivity of the solution using a suitable Conductivity Meter such as the Elcometer 138 on page 2-41.

• Certificate of Cleanliness & Test Area available at www.elcometer.com/cert

Basic Bresle Salt Kit

Elcometer 138B

If a coating is applied to a contaminated surface, which is not properly prepared, it could fail prematurely resulting in costly re-coating and high maintenance costs.

Therefore it is essential to measure the level of contaminants on a surface prior to coating application to ensure the quality of the coating and that its optimum lifetime is achieved.

The Elcometer 138 Basic Bresle Kit includes the Elcometer 135C Bresle Test Patches and the Elcometer 138E Conductivity Meter. This lightweight, portable conductivity meter accurately measures the salinity of the test samples.

The sensor cartridge can be easily replaced when necessary and displays conductivity in a range of units including: S/cm & S/m.



STANDARDS:
AS 3894.6-A, IMO MSC.215 (82), IMO MSC.244 (83), ISO 8502-6, ISO 8502-9, SSPC Guide 15, US Navy NSI 009-32, US Navy PPI 63101-000

Technical Specification

Part Number	Description		Certificate
E138-EC	Elcometer 138 Basic Bresle Salt Kit with Elcometer 135C Bresle Test Patches		●
Measurement Range	0 µS/cm to 200.0 µS/cm, 0 µS/cm to 2000 µS/cm, 0 mS/cm to 20.00 mS/cm		
Accuracy*	± 1% of full scale		
Dimensions	307 x 260 x 74mm (12.1 x 10.2 x 2.9")	Weight	952g (2lb 1oz)
Packing List	Box of 25 Elcometer 135C Bresle Test Patches, Elcometer 138E Conductivity Meter, 250ml (8.5fl oz) bottle of pure distilled water, 3 x 3ml (0.1fl oz) syringes, 3 x blunt needles, 1 x 20ml Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution, 30ml (1fl oz) plastic beaker, 4 x 1.5V batteries, transit case & user guide		

Accessories

E135----C25	Elcometer 135C Bresle Test Patch (Box of 25)
E135----C100	Elcometer 135C Bresle Test Patch (Box of 100)
T13818517	3 x 5ml (0.17fl oz) Syringes
T13818518	3x Needles
T13818519	Plastic Beaker 30ml (1fl oz)
T13827355	Elcometer 138E Conductivity Meter
T13827352-1	Standard 447 µS/cm (0.447 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13827352-3	Standard 15000 µS/cm (15 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13823926	Standard 1.41 mS/cm (1410 µS/cm) Calibration Solution – 6 x 14ml (0.47fl oz) Bottles
T13824404	Standard 12.9 mS/cm (12900 µS/cm) Calibration Solution – 6 x 14ml (0.47fl oz) Bottles
T13827259	Pure Distilled Water - 250ml (8.5fl oz) Bottle

* See Elcometer 138E for full specification

● Certificate of Cleanliness & Test Area available to download at www.elcometer.com/cert

Elcometer 138 Abrasive Soluble Salt Test Kit – ASTM D4940



STANDARDS:
ASTM D4940

Abrasives used for blast cleaning surfaces can be contaminated with soluble salts due to the source or the re-use of the blasting media. This contamination can be transferred to the blast cleaned surface and result in accelerated corrosion conditions and also cause premature coating failure, if this contamination is not removed prior to applying the coating.

Testing abrasives on site for soluble salt contamination can be carried out quickly and easily using the Elcometer 138 Abrasive Soluble Salt Test Kit, according to the ASTM D4940 method. A measured volume of the abrasive is mixed with the same volume of water and agitated to allow any soluble salts to dissolve in the water. The resulting slurry is allowed to settle and the filtered water can then be tested using a conductivity meter. The Elcometer 138 Abrasive Soluble Salt Test Kit provides all that is needed to carry out the test in the field or in the laboratory.

Technical Specification

Part Number	Description
E138-A	Elcometer 138 Abrasive Soluble Salt Test Kit with Elcometer 138E Conductivity Meter
Measurement Range	0 µS/cm to 200.0 µS/cm, 0 µS/cm to 2000 µS/cm, 0 mS/cm to 20.00 mS/cm
Accuracy	±1% full scale (see Elcometer 138E for full specification)
Dimensions	456 x 384 x 127mm (18 x 15.1 x 5”) Weight 2.2kg (4lb 14oz)
Packing List	Elcometer 138E Conductivity Meter, 1000ml (33.8 fl oz) bottle of pure distilled water, 100ml & 600ml (3.4 & 20.3 fl oz) glass beakers, 500ml (16.9fl oz) plastic measuring beaker, funnel, stirring rod, box of 100 filter papers (Grade 413), 1 x 20ml (0.74fl oz) standard 1413 µS/cm (1.413 mS/cm) calibration solution, 4x LR44 batteries, transit case and user guide

Accessories

T13827355	Elcometer 138E Conductivity Meter
T13827455	Replacement Sensor for Conductivity Meter
T13827352-2	Standard 1413 µS/cm (1.413 mS/cm) Calibration Solution – 4 x 20ml (0.74fl oz) Single Use Pouches
T13827494	Pure Distilled Water 1000ml (33.8fl oz) Bottle
T13827495	Glass Beaker 100ml (3.4fl oz)
T13827496	Glass Beaker 600ml (20.3fl oz)
T13827498	Plastic Measuring Beaker 500ml (16.9fl oz)
T13827497	Funnel
T13827499	Stirring Rod
T13827500	Box of 100 Filter Papers (Grade 413)

CSN Chloride, Sulphate & Nitrate Kit

Elcometer 134 CSN

Designed to accurately, measure surface chloride, sulphate and nitrate ions in minutes, the Elcometer 134 CSN Salt kit offers a single kit solution for testing in the field.

All the components of the Elcometer CSN Test Kits are pre-measured and pre-dosed for trouble free testing.

Results are recorded in parts per million (ppm) requiring no complicated calculations. Elcometer 134 CSN tests are all designed to use a ratio of 1:1 for easy conversion to µg/cm².

Supplied in an ABS plastic carry case for easy portability around the site, each field kit is supplied with full instructions attached to the inside lid, together with:

- 5x Chloride tests
- 5x Sulphate tests, together with 1x colorimeter, for sulphate testing
- 5x Nitrate test strips
- 5x Syringes (without needles)

Refill kits containing 5x chloride, nitrate and sulphate tests are available.







STANDARDS:
ISO 8502-5, ISO 8502-11, SSP Guide 15

Technical Specification

Part Number	Description
E134-CSN	Elcometer 134 CSN Chloride, Sulphate & Nitrate Test Kit
Measuring Range	0 - 100µg/cm² (0 - 100ppm)
Scale Resolution	1µg/cm² (1ppm)
Sample Time	1 - 5 minutes (approximately)
Storage Temperature	Not exceeding 25°C (77°F)
Dimensions	360 x 320 x 140mm (14.2 x 12.6 x 5.5”)
Weight	1.76kg (3.8lb)
Packing List	5x tests (containing: 5x chloride tests, 5x nitrate test strips, 5x sulphate tests, 5x syringes) 1x colorimeter, carry case and operating instructions

Accessories

T134-KIT	Refill Kit for Elcometer 134 CSN

Elcometer 270 Pinhole Detection Inspection Kit







STANDARDS:
AS 3894.2, ASTM D 5162-A, ASTM G6, ASTM G62-A, BS 7793-2, ISO 8289-A, ISO 14654, JIS K 6766, NACE RP 0188, NACE SP 0188, NACE TM0384

The Elcometer 270 Pinhole Detector Inspection Kit utilises the wet sponge technique and has been designed to set a new standard for wet sponge detectors - a high quality, low voltage detector with similar accessories to a high voltage spark tester.

The Inspector's Kit does not include the main instrument; just add the model number to the order:

Part Number	Description
D270----3	Elcometer 270/3 Pinhole Detector (9V & 90V)
D270----4	Elcometer 270/4 Pinhole Detector (9V, 67.5V & 90V)

For more information see page 10-3.

Technical Specification

Part Number	Description
T27018191	Elcometer 270 Pinhole Detector Inspection Kit
Packing List	Separate wand handle & lead, roller wand, 10m (32') signal return cable, extension pieces, telescopic extension, belt clip, bottle of wetting agent, 3x AA batteries, spare flat sponge, spare roller sponge

The kit does not include the main instrument; see page 10-3 for more information

Accessories



Standard wand T27016867
A universal flat sponge to suit almost all applications
Spare flat sponge set T27018050
Pack of 3 sponges;
150 x 60 x 25mm (6 x 2.3 x 1")



Roller sponge wand T27016960
Ideal for large flat surface inspection
Spare roller sponge T27018051



Separate wand adaptor T27016999
with belt clip - converts the gauge into a separate pinhole detector
Telescopic wand adaptor T27016998
with belt clip - extends to 1m (39"), ideal for floors or high areas



Extension piece T27016965
420mm (16.5") extensions to expand operators reach
Additional extension pieces can be connected to each other



Wetting agent T27018024
50ml (1.7floz) bottle - helps aid the fast detection of pinholes. Simply add to the water used to dampen the sponge



Return cable - 4m (13') T99916954
supplied as standard, complete with crocodile clip and plug
Return cable - 10m (32') T99916996
supplied on a drum, complete with clip and connection plug

Pulsed DC Holiday Detector Inspection Kit

Elcometer 280

The Elcometer 280 is a 'stick type' holiday detector which has been designed to make pulsed DC high voltage holiday detection safer, easier and more reliable than ever before.

Using state of the art electronics, the Elcometer 280 allows users to inspect coatings - without connecting the earth return lead to the component substrate - ideal for inspecting large surfaces and pipelines.

The Elcometer 280 uses the high voltage pulsed DC technique to detect holidays in coatings - even if the coating is damp, dirty or slightly conductive.

From the two stage safety switch, bright LED's and screen icons signifying when the high voltage is on, to the extended ribbing to protect the user from spark creep, the Elcometer 280 sets the standard for high voltage measurement safety.

For more information see pages 10-5







STANDARDS:
AS 3894.1, ANSI/AWWA C203, ANSI/AWWA C214, ASTM D4787, ASTM D5162, ISO 2746, ISO 29601, JIS G 3491, JIS G 3492, NACE RP0274, NACE SP0188, NACE SP0490, NACE TM0186, NACE TM0384

Technical Specification

Part Number	Description
D280-T-KIT	Elcometer 280 Pulsed DC Holiday Detector Inspection Kit
Packing List	Elcometer 280 Pulsed DC Holiday Detector Gauge (Model T), 5m (16') trailing signal return lead, battery pack (2 supplied with Model T), battery charger with mains cables (UK, EUR & US), stainless steel rolling spring holder (supplied with Model T only), 250mm (9.8") probe extension shaft, shoulder strap and operating instructions - packed in a lightweight, rugged, wheeled transit case

Accessories - For more information see pages 10-14 to 10-18



Band brush probes

See page 10-14



External 'C-type' wire brushes

See page 10-16



Right angled wire brush probes

See page 10-15



Right angled rubber probes

See page 10-16



Internal circular wire pipe brush probes

See page 10-15



Grounding mats

See page 10-18

Elcometer

Duct Deposit Measuring System







Controlling ducting deposits and monitoring their build-up is essential to maintain hygiene standards and reduce fire risks in heating and ventilation systems.

The Elcometer 456 Duct Deposit Measuring System has been specifically designed to meet the requirements of the DTT (Deposit Thickness Test) in HVCA's (Heating & Ventilation Contractor's Association) Guide to Good Practice, for the measurement of dust and grease deposits within ventilation systems and kitchen ducts made of ferrous metals.

By using the Elcometer 456 Ferrous Top Gauge with the specially designed probe and duct cleaning templates, readings can be taken of the deposit thickness on a specific test area, before and after cleaning.

ElcoMaster® Software, supplied as standard with the Elcometer 456 Duct Deposit Measuring System includes a template designed specifically for reporting duct deposit measurements.

Bluetooth® wireless technology

compatible with ElcoMaster®

STANDARDS:

AS 2331.1.4, AS 3894.3-B, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, ASTM D 1400, ASTM D 7091, ASTM E 376, ASTM G 12, BS 3900-C5-6B, BS 3900-C5-6A, BS 5411-11, BS 5411-3, BS 5599, DIN 50981, DIN 50984, ECCA T1, EN 13523-1, IMO MSC.215(82), IMO MSC.244 (83), ISO 1461, ISO 19840, ISO 2063, ISO 2360, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, ISO 2808-12, JIS K 5600-1-7, NF T30-124, SS 184159, SSPC PA 2, US Navy PPI 63101-000, US Navy NSI 009-32

Technical Specification

Part Number	Description	Certificate
A456CDUCT	Elcometer 456 Duct Deposit Measuring System	○
Measurement Range	0 - 1500µm (0 - 60mils)	
Packing List	Elcometer 456 Top Separate Gauge, Ferrous duct probe, duct cleaning template, precision foil set 25µm, 50µm, 125µm, 250µm, 500µm, 1000µm, 2mm (x2), ElcoMaster® Software, 2x AA batteries, wrist harness, carry case and operating instructions	

Accessories

T456CF2B	Elcometer 456 Duct Probe
T99913939	Duct Cleaning Template
T99022255-8	Precision Foil Set: Scale 2B; 0 - 5mm (0 - 200mils)
T99022255-8C	Certified Precision Foil Set: Scale 2B; 0 - 5mm (0 - 200mils)
T99913969	Ferrous Zero Plate
T99920130	USB Bluetooth® Transmitter/Receiver

○ Optional Calibration Certificate available.



Appearance

Gloss, Haze, DOI, Colour

Appearance



Visual appearance can determine a person's perception of a product. Colour and Gloss are two key parameters that are used to define a product's overall quality. Perception is subjective, but Elcometer's range of instruments quantify the appearance criteria.

Gloss: the ability of a surface to reflect light without scattering is known as gloss. Gloss is measured by directing a constant intensity light beam at a fixed angle to the test surface and then by monitoring the amount of reflected light at the same angle. Different surfaces require different reflective angles.

Elcometer Glossmeters cover the range necessary to measure almost any surface from high gloss to matt, from large to small surfaces.

Haze: Some materials appear to have a considerable difference in gloss yet give comparable readings when measured with a traditional glossmeter. These materials can be differentiated by measuring at a second angle and comparing the two readings using a haze meter. Reflectance haze is defined by ASTM D4039 as the difference between gloss at 60° and the gloss at 20°.

Rspec: Peak specular reflectance is a measure of the peak gloss value of a surface; this value is obtained very close to the specular angle.

Distinctiveness of Image (DOI): Measures the effect of surface textures such as orange peel on a reflected image. Reflections seen in a totally smooth high gloss surface are completely sharp and distinct. As surface textures increase the image becomes fuzzy and distorted.

Colour: A material's ability to absorb certain wavelengths of light and reflect others is defined as its colour. For example, a black material reflects no light across the complete colour spectrum. A pure white material reflects all of the light, whilst all other colours reflect light at different points of the spectrum. Colour is quantified by the material's Red, Green and Blue (RGB) values.

Visual appearance can determine a person's perception of a product. A key parameter used to define a product's overall visual quality is ***gloss***.

Choosing the correct angle for gloss measurement:

Gloss Measurement

Gloss measurement is based on the amount of light reflected on the surface.

Gloss Measurement is relative to a polished glass reference standard. The amount of light that is reflected upon the surface is dependent on the angle of incidence and the properties of the surface.

Gloss Catergories

Gloss is categorised as either matt, semi or high gloss.

In order to determine the most appropriate measurement angle start with a glossmeter set at a 60° angle of incidence.

Results

Gloss is measured in Gloss Units (GU).

If the result is between 10 - 70GU, the coating is termed 'semi-gloss' and should be measured using the 60° angle. If the result is less than 10GU, the product is 'low gloss' and should be measured using the 85° angle and if it is greater than 70GU, the product is known as 'high gloss' and should be measured using the 20° angle.

Anodised Metals

All three angles should be recorded (20, 60 & 85°) when measuring gloss on anodised metals.

This ensures there is a complete understanding of the specular reflectance between the coating and the metal substrate.

Gloss Range	60° value	Measure with
High Gloss	> 70GU	20°
Semi Gloss	10 - 70GU	60°
Low/ Matt	< 10GU	85°









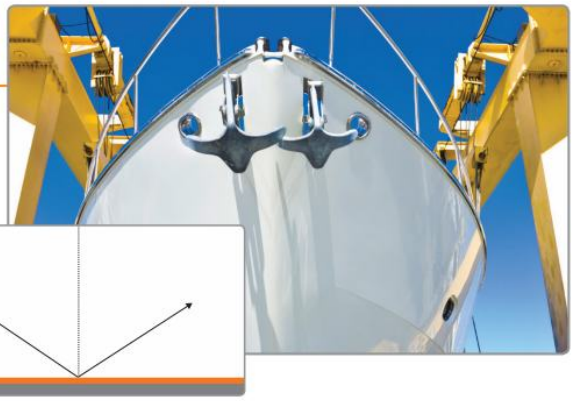


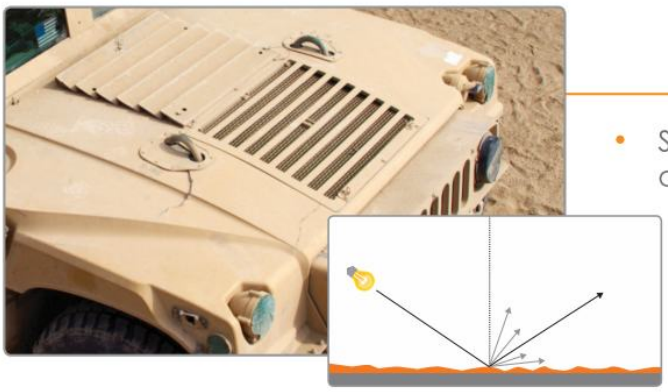


Gloss is measured by directing a constant intensity light beam, at a fixed angle, on to the test surface and then monitoring the amount of reflected light from the same angle. This specular reflectance is measured using a glossmeter. Different surfaces require different reflective angles:

High Gloss

- Surfaces with a brilliant or highly polished finish reflect images clearly.
- This distinct reflection is caused by the incident light reflecting on the surface in a specular direction.





Semi & Matt Gloss

- Semi and matt surfaces reflect images less distinctly and with reduced intensity.
- On semi or matt surfaces light not only reflects in a specular direction but also is scattered causing the reflected image to appear diffused.

% Reflectance (%)

% Reflectance compares the amount of light energy transmitted and received by a glossmeter and expresses the value as a percentage. The shinier a surface is, the closer the value will be to 100%.

Whilst the Gloss Unit (GU) scale is linear, each angle of incidence has a different measurement range; 0 – 2000GU (20°), 0 – 1000GU (60°), 0 – 160GU (85°).

% Reflectance displays the measurement value as a percentage relative to the selected angle of incidence. For example, a value of 1000GU at 20° would be expressed as 50%$_{20}$ and 500GU would be expressed as 25%$_{20}$, but at 60° this would be expressed as 50%$_{60}$.

Haze (HU)

Haze causes a drop in reflected contrast and causes 'halos' to appear around the reflected light sources, dramatically reducing the visual quality. In accordance with ASTM D4039 haze is defined as the numeric difference between the specular reflectance at 60° and 20°.

This is expressed in Haze Units (HU).

Glossmeters

Elcometer 480

The **Elcometer 480** range are easy to use glossmeters which combine high accuracy, repeatability and reproducibility making them the most advanced glossmeters on the market.

Multiple angles; 20°, 60°, 85° and Differential Mode with pass/fail

Standard, Auto Repeat and Scan Modes and 40 user definable limit standards

3 - 10 readings per second with 40,000 reading memory in up to 2,500 batches

Auto calibration tile recognition via RFID[1]

Date and time stamped readings

Display readings, statistics, graphs & batch review



Small, robust & ergonomic

USB & Bluetooth® data output to PC, iPhone or Android™ devices

compatible with ElcoMaster.

Bluetooth® wireless technology

2 YEAR* WARRANTY

STANDARDS:

AS/NZS 1580.602.2, ASTM C584, ASTM C523, ASTM D523, ASTM D1455, ASTM D2457, ASTM D4039, ASTM D4449, ASTM D5767, ASTM E430, ASTM E2387, BS 3900 D5, DIN 67530, ECCA T2, EN 12373-11, EN 13523-2, ISO 7668, ISO 2813, ISO 13803, JIS K 5600-4-7, JIS Z 8741, TAPPI T 653 (20°)

* The Elcometer 480 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

[1] Radio Frequency Identification; European Patent Number: 2906904

Elcometer 480 Glossmeters



Single, dual and triple glossmeters available

Model Range

Available as either a simple entry level 60° glossmeter or state of the art Single, Dual or Triple angle variants.

Memory and Batching

Store up to 40,000 date and time stamped readings in up to 2,500 user definable alpha-numeric batches.



Store up to 40,000 readings in up to 2,500 batches

Display Modes

The scratch and solvent resistant colour LCD screens display gloss, % reflectance or haze readings, statistics, trend graphs or an analogue scan bar.



Multiple display options and measurement modes

Accurate & Repeatable

Advanced electronics and a superior optical design combines highly accurate, repeatable and reproducible measurements with industry leading inter-instrument agreement.

Range	0-10GU	10-100GU	100-2000GU
Repeatability	±0.1GU	±0.2GU	±0.2%
Reproducibility	±0.2GU	±0.5GU	±0.5%



Wireless Connectivity

Readings can be transferred to PC, iPhone, Android™ or other mobile devices via USB or Bluetooth® for instant reporting using ElcoMaster® Software.

Glossmeters

Elcometer 480

Measurement Modes

Standard, Auto Repeat & Scan Modes



No two inspections are the same. It is for this reason that the Elcometer 480 is equipped with three measurement modes:

- Standard Mode: Press the measure button to take an individual spot measurement.
- Auto Repeat Mode: When the glossmeter is slid over the surface a measurement of all three angles is automatically taken at a user definable rate between 10 - 180 readings per minute. When enabled all the individual readings are stored into memory.
- Scan Mode: As the glossmeter slides over the entire surface area the gauge measures all three angles at a continuous rate of 10 readings per second. When stopped, the gauge displays and stores the average, highest and lowest values - ideal for checking a sample's overall uniformity.

Limit Standards and Differential Mode with Pass/Fail

When visual appearance is critical Master Standards are created. These are generated and approved by the customer and then used by manufacturers as part of their quality control inspection regime. As these Master Standards have been visually approved they often do not have numerical gloss values assigned.

In order to avoid subjectivity between inspectors, the Elcometer 480 can automatically generate and store the nominal (target), highest & lowest acceptable gloss values (Limits) from the Master Standard.

Up to 40 Limits for each customer's Master Standards can be stored within, and recalled from, the gauge's 'Limit Standards' memory.



When Limit Standards are used in combination with the gauge's Differential Mode, the Elcometer 480 displays the measurement value together with the difference from the nominal (target) value.

Readings outside the Limit Standards are displayed in red, providing quick Pass/Fail analysis.

Due to the Elcometer 480's industry leading inter-instrument agreement, once a Master Standard Limit has been created, the gauge can transfer these values to other Elcometer 480 glossmeters, via the ElcoMaster® Software's Library of Limit Standards, at any time.

Information from multiple glossmeters can be combined into a single inspection report within ElcoMaster® Software, ideal for multiple production and assembly lines.

Elcometer 480 Glossmeters

Product Features	■ Standard	□ Optional
	Model B	Model T
Measurement geometries	60°	60°, 20/60° or 20/60/85°*
Measurement units	GU	GU, HU[1] & %
Fast, accurate reading rate	■	■
Repeatable & reproducible measurements	■	■
Easy to use menu structure; *in 30+ languages*	■	■
Tough, impact, waterproof & dust resistant	■	■
Scratch & solvent resistant colour display; *2.4" (6cm) TFT*	■	■
Rotating display: *auto, 0°, 180°*	■	■
Ambient light sensor; *with adjustable auto brightness*	■	■
Data output		
USB live readings	■	■
USB batch download		■
Bluetooth®: *to PC, iOS or Android™ mobile devices*		■
USB & battery powered	■	■
Calibration Certificate	■	■
Manual gauge calibration	■	■
Auto gauge calibration; *via RFID tagging of integrated calibration tile*[2]		■
On screen statistics - *user selectable*		
Number of readings, Mean (average), Standard deviation,	■	■
Highest reading, Lowest reading, Range		■
Coefficient of variation,		■
Nominal value, High Limit value, Low Limit value		■
Number above high limit, Number below low limit		■
Measurement modes		
Standard Mode	■	■
Auto Repeat Mode; *programmable 10-180 readings per minute*		■
Scan Mode; *10 readings per second*		■
Differential Mode with Pass/ Fail mode;		■
Limit Standards; *up to 40 programmable standards*		■
Gauge & batch specific standard limits		■
Gauge memory 40,000 readings in up to 2,500 batches		■
Alpha-numeric batch names		■
Fixed batch size mode		■
Date and time stamp		■
Gauge auto diagnostics	■	■
Display modes; *user selectable*		
Readings; *gloss, % reflectance†, haze*[1]	■	■
Selected statistics	■	■
Live trend graph; *last 20 readings*		■
Scan bar		■
Readings & differential (with pass/fail)		■
Delete last reading	■	■
2 year extended warranty[3]	■	■

* Dependant on model [1] Haze on Dual and Triple models only [2] Radio Frequency Identification; European Patent Number: 2906904

[3] The Elcometer 480 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via www.elcometer.com.

Glossmeters

Elcometer 480

Technical Specification

Part Number	Description			Certificate
J480B-6	Elcometer 480 Model B 60° Glossmeter			•
J480T-6	Elcometer 480 Model T 60° Glossmeter			•
J480T-26	Elcometer 480 Model T 20/60° Glossmeter			•
J480T-268	Elcometer 480 Model T 20/60/85° Glossmeter			•
Display information	2.4" (6cm) QVGA colour TFT display, 320 x 240 pixels			
Power	USB (via PC) or 2x AA batteries (~50,000 readings)			
	20°	60°	85°	
Measurement Dimensions	 20°: 10 x 10mm	 60°: 8 x 16mm	 85°: 4 x 55mm	
Measurement Range	0 - 2,000GU	0 - 1,000GU	0 - 160GU	
Repeatability	± 0.1GU (0 - 10GU); ±0.2GU (10 - 100GU); ±0.2%: 100 - 2000GU			
Reproducibility	± 0.2GU (0 - 10GU); ±0.5GU (10 - 100GU); ±0.5% 100 - 2000GU			
Resolution	Gloss:	0.1 GU (0 - 100GU); 1 GU (>100GU)		
	% Reflectance:	0.01% (0 - 10GU); 0.1% (10 - 100GU)		
	Haze:	0.1 HU (0 - 100HU); 1 HU (>100HU)		
Operating Temperature	-10°C to 50°C (14 to 122°F); Relative Humidity: 0 - 85%RH			
Dimensions (H x W x D)	68 x 155 x 50mm (2.68 x 6.10 x 1.97")			
Weight	534g (1lb 3oz) *[including batteries]*			
Packing List	Elcometer 480 Glossmeter, integrated calibration tile, calibration certificates for gauge & calibration tile, 2x AA batteries, wrist strap, operating instructions, plastic carry case, ElcoMaster® Software (Model T) and USB cable (Model T)			

Accessories

T48024798-LC	Low Gloss Calibration Tile	Nominal Value: 22GU at 60°	•
T48024798-MDC	Mid Gloss Calibration Tile	Nominal Value: 55GU at 60°	•
T48024798-HC	High Gloss Calibration Tile*	Nominal Value: 97GU at 60°	•
T48024798-MRC	Mirror Gloss Calibration Tile	Nominal Value: 1900GU at 20°	•
T48024798-SH	Soft Material Specimen Holder, complete with 3 sample trays		
T48025004	Soft Material Sample Trays (x3)		
T99923535	Gloss Tile Cleaning Cloth		
T99925002	USB Cable		



Each calibration tile is supplied within its own base unit to ensure measurement accuracy.



The soft material specimen holder is supplied with 3 sample trays - ideal for testing soft, powder or viscous materials.



• Certificate supplied as standard.

* Supplied with gauge

Elcometer 408 Triple Angle Gloss & DOI Meter

The **Elcometer 408** provides the very latest in gloss measurement technology, providing accurate gloss, haze and distinctiveness of image (DOI) analysis in a single reading.

Display and download Goniophotometric profiles

On screen statistics with trend & measurement graphs

Press button once to measure all parameters; gloss, haze, DOI, Rspec & RIQ



USB or Bluetooth® data output

Integrated calibration tile for fully automatic error-free calibration

Stores up to 999 readings with full goniophotometric profiles in user definable batches

STANDARDS:
ASTM D523, ASTM D2457, ASTM E430, ASTM D5767, DIN 67530, DIN EN ISO 2813, JIS Z 8741, ISO 7668

compatible with ElcoMaster®

Bluetooth® wireless technology

Triple Angle Gloss & DOI Meter

Elcometer 408

Accurate

Fast and simultaneous measurement of gloss, haze, DOI, Rspec and RIQ, with a Calibration Certificate supplied.



Easy to read large colour screen with adjustable brightness

Simple

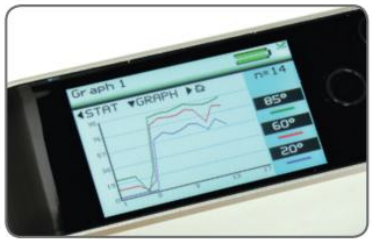
Bright, easy to read LCD screen displays the gloss value, statistics & graphs and offers several display measurements.



Reading can be transferred to PC or smartphones wirelessly

Flexible

Triple (20/60/85°) angle for maximum accuracy and resolution in all gloss applications.



On screen graph highlights trends in the measured batch

Durable

Compact and portable with integrated tile holder. Robust aluminium construction ensures optical stability.



Each instrument is supplied with a Calibration Certificate

Efficient

Clear, illuminated display with a menu-driven user interface in multiple languages



17hrs+ continuous operation or 20,000+ readings

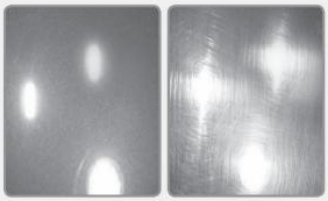
Elcometer 408 Triple Angle Gloss & DOI Meter

Distinctiveness of Image (DOI)

DOI measures the sharpness of a reflected image in a coating surface. Similar coatings may have identical gloss values but visually the quality may be different. A visually poor coating may have a highly textured dimpled appearance known as “orange peel”. When a reflected object is viewed in such a coating the image becomes fuzzy and distorted. A surface that has a perfect, undistorted image returns a value of 100. As the value decreases. the image becomes more distorted.



Haze (HU) & Log Haze (HULog)



High quality gloss surfaces have a clear, deep, brilliant finish. Haze causes a drop in reflected contrast and causes halos to appear around light sources, these unwanted effects dramatically reduce visual quality.

Undetectable by traditional glossmeters the Elcometer 408 measures Haze Units in accordance with ASTM E430 at the same time as simultaneously measuring gloss and DOI.

Peak Reflectance (Rspec)

Rspec is the peak reflectance measured over a very narrow angle in the specular direction and is very sensitive to any surface texture, waviness or rippling. When Rspec is equal to the gloss the surface is smooth. Rspec drops as the surface texture increases.



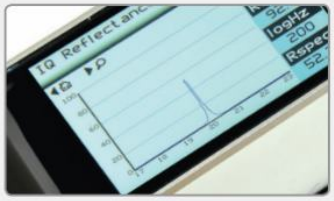
Reflected Image Quality (RIQ)



Reflected Image Quality provides greater sensitivity when evaluating highly reflective coatings and the specular / diffuse element of lower gloss materials. A surface that exhibits a perfect undistorted image returns a value of 100, as the values decrease higher surface texture is present and the image sharpness reduced.

Goniophotometric Profile

The gloss, haze, DOI and Rspec values produced by the Elcometer 408 can be used to assess the visual quality of any surface. The full range of goniophotometric curves can be downloaded to a computer for a detailed understanding of specular reflectance. The Elcometer 408 can also be used to quantify an orange peel finish or a substandard coating with a low DOI.



Triple Angle Gloss & DOI Meter

Elcometer 408

Product Features

Easy to use menu structure	English, Spanish, French, Italian, German, Chinese
Bright colour screen; *with permanent backlight*	Adjustable brightness, 6 button touch sensitive interface
User definable measurement display	■
Scratch & solvent resistant display	■
USB power supply	■
Calibration certificate	■
Data output	■
USB; *to PC*	■
Bluetooth®: *to PC or Android™ mobile device*#	■
On screen statistics	$\bar{x}$, σ, maximum & minimum value
USB cable	■
Date and time stamp	■
Gauge memory; *number of readings*	up to 999 readings & curves
Repeat Measurement Mode	user definable: 2, 5 or 10 seconds
Delete last reading	■
Standard & fixed batch sizes	■
Trend, gloss & image graphs	■
Measurement modes	Gloss (GU): 20°, 60°, 85°; Haze (HU) & Haze Log (HU Log); Distinctiveness of Image (DOI); Peak Reflectance (Rspec) & Reflected Image Quality (RIQ)

Technical Specification

Part Number	Description				Certificate
J408--268	Elcometer 408 Triple Angle Gloss & DOI Meter (20, 60 & 85°)				●
Power Supply	Rechargeable Battery Pack				
Recharge Time	USB 4.5 hours				
	Gloss	Haze	DOI	RIQ	
Measurement Range	20°: 0-2,000 GU; 60°: 0-1,000 GU; 85°: 0-199 GU	0-2,000 GU	0-100 DOI	0-100 RIQ	
Resolution	0.1 GU	0.1 HU	0.1	0.1	
Repeatability	±0.2 GU	±0.5 HU	±0.2	±0.2	
Reproducibility	±0.5 GU	±1.5 HU	±0.5	±0.5	
Peak Specular Reflectance at 20°	± 0.09905°				
Dimensions (H x W x D)	65 x 140 x 50mm (2.5 x 5.5 x 1.9")		Weight	790g (1lb 12oz)	
Packing List	Elcometer 408 Gloss & DOI Meter, high gloss calibration tile with calibration certificate, gloss tile cleaning cloth, transit case, USB cable, Novo-Gloss Multi Gauge Software, mini cd (instruction manual, Bluetooth® data app, Example Excel spreadsheets), instructional videos & operating instructions.				

Accessories

T40823532	High Gloss Calibration Tile with Calibration Certificate
T40823533	Mirror Gloss Calibration Tile with Calibration Certificate
T99923535	Gloss Tile Cleaning Cloth
T99921325	USB Cable

● Certificate supplied as standard.

Live readings only

Elcometer 6085 Portable Sphere Spectrophotometer



STANDARDS:
AS/NZS 1580.601.3, ASTM C 609, ASTM D 2244, ASTM E 1164, ASTM E 308, ASTM E 313, BS 8493, DIN 5033-2, DIN 5033-3, DIN 5033-4, DIN 5033-7, DIN 6174, EN 12373-12, EN 13523-15, ISO 7724-2, ISO 7724-3, JIS K 5600-4-5, JIS K 5600-4-6, NF T36-006, NF X08-012-1, NF X08-012-2

The Elcometer 6085 is an affordable sphere spectrophotometer, designed to give fast, precise and accurate colour measurement information on materials ranging from paper and paint to plastics and textiles.

- Lightweight, compact and portable
- Diffuse/8° sphere optical geometry
- Fixed 8mm aperture
- Large, easy-to-read high resolution graphical colour LCD display
- Opacity and colour strength measurement
- Simultaneous measurement of both specular components included and specular component excluded
- Rugged construction
- Reliable detent lock
- Rechargeable battery for portable use

Key Features

- **Measuring Functions and Indices**
  The Elcometer 6085 provides absolute and difference measurements for the following colourmetric systems. These values can be obtained from any of the nine illuminants with 2° or 10° observer angle: L*a*b*, DL*Da*Db*, L *C*h°, DL*DC*DH*, DE*ab, DECMC, DE CIE94 and XYZ. Whiteness and Yellowness per ASTM E 313-98.
- **Pass/Fail Mode**
  The instrument stores up to 1,000 standards with tolerances for easy pass/fail measurement. A simplified green tick shown on screen shows a straight forward pass indication or a red cross shows a fail. Results are shown at a glance showing detailed colour comparison data for analysis.
- **Quick Colour Compare**
  A quick measurement can be taken to compare two colours. This allows the operator to take quality control readings in a time efficient manner without having to create tolerances or store data.
- **The Sphere**
  The Elcometer 6085's diffusing sphere is made of Spectalon®, a durable, highly reflective material designed to perform in a rigorous production environment. The diffusing material prevents degradation due to the flaking and chipping of the sphere wall material.
- **Opacity, Colour Strength and Shade Sorting**
  The instrument can measure opacity as well as three colour-strength options: chromatic, apparent and tri-stimulus calculations. The Elcometer 6085 also performs 555 shade sorting. This is an important consideration in the colour quality control of manufactured products involving plastics, painted or textile materials.
- **Texture and Gloss influence**
  To determine the influence of the specular component, the 6085 allows simultaneous measurement of both specular - included (colour) and specular-excluded (appearance).
- **User friendly Ergonomics**
  In addition to onboard programmes to assist the operator in the measurement process, the instrument itself is highly user-friendly. It is compact and lightweight with an ergonomic overmold design that provides a smooth and comfortable grip. The flip-back shoe is designed to withstand heavy use and has a reliable detent lock. Read-outs are large and easy to see with a high resolution colour LCD screen. A rechargeable battery pack allows extended operation of the instrument.

Portable Sphere Spectrophotometer

Elcometer 6085

Technical Specification

Part Number	Description	Certificate
K6085M001	Elcometer 6085 Ci60 Portable Sphere Spectrophotometer	•
K6085M002	Elcometer 6085 Ci62 Portable Sphere Spectrophotometer	•
Measuring Geometrics	d/8°, DRS spectral engine, fixed 8mm aperture Simultaneous SPIN / SPEX	
Light Source	Gas filled tungsten lamp	
Illuminant Types	A, C, D50, D55, D65, F2, F7, F11 & F12	
Standard Observers	2° and 10°	
Spectral Range	400-700nm	
Memory	1,000 standards with tolerances, 4,000 samples	
Measurement Range	0 to 200% reflectance	
Measuring Time	Approximately 2 seconds	
Inter-Instrument Agreement (Ci60)	CIE L*a*b*: Avg. 0.40 ΔE*ab based on average of 12 BCRA Series II tiles (specular component included) Max. 0.60 ΔE*ab on any tile (specular component included)	
Inter-Instrument Agreement (Ci62)	CIE L*a*b*: Avg. 0.20 ΔE*ab based on average of 12 BCRA Series II tiles (specular component included) Max. 0.40 ΔE*ab on any tile (specular component included)	
Short-term Repeatability[1]	Ci60 - 0.10 ΔE*ab on white ceramic (standard deviation) Ci62 - .05 ΔE*ab on white ceramic (standard deviation)	
Lamp Life	Approximately 500,000 measurements	
Power Supply	Removable battery pack; 7.4 VDC, 2400 mAh	
Measurements per Charge	1,000 measurements within 8 hour period	
Weight	1.05kg (2.32lbs.)	
Screen Display	3.2 inch backlit Colour Graphic LCD	
Dimensions	109 x 91 x 213mm (4.3 x 3.6 x 8.4”)	
Packing List	Elcometer 6085 Ci60, calibration standards, calibration certificate for standards, AC adaptor, mains leads (UK & EUR), carry case & operating instructions	
Packing List	Elcometer 6085 Ci62, calibration standards, calibration certificate for standards, AC adaptor, mains leads (UK & EUR), carry case & USB cable, operating instructions	

• Certificate supplied as standard.

[1] Based on 20 measurements on a white tile

Notes

elcometer





Test the abrasion, washability and resistance of a wide range of materials using the Elcometer 1720 Washability & Abrasion Tester.

See page 19-4



Dispersion & Density

14

Dispersion & Density



From the development of coatings, inks & cosmetics in the laboratory to testing during the production process, quick and precise measurement of the particle size of the material (dispersion) and volumetric mass (density) are essential measurement techniques required for reliable and repeatable formulations.

Elcometer's stringent manufacturing standards ensure that the highest level of precision and quality is maintained for all its gauges in order to comply with the requirements of the industries where the grinding process is involved, particularly in the fields of wet paints and powder, varnishes, printing inks and cosmetics.

Dispersion

The comprehensive range of Elcometer fineness of grind gauges consists of stainless steel blocks with a precision ground scraper. Each block has either one or two channels, precision ground in a uniformly increasing depth from zero at one end to a specified depth at the other, identified by the scale on the gauge.

Density

To maintain consistency of a coating, the Density should remain constant from batch to batch.

Density Cups, also known as Specific Gravity Cups or Picnometers, are used to determine the mass per unit volume (Specific Gravity) of a liquid at a given temperature.

Specific Gravity is defined as the ratio of the density of a given substance to the density of water, when both are at the same temperature.

As the Specific Gravity Cup is an exact measurement of the volume of the liquid, it is imperative that the exact weight of the sample is obtained.

Elcometer offers a range of cups and laboratory balances for accurate measurements during the development of a coating.

Fineness of Grind Gauges (Dual Channels)

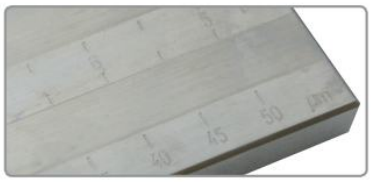
Elcometer 2020

The Elcometer Fineness of Grind Gauges are used to determine the particle size and fineness of grind of many materials including paints, pigments, inks, coatings, chocolates and other similar products.

These two channel gauges, are made of hardened stainless steel and have two grooves with a graded slope (dependent on the model chosen).

Graduated in microns, mils, NS (Hegman) or PCU (North), the gauges have a tolerance of ±2µm (0.08mil). The groove width for all models is 12mm (0.47") with a groove length of 127mm (5.0").





STANDARDS:
ASTM D 1210, AS/NZS 1580.204.1
DIN 53203, EN 21524,
FTMS 141 4411.1, ISO 1524,
JIS K 5600-2-5, NF T30-046

Technical Specification

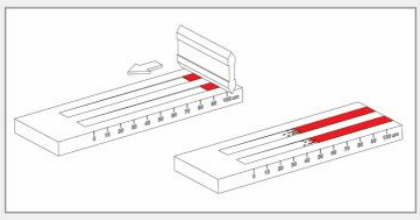
Part Number Metric	Model	Range (µm)	Range (mils)	Graduation (µm)	Graduation (mils)	Hegman (NS or H)	Paint Club (PCU)	Certificate
K0002020M003	Elcometer 2020/3	0 - 15	-	0 - 15	-	8 - 7	10 - 9	○
K0002020M004	Elcometer 2020/4	0 - 25	0 - 1	2.5	0.1	8 - 6	10 - 8	○
K0002020M001	Elcometer 2020/1	0 - 50	0 - 2	5	0.2	8 - 4	10 - 5	○
K0002020M002	Elcometer 2020/2	0 - 100	0 - 4	10	0.5	8 - 0	10 - 0	○
Packed Dimensions	180 x 40 x 12mm (7.1 x 1.6 x 0.5")							
Packed Weight	1.36kg (3lb)							
Packing List	Elcometer 2020 Fineness of Grind Gauge, scraper, plastic case and operating instructions							

Accessories

KT002020N001	Replacement Scraper for Elcometer 2020

How to use a Fineness of Grind Gauge

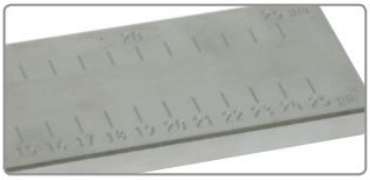
The material is placed on the deepest part of the groove and, using the scraper provided, drawn up the slope - the particle size is indicated where the material stops.



○ Optional Calibration Certificate available.

Elcometer 2050 High Precision Grindometer (Single Channel)





STANDARDS:
ASTM D 1210, AS/NZS 1580.204.1
DIN 53203, EN 21524,
FTMS 141 4411.1, ISO 1524,
JIS K 5600-2-5, NF T30-046

This single channel precision gauge is used to determine particle size and fineness of grind for many materials including paints, pigments, inks, coatings, chocolates and other similar products.

Manufactured out of hardened stainless steel, each gauge is graduated in microns on the top to an accuracy of ±1µm (0.04mil). The groove width is 12mm (0.47") and the groove length is 200mm (7.87").

The High Precision Grindometer has a single groove.

Technical Specification

Part Number Metric	Model	Range (µm)	Range (mils)	Graduation (µm)	Graduation (mils)	Certificate
K0002050M001	Elcometer 2050/1	0 - 25	0 - 1	1	0.05	○
K0002050M002	Elcometer 2050/2	0 - 50	0 - 2	2	0.1	○
K0002050M005	Elcometer 2050/5	0 - 100	0 - 4	5	0.2	○
K0002050M008	Elcometer 2050/8	0 - 250	0 - 10	12.5	0.5	○
Tolerance	±1µm (0.04mil)					
Packed Dimensions	312 x 270 x 79mm (12.3 x 10.6 x 3.1")					
Packed Weight	1.75kg (3.85lb)					
Packing List	Elcometer 2050 High Precision Grindometer, scraper, transit case and operating instructions					

Accessories

KT002030N001	Replacement Scraper for Elcometer 2050

○ Optional Calibration Certificate available.

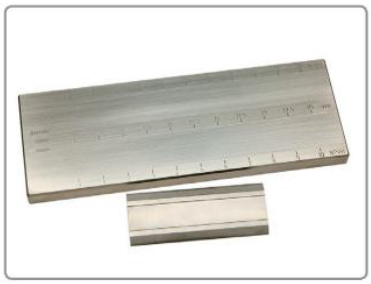
NPIRI Fineness of Grind Gauge

Elcometer 2070

This precision gauge is used to determine particle size and the fineness of grind of particles in printing inks according to the National Printing Inks Research Institute (NPIRI) scale.

As ink particles are so fine, the two grooves of the gauge have a gentle gradient allowing a scale of 2.5µm for better resolution.

The groove width is 25mm (0.98”) and the groove length is 165mm (6.5”). The NPIRI scale is displayed alongside the microns scale. The NPIRI gauge and its scraper are made of hardened stainless steel.





STANDARDS:
ASTM D 1316

Technical Specification

Part Number		Model	Range		Graduation		Certificate
Metric	Imperial		(µm)	(mils)	(µm)	(mils)	
K0002070M001	K0US2070M001	Elcometer 2070	0 - 25	0 - 1	2.5µm / 1 NPIRI	0.1mil / 1 NPIRI	○
Packed Dimensions		220 x 80 x 12mm (8.6 x 3.1 x 0.5”)					
Packed Weight		2.2kg (4.8lb)					
Packing List		Elcometer 2070 NPIRI Fineness of Grind Gauge, scraper, plastic case and operating instructions					

Accessories

KT002070N001	Replacement Scraper for Elcometer 2070

○ Optional Calibration Certificate available.

Elcometer 1800 Density Cup



The Elcometer 1800 is a stainless steel precision cup for determining the specific gravity or density of paints and similar products.

The density cup consists of a cylindrical container and lid with a hole for the exhaust of excess liquid.

STANDARDS:
ASTM D 891-B, ASTM D1475,
DIN 53217-2, FTMS 141 4183,
ISO 2811-1, JIS K 5600-2-4,
NBN T22-110, NFT 30-020

Technical Specification

Part Number	Description	Volume/ Capacity	Certificate
K0001800M001	Elcometer 1800/1 Density Cup stainless steel	50cc	
K0001800M002	Elcometer 1800/2 Density Cup stainless steel with calibration certificate	50cc	•
K0001800M005	Elcometer 1800/5 Density Cup stainless steel	100cc	
K0001800M006	Elcometer 1800/6 Density Cup stainless steel with calibration certificate	100cc	•

How to use a Density Cup

- Weigh the Cup and Lid when empty
- Fill with the liquid
- Place lid on the Cup, removing excess liquid*
- Weigh the Density Cup when full
- Divide the weight by the cup volume/capacity to determine the Specific Gravity

*Each Cup has an escape hole in the lid to allow excess liquid to escape. Any excess liquid should be removed before weighing.

The formulae for calculating Density and Specific Gravity are:

$$\text{Density} = \frac{\text{Weight}}{\text{Unit Volume}}$$

Note: 50cc = 50cm³ = Volume
100cc = 100cm³ = Volume

$$\text{Specific Gravity} = \frac{\text{Density of the Material}}{\text{Density of Water at the Same Temperature}}$$

• Certificate supplied as standard.

Compact Balance

Elcometer 8720

The Elcometer 8720 Compact Balance is very easy to use and offers extensive weighing functions selectable by the user.

- Weighing range from 0 to 1,200g (0 - 42.3oz)
- Backlit LCD display
- 130 x 130mm stainless steel weighing plate



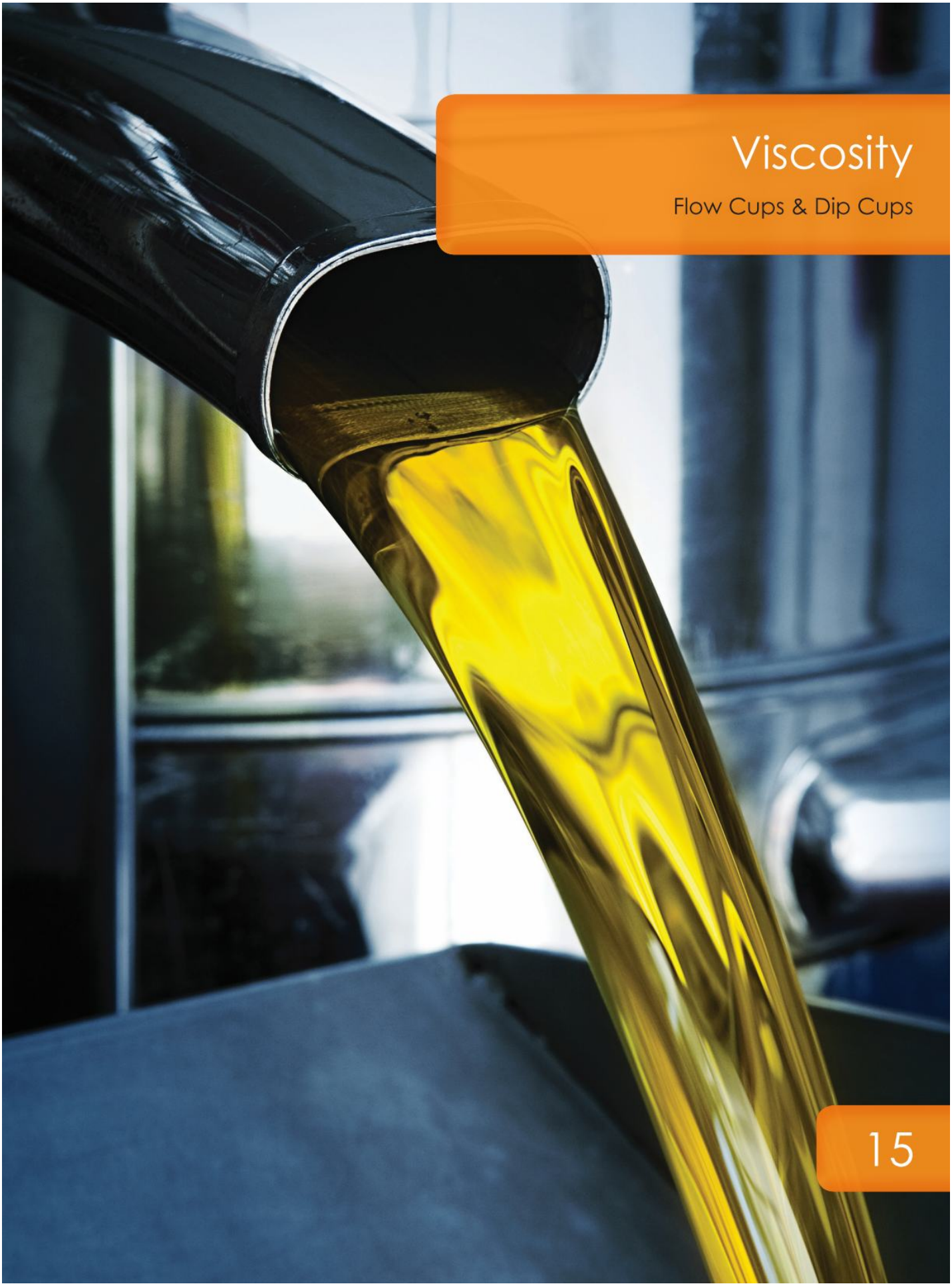
Technical Specification

Part Number			Description	Certificate
UK 240V	EUR 220V	US 110V		
K0UK8720M001C	K0008720M001C	K0US8720M001C	Elcometer 8720 Compact Balance - Certified	•
Range	0 - 1,200g (0 - 42.3oz)			
Reproducibility	0.01g (0.0004oz)			
Linearity	±0.03g (0.001oz)			
Dimensions	167 x 250 x 85mm (6.6 x 9.8 x 3.3")			
Weight	2kg (4.4lb)			
Packing List	Elcometer 8720 Compact Balance, power cable and operating instructions			

• Certificate supplied as standard.

Notes


elcometer
FILM APPLICATION
Measure
FAST · REPEATABLE
ACCURATE · DURABLE
Prepare consistent and reproducible coating samples with the Elcometer 4340 Motorised Film Applicator.
See page 17-3



Viscosity

Flow Cups & Dip Cups

15

Viscosity



Viscosity is perceived as 'thickness' or resistance to pouring, but there is more to viscosity than this. All fluids have an internal friction between molecules, which determines how well fluid flows. Due to this internal friction, energy is required to move the liquid and viscosity is the measure of the resistance to flow.

Measuring Viscosity

Elcometer manufactures and supplies a wide range of viscosity gauges, including;.

Flow Cups: the process of flow through an orifice can often be used as a relative measurement and classification of viscosity.

This measured kinematic viscosity is generally expressed in seconds of flow time which can be converted into Centistokes using a viscosity disc calculator.

Dip Cups: using the same principle as flow cups, dip cups (Frikmar, Zahn, Shell etc.) can be used to provide a quick viscosity measurement either on-site or on the shop-floor.

Flow Measurement: simple to use instruments that measure the fluidity and flow of coatings, especially thick or paste-like materials.

Definitions

Viscosity: a measure of the resistance of a liquid to flow.

Kinematic Viscosity: the absolute viscosity of a fluid divided by the density of the fluid. Also known as the coefficient of kinematic viscosity.

Centipoise: a unit of measurement of which water is the standard at 1cP.

Newtonian fluids: fluids that continue to flow at a given temperature, such as water and some oils - regardless of the forces acting on it. No matter how fast it is stirred or mixed, Newtonian fluids will always behave in the same manner. Newtonian fluids are typically measured with flow and dip viscosity cups, see page 15-3.

Non-Newtonian fluids: fluids which change viscosity when a force is applied, e.g. paints and ketchup, etc. Non-Newtonian fluids are usually measured using Rotational Viscometers.

Fast and easy to use - **ElcoCalc™** instantly converts viscosity cup flow time in seconds into Centistokes (cSt).

Save time converting viscosity cup flow time into Centistokes (cSt) by using Elcometer's free app, ElcoCalc™, available from the Android or Apple App stores.

ElcoCalc™ works out the viscosity in Centistokes for you – simply choose your cup type, enter the flow time, and ElcoCalc™ does the rest.

ElcoCalc™ is free software that is available on Android™ and the App Store. Compatible with Android™ mobile devices running Android™ 2.1 or later and also iPod, iPhone and iPad running iOS 4.0 or later.



Elcometer 2350, 2351, 2352, 2353, 2354 Viscosity Flow Cups



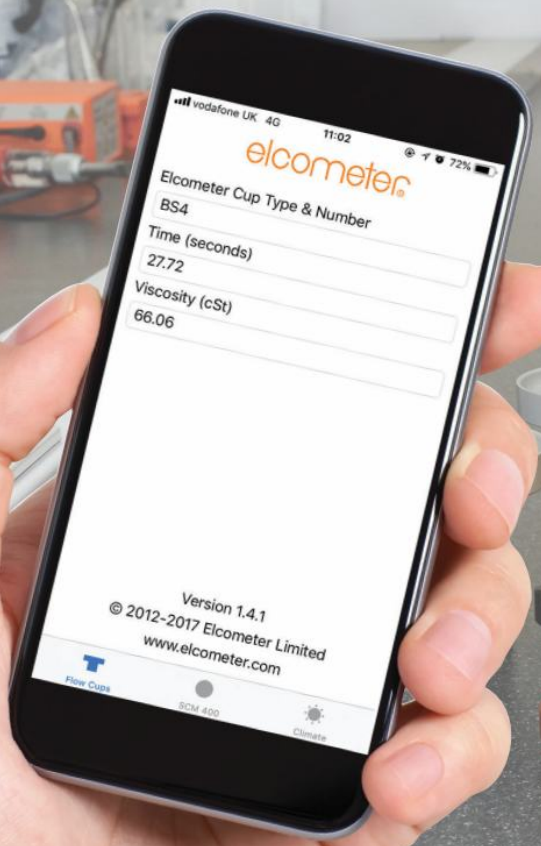
Elcometer 2434, 2435, 2436, 2437 Frikmar Viscosity Dip Cups



Elcometer 2210 Zahn Viscosity Dip Cups



Elcometer 2310 Shell Viscosity Dip Cups



Download on the App Store

ANDROID APP ON Google play

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Elcometer 2350 & 2354 Viscosity Flow Cups



STANDARDS:
ISO: ISO 2431
AS/NZS: AS/NZS 1580.214.2 (cup 4), AS/NSZ 1580.214.6:1995
BS: BS 3900-A6:1971
FORD/ASTM: ASTM D 1200, D 5125
DIN: DIN 53211 (cup 4)
AFNOR: NF T30-014

The very easy to use Viscosity Flow Cups are made of anodized aluminium with a stainless steel orifice, for measuring the consistency of paints, varnishes and similar products. The measured kinematic viscosity is generally expressed in seconds (s) flow time. If the Standards stipulate conversion methods the flow time can be converted into Centistokes (cSt) using the Elcometer ElcoCalc™ Mobile App.

Calibration certificates which offer traceability and assurance that each viscosity cup has been individually tested and comply to Standards are also available.

The cups can be supplied separately or with an adjustable stand which includes a precision level and an overflow glass draw plate. They can also be supplied with a flow jacket for temperature control (thermojacket), see page 15-6 for more information.

compatible with ElcoCalc™

Technical Specification

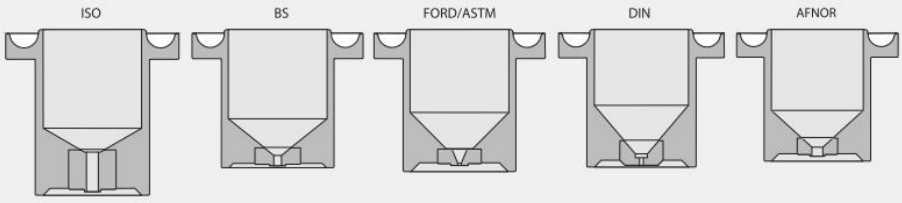
BS Viscosity Flow Cups

Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002354M003	Elcometer 2354/3 BS Viscosity Cup 4	3.97mm	89 - 340	◇
K0002354M003C	Elcometer 2354/3 with calibration certificate	3.97mm	89 - 340	● [3]

DIN Viscosity Cups

Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002350M001	Elcometer 2350/1 DIN Viscosity Cup 2	2mm	-	
K0002350M002	Elcometer 2350/2 DIN Viscosity Cup 4	4mm	96 - 683	◇
K0002350M003	Elcometer 2350/3 DIN Viscosity Cup 6	6mm	-	
K0002350M004	Elcometer 2350/4 DIN Viscosity Cup 8	8mm	-	
K0002350M001C	Elcometer 2350/1 with calibration certificate	2mm	-	● [2]
K0002350M002C	Elcometer 2350/2 with calibration certificate	4mm	96 - 683	● [3]
K0002350M003C	Elcometer 2350/3 with calibration certificate	6mm	-	● [2]
K0002350M004C	Elcometer 2350/4 with calibration certificate	8mm	-	● [3]

Viscosity Flow Cups - Cup Designs



[1] For Information Only [2] Dimensional Certificate [3] Efflux Time Certificate
● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Viscosity Flow Cups

Elcometer 2351, 2352 & 2353

Technical Specification

ISO Viscosity Flow Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002353M001	Elcometer 2353/1 ISO Viscosity Cup 3	3mm	7 - 42	◇
K0002353M002	Elcometer 2353/2 ISO Viscosity Cup 4	4mm	34 - 135	◇
K0002353M003	Elcometer 2353/3 ISO Viscosity Cup 5	5mm	91 - 326	◇
K0002353M004	Elcometer 2353/4 ISO Viscosity Cup 6	6mm	188 - 684	◇
K0002353M005	Elcometer 2353/5 ISO Viscosity Cup 8	8mm	-	
K0002353M001C	Elcometer 2353/1 with calibration certificate	3mm	7 - 42	● [3]
K0002353M002C	Elcometer 2353/2 with calibration certificate	4mm	34 - 135	● [3]
K0002353M003C	Elcometer 2353/3 with calibration certificate	5mm	91 - 326	● [3]
K0002353M004C	Elcometer 2353/4 with calibration certificate	6mm	188 - 684	● [3]
K0002353M005C	Elcometer 2353/5 with calibration certificate	8mm	-	● [3]

FORD/ASTM Viscosity Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002351M001	Elcometer 2351/1 FORD/ASTM Viscosity Cup 1	1.90mm	10 - 35	◇
K0002351M002	Elcometer 2351/2 FORD/ASTM Viscosity Cup 2	2.53mm	25 - 120	◇
K0002351M003	Elcometer 2351/3 FORD/ASTM Viscosity Cup 3	3.40mm	49 - 220	◇
K0002351M004	Elcometer 2351/4 FORD/ASTM Viscosity Cup 4	4.12mm	70 - 370	◇
K0002351M005	Elcometer 2351/5 FORD/ASTM Viscosity Cup 5	5.20mm	200 - 1,200	◇
K0002351M001C	Elcometer 2351/1 with calibration certificate	1.90mm	10 - 35	● [3]
K0002351M002C	Elcometer 2351/2 with calibration certificate	2.53mm	25 - 120	● [3]
K0002351M003C	Elcometer 2351/3 with calibration certificate	3.40mm	49 - 220	● [3]
K0002351M004C	Elcometer 2351/4 with calibration certificate	4.12mm	70 - 370	● [3]
K0002351M005C	Elcometer 2351/5 with calibration certificate	5.20mm	200 - 1,200	● [3]

AFNOR Viscosity Cups Part Number	Description	Orifice Diameter	Range[1]	Certificate
K0002352M001	Elcometer 2352/1 AFNOR Viscosity Cup 2.5	2.46mm	5 - 140	
K0002352M002	Elcometer 2352/2 AFNOR Viscosity Cup 4	4mm	50 - 1,100	
K0002352M003	Elcometer 2352/3 AFNOR Viscosity Cup 6	6mm	510 - 5,100	
K0002352M001C	Elcometer 2352/1 with calibration certificate	2.46mm	5 - 140	● [2]
K0002352M002C	Elcometer 2352/2 with calibration certificate	4mm	50 - 1,100	● [2]
K0002352M003C	Elcometer 2352/3 with calibration certificate	6mm	510 - 5,100	● [2]

Elcometer Viscosity Flow Cups Accessories

Accessories



KT002400N201	Viscosity Cup Stand with Bubble Level and Glass Draw Plate To ensure the viscosity cup is positioned correctly to carry out the test.



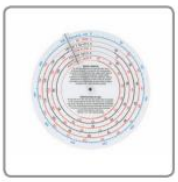
KT002400N001	Viscosity Cup Precision Stand with Bubble Level and Glass Draw Plate To ensure the viscosity cup is positioned correctly to carry out the test.
KT002400P001	Bubble Level for Viscosity Cup To ensure the viscosity cup is parallel to the surface.
KT002400P999	Viscosity Glass Draw Plate To retain test sample until operator is ready to commence test and provides surface for bubble level.



KT002400N002	Double-walled Stand with Thermojacket For heating test samples for viscosity measurement at specific elevated temperatures.



K0007300M201	Elcometer 7300 High Precision Stopwatch



KT002400N003	Elcometer 2400 Conversion Disc Allowing viscosity (cSt) and flow times of different cups to be calculated. Front: No.4 cups according to AFNOR, BS, NF, ASTM, DIN, Zahn 2 Back: No.3-4-5-6 cups according to ISO and Zahn 3

Thermometers



To accurately measure flow for viscosity the temperature needs to be 23°C ±2°C (73.4°F ±3.6°F). Here are a range of thermometers from Elcometer. For more information see page 4-10.

T1164441-	Spirit Thermometer in °C
T1164442-	Spirit Thermometer in °F
G212----1A	Elcometer 212 Digital Pocket Thermometer (°C/°F) with Liquid Probe
	For more information see page 4-10
G213----2	Elcometer 213/2 Digital Thermometer (°C/°F)
T9996390-	Elcometer 213/2 Liquid Probe
	For more information see page 4-11



For a full range of Calibration Oils see page 15-12

Viscosity Dip Cups - Frikmar

Elcometer 2435 & 2437

Thanks to its handle, this cup is very easy to use to perform checks on site or during the manufacturing process. It is ideal for measuring the consistency of paints, varnishes and other similar products.

Simply dip the cup into the product to be measured, lift it out and measure how long it takes for the contents to empty through the orifice.

The measured kinematic viscosity is generally expressed in seconds (s) flow time, which can be converted to Centistokes (cSt) if the Standard stipulates a conversion method.

Several ranges are available, according to the Standards being used; from 7 to 1,100cSt.







STANDARDS:
DIN: DIN 53211 (cup 4 only)
FORD/ASTM: ASTM D 1200, D 5125
ISO: ISO 2431
AFNOR: NF T30-014

compatible with ElcoCalc™

Technical Specification

FORD/ASTM Viscosity Dip Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002435M001	Elcometer 2435/1 FORD/ASTM Dip Cup 4	4.12mm	70 - 370	◇
K0002435M001C	Elcometer 2435/1 with calibration certificate	4.12mm	70 - 370	● [3]

ISO Viscosity Dip Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002437M002	Elcometer 2437/2 ISO Dip Cup 3	3mm	7 - 42	◇
K0002437M003	Elcometer 2437/3 ISO Dip Cup 4	4mm	34 - 135	◇
K0002437M006	Elcometer 2437/6 ISO Dip Cup 5	5mm	91 - 326	◇
K0002437M004	Elcometer 2437/4 ISO Dip Cup 6	6mm	188 - 684	◇
K0002437M005	Elcometer 2437/5 ISO Dip Cup 8	8mm	-	
K0002437M002C	Elcometer 2437/2 with calibration certificate	3mm	7 - 42	● [3]
K0002437M003C	Elcometer 2437/3 with calibration certificate	4mm	34 - 135	● [3]
K0002437M006C	Elcometer 2437/6 with calibration certificate	5mm	91 - 326	● [3]
K0002437M004C	Elcometer 2437/4 with calibration certificate	6mm	188 - 684	● [3]
K0002437M005C	Elcometer 2437/5 with calibration certificate	8mm	-	● [2]



For a full range of Calibration Oils see page 15-12

[1] For Information Only [2] Dimensional Certificate [3] Efflux Time Certificate
● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Elcometer 2434 & 2436 Viscosity Dip Cups - Frikmar

Technical Specification

DIN Viscosity Dip Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002434M001	Elcometer 2434/1 DIN Dip Cup 2	2mm	-	◇
K0002434M002	Elcometer 2434/2 DIN Dip Cup 4	4mm	96 - 683	◇
K0002434M003	Elcometer 2434/3 DIN Dip Cup 6	6mm	-	◇
K0002434M004	Elcometer 2434/4 DIN Dip Cup 8	8mm	-	◇
K0002434M001C	Elcometer 2434/1 with calibration certificate	2mm	-	● [2]
K0002434M002C	Elcometer 2434/2 with calibration certificate	4mm	96 - 683	● [3]
K0002434M003C	Elcometer 2434/3 with calibration certificate	6mm	-	● [2]
K0002434M004C	Elcometer 2434/4 with calibration certificate	8mm	-	● [2]

AFNOR Viscosity Dip Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002436M001	Elcometer 2436/1 AFNOR Dip Cup 4	3.99mm	50 - 1,100	
K0002436M001C	Elcometer 2436/1 with calibration certificate	3.99mm	50 - 1,100	● [2]

Elcometer 2215 Lory Viscosity Cup



The Elcometer 2215 Lory Viscosity Cup is a conventional cylindrical cup with a needle fixed into the bottom for quick measurements on-site or during production.

The cup is first dipped into the product to be measured, which then empties through the escape hole. Unlike other viscosity cups, the flow time is measured as soon as the point of the needle appears.

Technical Specification

Part Number	Description	Cup Number	Range (cSt)[1]
K0002215M001	Elcometer 2215 Lory Viscosity Cup	1	50 - 1,100



For a full range of Calibration Oils see page 15-12

[1] For Information Only [2] Dimensional Certificate [3] Efflux Time Certificate

● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Shell Viscosity Dip Cups

Elcometer 2310

The Elcometer 2310 Shell Viscosity Dip Cups are stainless steel for quick measurements on-site or during production. These cups are often used in the printing or ink industry.

Simply dip the cup into the product to be measured, lift it out and measure how long it takes for the contents to empty through the orifice.

The measured kinematic viscosity is generally expressed in seconds (s) flow time, which can be converted into Centistokes (cSt).

There are six different orifice diameter sizes available, for measurements between 2 and 1,300cSt.







compatible with ElcoCalc™

STANDARDS:
ASTM D 4212

Technical Specification

Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002310M001	Elcometer 2310/1 Shell Dip Cup 1	1.8mm	2 - 20	◇
K0002310M002	Elcometer 2310/2 Shell Dip Cup 2	2.4mm	10 - 50	◇
K0002310M003	Elcometer 2310/3 Shell Dip Cup 3	3.1mm	30 - 120	◇
K0002310M004	Elcometer 2310/4 Shell Dip Cup 4	3.8mm	70 - 270	◇
K0002310M005	Elcometer 2310/5 Shell Dip Cup 5	4.6mm	125 - 520	◇
K0002310M006	Elcometer 2310/6 Shell Dip Cup 6	5.8mm	320-1300	◇
K0002310M001C	Elcometer 2310/1 with calibration certificate	1.8mm	2 - 20	● [2]
K0002310M002C	Elcometer 2310/2 with calibration certificate	2.4mm	10 - 50	● [2]
K0002310M003C	Elcometer 2310/3 with calibration certificate	3.1mm	30 - 120	● [2]
K0002310M004C	Elcometer 2310/4 with calibration certificate	3.8mm	70 - 270	● [2]
K0002310M005C	Elcometer 2310/5 with calibration certificate	4.6mm	125 - 520	● [2]
K0002310M006C	Elcometer 2310/6 with calibration certificate	5.8mm	320-1300	● [2]

For a full range of accessories see page 15-6



[1] For Information Only
[2] Efflux Time Certificate
● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Elcometer 2210 Zahn Viscosity Dip Cups







The Elcometer 2210 Zahn Dip Cup is a small U-shaped cup suspended from a looped wire. This method is ideal for measuring the consistency of paints, varnishes and similar products.

Simply dip the cup into the product to be measured, lift it out and measure how long it takes for the contents to empty through the orifice.

There are five cups with five different orifice sizes available, ranging from 5 to 1,840cSt.

STANDARDS:
ASTM D 1084-D, ASTM D 4212

compatible with ElcoCalc™

Technical Specification

Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002210M001	Elcometer 2210/1 Zahn Dip Cup 1	1.8mm	5 - 56	◇
K0002210M002	Elcometer 2210/2 Zahn Dip Cup 2	2.7mm	21 - 231	◇
K0002210M003	Elcometer 2210/3 Zahn Dip Cup 3	3.8mm	146 - 848	◇
K0002210M004	Elcometer 2210/4 Zahn Dip Cup 4	4.3mm	222 - 1,110	◇
K0002210M005	Elcometer 2210/5 Zahn Dip Cup 5	5.3mm	460 - 1,840	◇
K0002210M001C	Elcometer 2210/1 with calibration certificate	1.8mm	5 - 56	● [2]
K0002210M002C	Elcometer 2210/2 with calibration certificate	2.7mm	21 - 231	● [2]
K0002210M003C	Elcometer 2210/3 with calibration certificate	3.8mm	146 - 848	● [2]
K0002210M004C	Elcometer 2210/4 with calibration certificate	4.3mm	222 - 1,110	● [2]
K0002210M005C	Elcometer 2210/5 with calibration certificate	5.3mm	460 - 1,840	● [2]

For a full range of Calibration Oils see page 15-12



[1] For Information Only
[2] Efflux Time Certificate
● Calibration Certificate supplied as standard.
◇ Batch Calibration Certificate supplied as standard.

Elcometer Viscosity Dip Cup Standard Calibration Oils

Elcometer 2410



In order to check the viscosity cup's calibration or to certify it for ISO purposes, it is imperative that viscosity cup standard calibration oils are used.

Standard oils have a specific drain time, dependent upon the viscosity cup type (Ford, Shell, Zahn etc.) and the orifice or cup number used.

To check the viscosity cup, use the standard viscosity oils in place of the liquid and measure the drain time.

Specific calibration oils can only be used with specific flow and dip cups. Please use the table below to determine which calibration oil is required with each cup, or contact Elcometer. Viscosity oils are supplied in ½ litre (1 pint) bottles.

Technical Specification

	Dip Cups					Flow Cups				
Part Number	Zahn	DIN Frikmar	ASTM/FORD Frikmar	ISO Frikmar	Shell	DIN	ASTM/FORD	ISO	Kinematic Viscosity at 25°C (77°F)*	Certificate
K0002410M021	1			3	2		2	3	34cSt	•
K0002410M022	2	4		4	4	4	3	4	120cSt	•
K0002410M023	3	4	4	6	5	4	4	6	230cSt	•
K0002410M024	4	4		6	6	4		6	420cSt	•
K0002410M025	5								710cSt	•
K0002410M026	6								1,200cSt	•

* Nominal Value

• Calibration certificate supplied as standard.

Elcometer Viscosity Cup Conversion

The table below lists the major flow cup types together with a conversion chart of Efflux Time (in seconds) to Viscosity in Centistokes (cSt). It has been constructed from the various International Standard calculators.

Each cup design is unique, care must be taken when comparing viscosity values between different cup types. These values are the absolute values and do not include the allowed tolerances, as these differ considerably between each of the Standards.

Time (seconds)	DIN	BS					ISO				FORD / ASTM				ZAHN					SHELL					
	4	2	3	4	5	6	3	4	5	6	1	2	3	4	1	2	3	4	5	1	2	3	4	5	6
15	38	6.4		19	40	234			35	66			19	40		4	88	148	322			20	48	91	235
16	45	6.8	3	24	48	262			39	75			22	44		7	99	163	345			21	52	98	251
17	51	7.3	5	28	56	290			43	84			24	48		11	111	178	368			23	55	104	267
18	57	7.7	7	32	64	317			47	93			26	52		14	123	192	391	1.1	7.5	24	59	111	284
19	63	8.1	9	35	72	343			51	101		1	29	56		18	135	207	414	1.4	8.1	26	62	117	300
20	69	8.6	11	39	79	369			55	110		3	31	60		21	146	222	437	1.6	8.6	27	66	124	316
21	74	9.0	13	43	86	395			58	118		4	33	64		25	158	237	460	1.8	9.2	29	69	130	332
22	80	9.4	15	47	93	420			62	126		6	36	67		28	170	252	483	2.0	9.8	30	72	137	348
23	85	9.8	17	50	100	445	1		66	134		7	38	71		32	181	266	506	2.3	10.4	32	76	143	365
24	91	10.3	18	54	107	470	2		70	142		9	40	75		35	193	281	529	2.5	10.9	33	79	150	381
25	96	10.7	20	57	114	494	3		73	150		10	43	79		39	205	296	552	2.7	11.5	35	83	156	397
26	101	11.1	22	60	120	519	4		77	157		12	45	83		42	216	311	575	2.9	12.1	36	86	163	413
27	107	11.5	23	64	127	543	4.5		80	165		13	47	87		46	228	326	598	3.2	12.7	38	90	169	429
28	112	12.0	25	67	133	567	5		84	173		14	49	91		49	240	340	621	3.4	13.2	39	93	176	446
29	117	12.4	26	70	140	591	6		88	180		16	52	94		53	252	355	644	3.6	13.8	41	97	182	462
30	122	12.8	28	73	146	614	6.6	34.5	91	188		17	54	98	1	56	263	370	667	3.8	14.4	42	100	189	478
31	127	13.3	30	77	153	638	7.3	36.0	95	196		19	56	102	2	60	275	385	690	4.1	15.0	44	104	195	494
32	132	13.7	31	80	159	662	7.9	37.5	98	203		20	59	106	3	63	287	400	713	4.3	15.6	45	107	202	510
33	137	14.1	33	83	165	685	8.6	38.0	102	210		22	61	110	4	67	298	414	736	4.5	16.1	47	110	208	527
34	142	14.5	34	86	171	709	9.2	41.0	105	218		23	63	114	6	70	310	429	759	4.7	16.7	48	114	215	543
35	147	15.0	35	89	177	732	9.8	42.0	109	225		24	66	117	7	74	322	444	782	5.0	17.3	50	117	221	559
36	152	15.4	37	92	184	755	10.4	44.0	112	233		26	68	121	8	77	333	459	805	5.2	17.9	51	121	228	575
37	157	15.8	38	96	190	778	11.0	45.2	115	240		27	70	125	9	81	345	474	828	5.4	18.4	53	124	234	591
38	162	16.3	40	99	196	801	11.6	47.0	119	247	1	29	73	129	10	84	357	488	851	5.6	19.0	54	128	241	608
39	167	16.7	41	102	202	825	12.1	48.0	122	254	2	30	75	133	11	88	369	503	874	5.9	19.6	56	131	247	624
40	172	17.1	43	105	208	848	12.7	50.0	126	262	2	32	77	137	12	91	380	518	897	6.1	20.2	57	135	254	640
41	176	17.5	44	108	214	871	13.3	51.2	129	269	3	33	80	141	13	95	392	533	920	6.3	20.7	59	138	260	656
42	181	18.0	45	111	220	893	13.8	53.0	133	276	4	35	82	144	14	98	404	548	943	6.6	21.3	60	141	267	672
43	186	18.4	47	114	226	916	14.4	54.0	136	283	4	36	84	148	15	102	415	562	966	6.8	21.9	62	145	273	689
44	191	18.8	48	117	232	939	14.9	56.0	139	291	5	37	86	152	17	105	427	577	989	7.0	22.5	63	148	280	705
45	196	19.2	50	120	238	962	15.5	57.0	143	298	5	39	89	156	18	109	439	592	1012	7.2	23.0	65	152	286	721
46	200	19.7	51	123	244	985	16.0	59.0	146	305	6	40	91	160	19	112	450	607	1035	7.5	23.6	66	155	293	737
47	205	20.1	52	126	250	1008	16.6	60.0	149	312	6	42	93	164	20	116	462	622	1058	7.7	24.2	68	159	299	753
48	210	20.5	54	129	255	1030	17.1	62.0	153	319	7	43	96	168	21	119	474	636	1081	7.9	24.8	69	162	306	770
49	215	21.0	55	132	261	1053	17.6	63.5	156	326	7	45	98	171	22	123	486	651	1104	8.1	25.3	71	166	312	786
50	219	21.4	56	135	267	1076	18.2	64.5	160	334	8	46	100	175	23	126	497	666	1127	8.4	25.9	72	169	319	802
51	224	21.8	58	138	273	1099	18.7	66.0	163	341	8	48	103	179	24	130	509	681	1150	8.6	26.5	74	173	325	818
52	229	22.2	59	141	279	1121	19.2	67.5	166	348	8	49	105	183	25	133	521	696	1173	8.8	27.1	76	176	332	834
53	234	22.7	60	144	285	1144	19.7	69.0	170	355	9	50	107	187	26	137	532	710	1196	9.0	27.6	77	179	338	851
54	238	23.1	62	147	291	1166	20.2	70.0	173	362	9	52	110	191	28	140	544	725	1219	9.3	28.2	79	183	345	867
55	243	23.5	63	150	297	1189	20.7	71.5	176	369	10	53	112	194	29	144	556	740	1242	9.5	28.8	80	186	351	883
56	248	24.0	64	153	302	1212	21.2	73.0	180	376	10	55	114	198	30	147	567	755	1265	9.7	29.4	82	190	358	899
57	253	24.4	66	156	308	1234	21.7	75.0	183	383	11	56	116	202	31	151	579	770	1288	9.9	30.0	83	193	364	915
58	257	24.8	67	159	314	1257	22.2	76.0	186	390	11	58	119	206	32	154	591	784	1311	10.2	30.5	85	197	371	932
59	262	25.2	68	162	320	1279	22.7	77.0	190	397	12	59	121	210	33	158	603	799	1334	10.4	31.1	86	200	377	948
60	267	25.7	70	165	326	1302	23.2	79.0	193	405	12	60	123	214	34	161	614	814	1357	10.6	31.7	88	204	384	964
65	290	27.8	76	179	354	1414	26	86.0	210	440	15	68	135	233	40	179	673	888	1472	11.8	34.6	95	221	416	1045
70	313	29.9	83	194	383	1526	28	93.0	226	475	17	75	147	252	45	196	731	962	1587	12.9	37.4	103	238	449	1126
75	337	32.1	89	208	412	1638	31	100	243	510	20	82	158	271	51	214	790	1036	1702	14.0	40.3	110	255	481	1207
80	360	34.2	96	223	441	1750	33	108	260	545	22	89	170	291	56	231	848	1110	1817	15.1	43.2	118	273	514	1288
85	383	36.4	102	237	469	1861	35	115	276	580	25	96	181	310	61.6	249	907	1184	1932	16.3	46.1	125	290	546	1369
90	406	38.5	108	252	498	1973	38	122	293	615	27	104	193	329	67	266	965	1258	2047	17.4	49.0	133	307	579	1450
100	452	42.8	121	280	554	2195	42	135	326	684	32	118	216	368	78	301	1082	1406	2277	19.7	54.7	148	342	644	1612
110	499	47.0	134	309	611	2418	47		359	754	37	132	239	406	89	336	1199	1554	2507	21.9	60.5	163	376	709	1774
120	545	51.3	146	338	668	2640	51		392	823	42	147	262	445	100	371	1316	1702	2737	24.2	66.2	178	411	774	1936
130	591	55.6	159	366	724	2862	56		425	893	47	161	285	483	111	406	1433	1850	2967	26.4	72.0	193	445	839	2098
140	637	59.9	171	395	781	3084	61		458	962	51	176	308	522	122	441	1550	1998	3197	28.7	77.8	208	480	904	2260
150	682	64.2	184	424	837	3305	65		491	1031	56	190	331	560	133	476	1667	2146	3427	31.0	83.5	223	514	969	2422

All measurements are in Centistokes (cSt). Centipoise (cP) = cSt x product density

Matthis Fluidometer

Elcometer 2280

The Elcometer 2280 is simple and easy-to-use allowing you to measure the fluidity of a coating.

The coating to be measured is poured into the semi-spherical cavity of the instrument, which is in the horizontal position. It is then lifted vertically allowing the liquid in the groove to flow under gravity, this is graduated in mm.

The distance flowed after approximately 10 seconds ±0.5 seconds, measured with the sand timer provided, indicates the fluidity of the coating.



Technical Specification

Part Number	Description
K0002280M001	Elcometer 2280 Matthis Fluidometer

Daniel Flow Gauge

Elcometer 2290

This simple gauge is used to assess the ability of thick or paste-like materials such as paints or printing inks to flow.

A material is poured into the semi-cylindrical reservoir. When the gauge is lifted vertically, the product runs on a graduated plate, which is fixed perpendicular to the reservoir.

The distance covered in a pre-determined time is the measure of the fluidity.



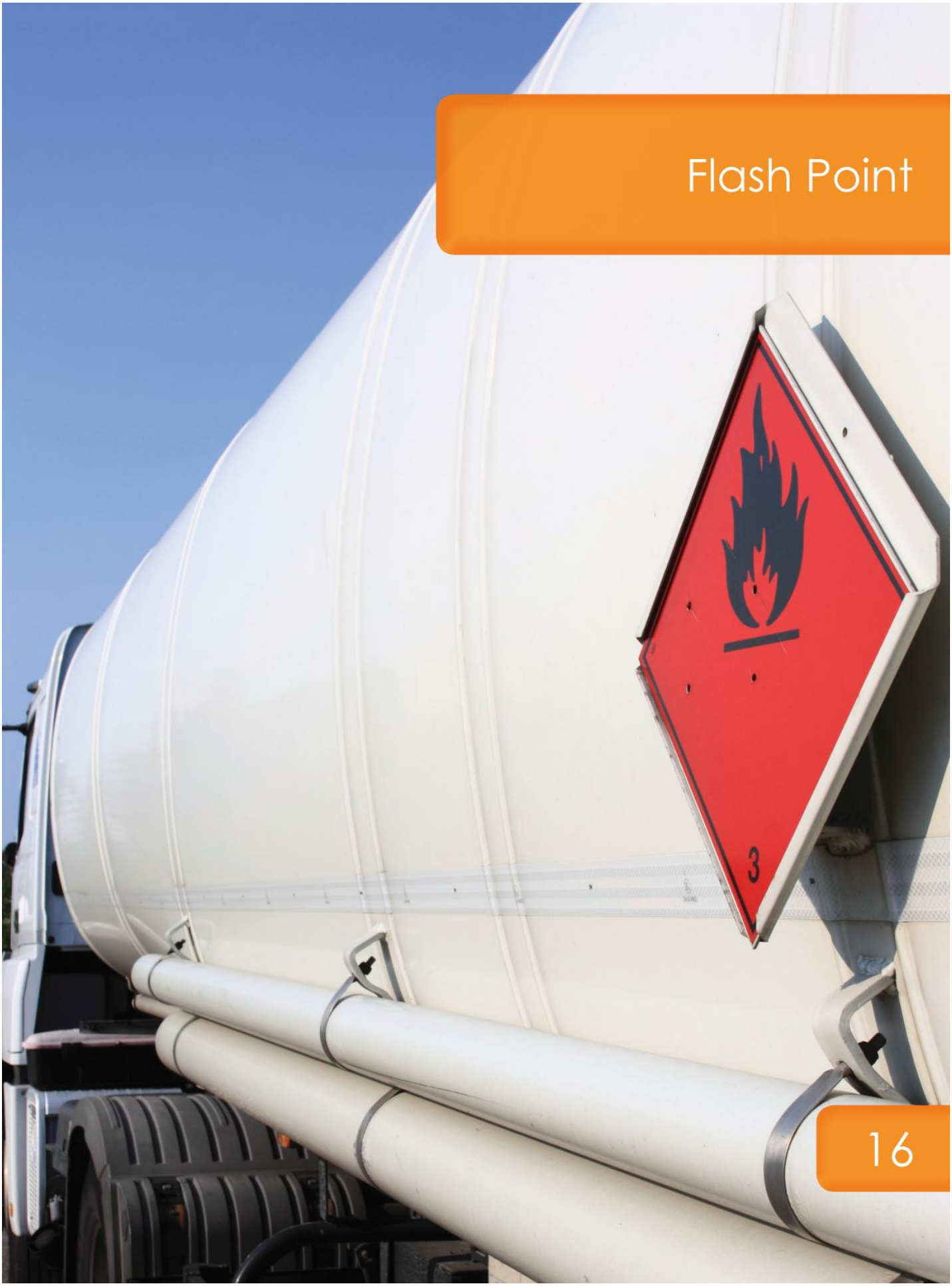
Technical Specification

Part Number	Description
K0002290M001	Elcometer 2290 Daniel Flow Gauge

Notes


elcometer
FILM APPLICATION
Measure
FAST · REPEATABLE · ACCURATE · DURABLE
elcometer
Elcometer 4340 Automatic Film Applicator
Prepare consistent and reproducible coating samples with the Elcometer 4340 Motorised Film Applicator.
See page 17-3

Flash Point



16

Flash Point



When developing any solvent based liquid including paint, coating or ink it is imperative that the flash point is determined and declared in order to meet the stringent transport regulations laid down by governments around the world.

Flash point is defined as "the lowest temperature of a liquid at which its vapours will form a combustible mixture with air". It is a convenient and reliable classification of the "flammability" of many substances. Most industries need to test the flash point of raw materials, products or waste to ensure:

Product Quality: as a measure of consistency and performance comparison

Compliance Testing: to test safety classification for handling, storage, transport and waste

In-service Analysis: tests on in-use oils and other substances for contamination/adulteration

General Safety: to evaluate hazard potential

Specifications: to check conformance

Elcometer offer a range of flash point testing equipment, including;

Open Cup Tests: simulate an un-contained condition, for example a spillage.

Closed Cup Tests: simulate an enclosed environment, for example storage in a tank or sealed container.

Testing flammable & combustible substances for flash point: the "flammability" of a material determines its safety classification and the regulations under which it must be handled, stored and transported. As not all mixtures containing solvents are highly flammable, an accurate and rapid flash point check is vital in reporting a material's "flammability" classification and may assist in saving costs.

Flash point tests using the "rapid equilibrium" method: Traditional equilibrium flash point tests such as ISO1516 and ISO1523, use cup in a water bath to ensure that the liquid and vapour of the sample are in temperature equilibrium by adopting a complex procedure and a very slow heating rate.

Elcometer Setaflash utilises a 2ml (0.067fl oz) or 4ml (0.135fl oz) sample which achieves rapid temperature equilibrium and gives a reliable flash point result in just one or two minutes.

Setaflash ‘Series 3’ Closed Cup Tester

Elcometer 6910/1

The Elcometer 6910 Closed Cup Tester is an easy to use instrument that can complete a flash/no flash test in less than two minutes or determine the flash point of a sample within a temperature range of ambient to 300°C (ambient to 572°F).

It provides fast and reliable flash point results and requires minimum operator skills. Test parameters, instrument status and test results are accessed via the touch screen display and a push button, which guide the operator through a straightforward testing process.

An audible prompt is sounded when a flash is achieved. An automatic flash detector reduces the chance of misinterpretation of the test result by the operator and enhanced repeatability. For easy record keeping the instrument stores 100,000 test results, which can be saved and transferred via the USB port.

Gas for the test jet shutter assembly is supplied from an integral gas tank, which is filled using a standard butane (lighter) refill cartridge.

- Flash point test in less than 2 minutes
- Small sample size, 2ml (0.067fl oz) or 4ml (0.135fl oz)
- Automatic flash detection
- Automatic barometric correction
- USB port and result storage
- Colour touch screen
- Portable
- Simple calibration







STANDARDS:

ASTM D1655, ASTM D3278, ASTM D3828, ASTM E502, BS 2000-523, CLP Regulations EC No 1272/2008, DEF STAN 91-91, EPA 1020 A & B, ISO 3679, ISO 3680, UN Class 3 Non-viscous Flammable Liquids

Technical Specification

Part Number	Description	Certificate
K6910M010	Elcometer 6910/1 Setaflash ‘Series 3’ Closed Cup Tester	○
Temperature Range	Ambient to 300°C (Ambient to 572°C)	
Sample Size	2ml (0.067fl oz) or 4ml (0.135fl oz)	
Fuel Supply	Integrated gas tank (removable)	
Cup Material	Aluminium	
Dimensions	195 x 295 x 140mm (7.6 x 11.6 x 5.5”)	
Data Storage and Download	1GB internal memory and integrated USB port	
Pressure Correction	Automatic barometric correction	
Weight	3kg (6.6lb)	
Packing List	Elcometer 6910 Setaflash ‘Series 3’ Closed Cup Tester, 2ml (0.067fl oz) syringe, gas valve & cap, viton ‘O’ ring, mains power cable, 2mm allen key, quick start guide, USB memory stick with user manual, quality assurance certificate and warranty registration form	

Accessories

KT006910N001	Cooling Module Option for 5°C (41°F) Ambient Temperature
KT006910N009	Certified Flash Point Material (50ml/1.7floz)

○ Optional Calibration Certificate available.

Elcometer 6910/2 Setaflash ‘Series 3’ Open Cup Tester







STANDARDS:
ASTM D1655, ASTM D3278, ASTM D3828, ASTM E502, BS 2000-523, CLP Regulations EC No 1272/2008, DEF STAN 91-91, EPA 1020 A & B, ISO 3679, ISO 3680, UN Class 3 Non-viscous Flammable Liquids

The Elcometer 6910/2 Open Cup Tester offers the fastest and most accurate flash point instrument at a cost effective price.

Certain substances, classified as “flammable” by closed cup flash point testing, may be reclassified as “non-flamable” by combustibility testing. This has significant potential cost reduction implications for the packaging, storage and shipping of many materials.

The Elcometer 6910/2 features an open cup for flash/no-flash finite determinations or sustained combustion tests, audible and on-screen prompts and easy calibration. Flash point tests can be conducted in less than two minutes with a temperature range from ambient to 300°C (ambient to 572°F).

A manually operated flame sweeping arm is fitted to the cup and gas is supplied from the integral tank via a control valve. The flash or sustained combustion characteristics of the sample are observed visually by passing the test flame over the sample.

- Flash point test in less than 2 minutes
- Small sample size, 2ml (0.067fl oz)
- Audible and on-screen prompts
- Portable
- Simple calibration

Technical Specification

Part Number			Description	Certificate
UK 240V	EUR 220V	US 110V		
K0UK6910M011	K0006910M011	K0US6910M011	Elcometer 6910/2 Setaflash ‘Series 3’ Open Cup Tester	○
Temperature Range	Ambient to 300°C (Ambient to 572°F)			
Sample Size	2ml (0.067fl oz)			
Test Time	1 minute for flash points up to 100°C (212°F)			
	2 minutes for flash points above 100°C (212°F)			
Temperature Measurement	0.5°C (1.0°F) resolution 0.5°C (1.0°F) accuracy			
Cup Material	Blackened aluminium			
Dimensions	260 x 280 x 260mm (10.2 x 11.0 x 10.2”)			
Weight	5kg (11.0lb)			
Packing List	Elcometer 6910 Setaflash ‘Series 3’ Open Cup Tester, 2ml (0.067fl oz) syringe, gas valve & cap, 105mm silicone tube, test flame height gauge, mains power cable, inspection certificate, warranty registration form and operating instructions			

Accessories

KT006910N001	Cooling Module Option for 5°C (41°F) Ambient Temperature
KT006910N009	Certified Flash Point Material (50ml/1.7fl oz)

○ Optional Calibration Certificate available.

Setaflash 'Series 3' Active-Cool Closed Cup Tester

Elcometer 6910/3

The Setaflash 'Series 3' Active-Cool Tester offers the same features as the Elcometer 6910/1 Setaflash but is fitted with a cup suitable for testing corrosive samples.

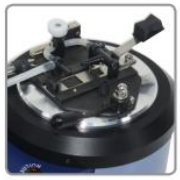
It has been designed to carry out flash/no flash tests rapidly and efficiently to determine the flash point of liquids and semi-solids in the 10°C to 130°C (50°F to 266°F) temperature range. A sample cup is heated and then cooled by Peltier cells. This gives very accurate and stable sub-ambient test temperatures and the benefit of rapid temperature normalisation between tests.

Flash point is automatically detected using a thermally activated detector, reducing the risk of operator error and minimising the potential danger of inhaling fumes during a test. A rechargeable gas tank with on/off switch and fine adjustment are integral to the unit.

- Flash/No Flash & Ramp Modes
- Flash point test in less than 2 minutes
- Small sample size, 2ml (0.067fl oz) or 4ml (0.135fl oz)
- Automatic flash detection
- Electronic Peltier cooling
- Audible and on-screen prompts
- Portable
- Corrosion resistant cup insert







STANDARDS:

ASTM D1655, ASTM D3278, ASTM D3828, ASTM D7236, ASTM E502, BS 2000-523, DEF STAN 91-91, EPA 1020 A & B, ISO 3679, ISO 3680, UN Class 3 Non-viscous Flammable Liquids

Technical Specification

Part Number	Description	Certificate
K6910M013	Elcometer 6910/3 Setaflash 'Series 3' Active-Cool	○
Temperature Range	10°C to 135°C (50°F to 275°F)	
Test Modes	Rapid Equilibrium and Ramp	
Sample Size	2ml (0.067fl oz) for flash points up to 100°C (212°F)	
	4ml (0.135fl oz) for flash points above 100°C (212°F)	
Test Duration	1 minute below 100°C, 2 minutes above 100°C, or user determined 1 to 99 minutes	
Ramp Rate	2°C/min ramp (3.6°F/min ramp)	
Cup Material	Corrosion resistant steel insert	
Dimensions	260 x 280 x 260mm (10.2 x 11.0 x 10.2")	
Weight	3kg (6.6lb)	
Packing List	Elcometer 6910 Setaflash 'Series 3' Active-Cool Closed Cup Tester, 2ml (0.067fl oz) syringe, gas valve & cap, power supply, mains power cable, 2mm allen key, quality assurance certificate, warranty registration form and operating instructions	

Accessories

KT006910N009	Certified Flash Point Material (50ml/1.7fl oz)

○ Optional Calibration Certificate available.

Elcometer 6910 Setaflash ‘Series 8’ Closed Cup Tester







STANDARDS:
ASTM D3278, ASTM D3828, ASTM D7236, ASTM E502, BS 2000-523, CLP Regulations EC No 1272/2008, EPA 1020 A & B, ISO 3679, ISO 3680, UN Class 3 Non-viscous Flammable Liquids

The Elcometer 6910 Setaflash ‘Series 8’ is an automated closed cup tester with a temperature range of ambient to 300°C (ambient to 572°F).

Test parameters, instrument status and flash point results are shown on the bright colour LCD display - all easily accessed via menus, navigated by the keypad, which guide the operator through a straightforward testing process.

The instrument uses an electric hot wire ignitor and is designed with two modes of flash point operation; Flash/No Flash and Ramp. Ramp Mode increases the sample temperature at the rate of 2°C/min and automatically dips the ignitor every 1°C up to 100°C (every 2°C above 100°C), until either a flash is detected or the end of test temperature is reached.

During the test the automatic flash point is set to ignore halo and other false flash effects reducing the risk of inaccurate test results and enhancing repeatability. At the end of the flash point test, the sample cup is cooled by forced air to reduce the cycle time between tests.

Up to 64 results can be stored in the memory which can be downloaded to a PC or printer via the RS232C port for further reporting.

- Small sample size, 2ml (0.067fl oz) or 4ml (0.135fl oz)
- Flash/No Flash & Ramp Modes
- Electric ignitor
- Automatic dipping and flash detection
- 64 test memory & RS232 interface
- Forced air cooling for rapid test cycling

Technical Specification

Part Number	Description	Certificate
K6910M020	Elcometer 6910 Setaflash ‘Series 8’ Closed Cup Tester	•
Temperature Range	Ambient to 300°C (Ambient to 572°F)	
Sample Size	2ml (0.067fl oz) or 4ml (0.135fl oz) according to method	
Test Modes	Rapid Equilibrium and Ramp	
Test Duration Rapid Equilibrium Mode	1 minute below 100°C (212°F), 2 minutes above 100°C (212°F)	
Test Duration Ramp Mode	Typically 7 minutes	
Cool Down Time	80°C to 20°C (176°F to 68°F) in 4 minutes	
Cup Material	Aluminium	
Dimensions	300 x 340 x 380mm (11.8 x 13.4 x 15.0”)	
Weight	8kg (17.6lb)	
Packing List	Elcometer 6910 Setaflash ‘Series 8’ Closed Cup Tester, mains power cable, 2ml (0.067fl oz) syringe, programming plug, 2mm allen key, 2.5mm allen key, ‘O’ ring fitted, certified flash point material (50ml/1.7fl oz), quality assurance certificate and operating instructions	

Accessories

KT006910N009	Certified Flash Point Material (50ml/1.7fl oz)

• Calibration Certificate supplied as standard.

Setaflash ‘Series 8’ Active-Cool Closed Cup Tester

Elcometer 6910

The Elcometer 6910 Setaflash ‘Series 8’ Active-Cool Closed Cup Tester offers the same features as the Setaflash ‘Series 8’ Closed Cup Tester but is designed with a temperature range of -20°C to 130°C (-4°F to 266°F) with no external cooling required. When connected to a suitable water supply, the range is extended down to -20°C (- 4°F) and operates with an electric ignition.

This Active Cool Closed Cup Tester uses the Peltier cell technology for heating and cooling, ensuring precise temperature control and rapid cool down after a test is completed.

- Small sample size, 2ml (0.067fl oz) or 4ml (0.135fl oz)
- Flash/No Flash & Ramp Modes
- Electric ignitor
- Automatic dipping and flash detection
- Active-Cool electronic Peltier cooling
- 64 test memory & RS232 interface







STANDARDS:

ASTM D3278, ASTM D3828, ASTM D7236, ASTM E502, BS 2000-523, CLP Regulations EC No 1272/2008, EPA 1020 A & B, ISO 3679, ISO 3680, UN Class 3 Non-viscous Flammable Liquids

Technical Specification

Part Number	Description	Certificate
K6910M021	Elcometer 6910 Setaflash ‘Series 8’ Active-Cool Closed Cup Tester	•
Temperature Range	Air: 10°C to 130°C (50°F to 266°F)	
	Water Assisted: -20 to 130°C (-4 to 266°F)	
Sample Size	2ml (0.067fl oz) or 4ml (0.135fl oz) according to method	
Test Modes	Rapid Equilibrium and Ramp	
Test Duration Rapid Equilibrium Mode	1 minute below 100°C (212°F), 2 minutes above 100°C (212°F), FAME 1 minute or user defined 1 to 99 minutes	
Test Duration Ramp Mode	Typically 7 minutes	
Cool Down Time	80°C to 20°C (176°F to 68°F) in 4 minutes	
Cup Material	Aluminium	
Dimensions	300 x 340 x 380mm (11.8 x 13.4 x 15.0”)	
Weight	8kg (17.6lb)	
Packing List	Elcometer 6910 Setaflash ‘Series 8’ Active-Cool Closed Cup Tester, 2ml (0.067fl oz) syringe, ignitor, mains power cable, programming plug, 2mm allen key, 2.5mm allen key, certified flash point material (50ml/1.7fl oz), certificate of calibration, warranty registration form and operating instructions	

Accessories

KT006910N009	Certified Flash Point Material (50ml/1.7fl oz)

• Calibration Certificate supplied as standard.

Elcometer 6910 Setaflash ‘Series 8’ Active-Cool (Corrosion Resisting)







STANDARDS:
ASTM D3278, ASTM D3828, ASTM D7236, ASTM E502, BS 2000-523, CLP Regulations EC No 1272/2008, EPA 1020 A & B, ISO 3679, ISO 3680, UN Class 3 Non-viscous Flammable Liquids

The Elcometer 6910 Setaflash ‘Series 8’ Active-Cool (Corrosion Resisting) offers the same feature as the Active Cool Closed Cup Tester but comes with a corrosion resisting insert in the cup for testing corrosive samples.

It has been designed to carry out flash/no flash tests with a temperature range of 10°C to 130°C (50°F to 266°F) with no external cooling required. When connected to a suitable chilled water supply, the range is extended down to -20°C (-4°F).

There is also the Ramp Mode which increases the sample temperature at the rate of 2°C/min and automatically dips the ignitor every 1°C up to 100°C (every 2°C above 100°C), until either a flash is detected or the end of test temperature is reached.

- Small sample size, 2ml (0.067fl oz) or 4ml (0.135fl oz)
- Flash/No Flash & Ramp Modes
- Electric ignitor
- Automatic dipping and flash detection
- ActiveCool electronic Peltier cooling
- 64 test memory & RS232 interface
- Corrosion resisting insert

Technical Specification

Part Number	Description	Certificate
K6910M022	Elcometer 6910 Setaflash ‘Series 8’ Active-Cool (Corrosion Resisting)	•
Temperature Range	Air: 10°C to 130°C (50°F to 266°F)	
	Water Assisted: -20 to 130°C (-4 to 266°F)	
Sample Size	2ml (0.067fl oz) or 4ml (0.135fl oz) according to method	
Test Modes	Rapid Equilibrium and Ramp	
Test Duration Rapid Equilibrium Mode	1 minute below 100°C (212°F), 2 minutes above 100°C (212°F), FAME 1 minute or user defined 1 to 99 minutes	
Test Duration Ramp Mode	Typically 7 minutes	
Cool Down Time	80°C to 20°C (176°F to 68°F) in 4 minutes	
Cup Material	Corrosion Resistant Steel Insert, Aluminium Cup	
Dimensions	300 x 340 x 380mm (11.8 x 13.4 x 15.0”)	
Weight	8kg (17.6lb)	
Packing List	Elcometer 6910 Setaflash ‘Series 8’ Active-Cool (Corrosion Resisting), 2ml (0.067fl oz) syringe, flash detector, mains power cable, programming plug, 2mm allen key, 2.5mm allen key, certified flash point material (50ml/1.7fl oz), certificate of calibration, warranty registration form and operating instructions	

Accessories

KT006910N009	Certified Flash Point Material (50ml/1.7fl oz)

• Calibration Certificate supplied as standard.

Film Application & Test Charts

Film Application & Tables 17-3

Bar Coaters, Applicators & Sag Tests 17-8

Test Charts 17-18



17

Film Application & Test Charts



For numerous products, such as paint, ink, varnishes, glue and cosmetics, the reliability of many laboratory tests is directly related to the quality and consistency of the samples.

Any measurements made on coatings for the purpose of describing their physical properties (drying time, elasticity, abrasion, gloss, colour, shade, etc.) are made on the basis of uniform and comparable samples with precisely controlled thickness.

In order to meet such specific demands, Elcometer has a wide range of high precision film applicators and spiral bar coaters. Elcometer's range of Motorised Film Applicators has been designed specifically to ensure the greatest levels of repeatability and reproducibility by ensuring:

- constant speed of application
- smoothness of operation - ensuring no jerks which create ridges and variation in thickness

Available with a highly engineered table, available with or without a vacuum and heating element, each Elcometer Motorised Film Applicator is accurately measured using a Co-ordinate Measuring Machine to meet an incredibly high level of flatness.

The average variation on Elcometer Application Tables is 2.3µm (0.092mil), while the average variation on glass used on some low cost tables is 12.0µm (0.48mil). If a 100µm (4mils) coating is tested, readings taken using an Elcometer table would produce readings between 97.7µm (3.9mils) and 102.3µm (4.1mils). On glass, the readings produced would be between 88µm (3.5mils) and 112µm (4.48mils) - a 47% variation.

Elcometer also offers a wide range of Leneta Test Charts to meet all specific requirements, which feature a combination of black and white markings. These are the two extremes of colour thereby indicating the thickness of coating required to cover the whole colour spectrum.

This range of Leneta Test Charts covers a variety of testing needs including the hiding power of coatings, ink qualities, penetration, spreading rates and opacity.

Motorised/Automatic Film Applicator

Elcometer 4340

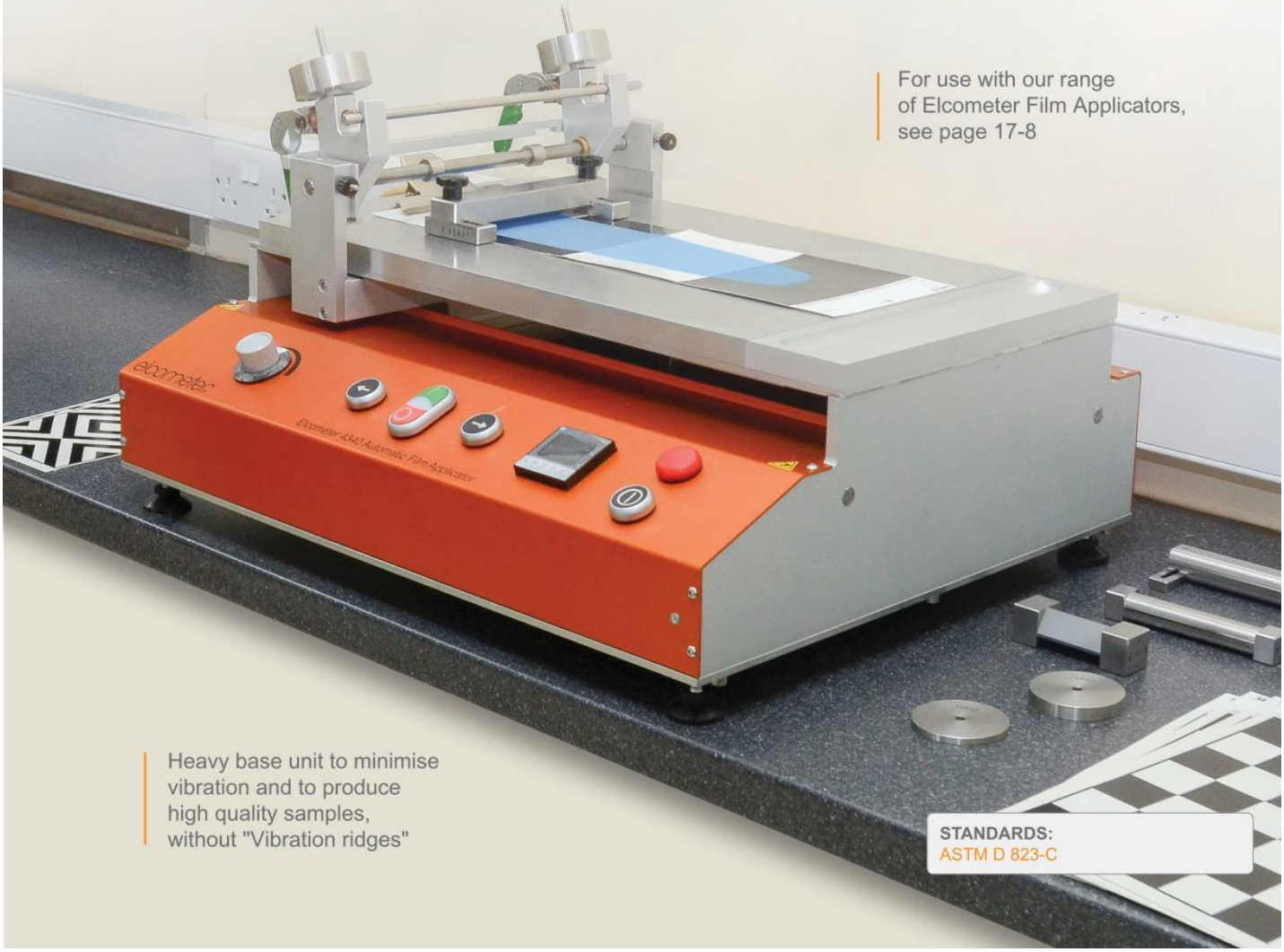
The **Elcometer 4340** Motorised Film Applicator is essential for preparing a wide variety of product samples including paint, varnish, cosmetics and glue.

Ideal for testing liquids including:
paint, varnish, cosmetics, glue

Precision engineered flat aluminium table for better repeatability
- 5 times flatter than glass

Standard table &
perforated or channelled
vacuum tables available

For use with our range
of Elcometer Film Applicators,
see page 17-8

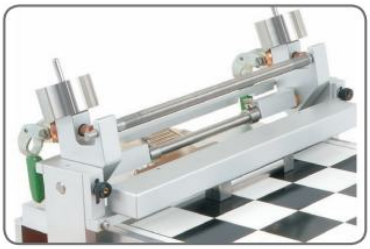


Heavy base unit to minimise
vibration and to produce
high quality samples,
without "Vibration ridges"

STANDARDS:
ASTM D 823-C

Elcometer 4340 Motorised/Automatic Film Applicator

The Elcometer 4340 provides total consistency and reproducibility on various substrates including contrast charts, sheet steel, plastic foils and glass.



Durable & Rugged

- Sturdy rigid design to eliminate vibration during film application
- Up to 15 years of standard use



Choice of Table

- Standard flat table
- Single and double channelled vacuum tables
- Perforated and heated vacuum tables
- Electric heated sample tables available for temperature control



Smooth & Repeatable Tests

- Use up to 3 film applicators simultaneously
- Test up to 2 test charts simultaneously
- 11 pre-set transverse speeds from 0.2 - 3.9 inches per second

Motorised/Automatic Film Applicator

Elcometer 4340

The Elcometer 4340 range of Motorised Film Applicators allows the flexibility to test using standard film applicators (filmographs) or spiral bar coaters by using the combined attachment.

Each table is engineered to the highest flatness rating (up to five times flatter than glass), and can be supplied in a number of variations to meet your specific test requirements, simply select the model from the Technical Specification below.



Technical Specification

Part Number	Test Chart Clip	Standard Table	Perforated Vacuum Table[1]	Double Channel Vacuum Table[1]	Electrically Heated Ambient to 200°C (Ambient to 392°F)	Certificate
K4340M10-	■	■				○
K4340M12- [2]	■	■			■	○
K4340M100	■		■			○
K4340M102	■			■		○
K4340M120 [2]	■		■		■	○

Dimensions	780 x 490 x 320mm (30.7 x 19.3 x 12.6")		
Table Dimensions[3]	600 x 305mm (23.6 x 12")[4] / 521.75 x 305mm (20.5 x 12")	Weight	29kg (64lb)
Packing List	Elcometer 4340 Film Applicator, Combined Film Applicator & Spiral Bar Coater Attachment, 3x mains leads (UK, EUR & US) and operating instructions		

Accesories

Part Number	Description	Suitable for:
KT004340N003	Spare/Replacement Combined Film Applicator & Spiral Bar Coater Attachment*	M10-, M100, M102
KT004340N103	Spare/Replacement Combined Film Applicator & Spiral Bar Coater Attachment*	M12-, M120
KT004350P052	Elcometer 4350/52 Non-Slip Rubber Mat	All models

[1] Vacuum Pump supplied separately (Elcometer 4930, see page 17-6)

[2] For 110V unit, add D to end of part number, e.g. K4340M120D

[3] Excluding run-off tray

[4] Table dimension size only applies to part numbers K4340M10-

○ Optional Calibration Certificate available.

Elcometer 4900 Free Standing Vacuum Tables



Elcometer 4900 free standing vacuum tables provide an ideal surface for manual application of films on test charts or samples. Made of perforated aluminium, the Elcometer 4900 keeps a wide range of test pieces absolutely flat (2.3µm variation over a 100mm length), including glass, plastic sheets, contrast charts etc. ideal for thicker, more substantial test pieces.

Elcometer vacuum tables are engineered to be flat and precise with little variation for "perfect" flatness. All Elcometer standard tables, channelled and perforated vacuum tables are 5 times flatter than glass.

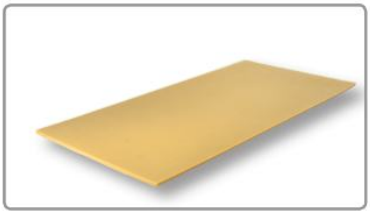
Technical Specification

Part Number	Description	Paper Size	Table Dimensions mm	Table Dimensions inches
K0004900M001	Perforated Vacuum Table	A4	305 x 225	12 x 8.9
K0004900M002	Standard Vacuum Table	A3	521.75 x 305	20.5 x 12

Accessories

KTUK4930M001	Vacuum Pump (UK 240V) -	used to provide vacuum to the Vacuum Tables
KT004930M001	Vacuum Pump (EUR 220V) -	used to provide vacuum to the Vacuum Tables
KTUS4930M001	Vacuum Pump (US 110V) -	used to provide vacuum to the Vacuum Tables

Elcometer 4350 Non-Slip Rubber Mat



A non-slip rubber mat designed to minimise surface defects. Suitable for use with the Elcometer Spiral Bar Coaters and the Elcometer 4340 Motorised Film Applicators; see page 17-5 and 17-8.

Technical Specification

Part Number	Description	Depth		Dimensions	
KT004350P052	Elcometer 4350/52 Non-Slip Rubber Mat	5	0.2"	510 x 250	20 x 9.8

Film Application & Test Charts

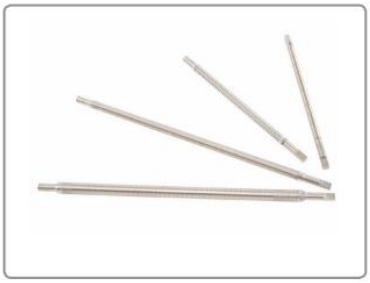
Film Application & Tables 17-3

Bar Coaters, Applicators & Sag Tests 17-8

Test Charts 17-18



Elcometer 4361 Spiral Bar Coaters





STANDARDS:
ASTM D 4147

Made of stainless steel and consisting of a cylindrical bar wound with stainless steel wire, these spiral bar coaters are used to apply a predetermined thickness for coatings with high levelling characteristics.

- A wide range of different wire diameters to measure coating thicknesses from 4 to 500µm (0.157 to 19.685mils).
- The Elcometer 4361 have a bar width of 140mm (5.5”), allowing the user to apply the correct film width dependent on the substrate or test chart width. Other widths are available on request.

Ideal for use with the Elcometer 4340 Motorised Film Applicators; see page 17-3. A range of standard and heated vacuum tables are available; see page 17-6 for more information.

Technical Specification

Bar Width 140mm (5.5”)		Coating Thickness				Coating Thickness	
Part Number	Model	µm	mils	Part Number	Model	µm	mils
K0004361P001	Elcometer 4361/1	4	0.157	K0004361P014	Elcometer 4361/14	50	1.968
K0004361P002	Elcometer 4361/2	6	0.236	K0004361P020	Elcometer 4361/20	80	3.149
K0004361P003	Elcometer 4361/3	8	0.315	K0004361P021	Elcometer 4361/21	90	3.543
K0004361P004	Elcometer 4361/4	10	0.393	K0004361P022	Elcometer 4361/22	100	3.937
K0004361P005	Elcometer 4361/5	12	0.472	K0004361P023	Elcometer 4361/23	110	4.330
K0004361P006	Elcometer 4361/6	16	0.630	K0004361P024	Elcometer 4361/24	120	4.724
K0004361P007	Elcometer 4361/7	20	0.787	K0004361P027	Elcometer 4361/27	150	5.905
K0004361P008	Elcometer 4361/8	26	1.024	K0004361P029	Elcometer 4361/29	175	6.890
K0004361P009	Elcometer 4361/9	30	1.181	K0004361P030	Elcometer 4361/30	200	7.874
K0004361P010	Elcometer 4361/10	34	1.338	K0004361P031	Elcometer 4361/31	300	11.811
K0004361P012	Elcometer 4361/12	40	1.574	K0004361P033	Elcometer 4361/33	500	19.685
K0004361P013	Elcometer 4361/13	46	1.811				



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3

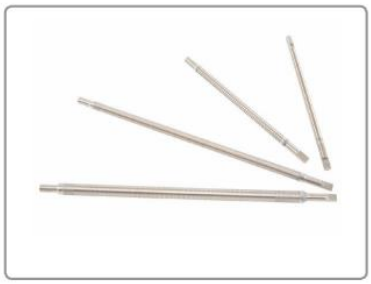
Spiral Bar Coaters

Elcometer 4360

Made of stainless steel and consisting of a cylindrical bar wound with stainless steel wire, these spiral bar coaters are used to apply a predetermined thickness for coatings with high levelling characteristics.

- A wide range of different wire diameters to measure coating thicknesses from 4 to 500µm (0.157 to 19.685mils).
- The Elcometer 4360 have a bar width of 250mm (9.8”), allowing the user to apply the correct film width dependent on the substrate or test chart width. Other widths are available on request.

Ideal for use with the Elcometer 4340 Motorised Film Applicators; see page 17-3. A range of standard and heated vacuum tables are available; see page 17-6 for more information.





STANDARDS:
ASTM D 4147

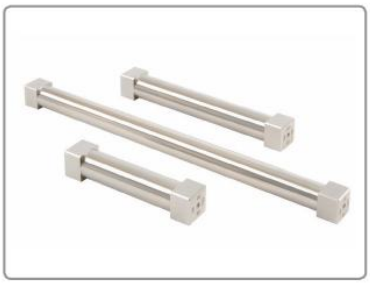
Technical Specification

Bar Width 250mm (9.8”)		Coating Thickness				Coating Thickness	
Part Number	Model	µm	mils	Part Number	Model	µm	mils
K0004360P001	Elcometer 4360/1	4	0.157	K0004360P016	Elcometer 4360/16	60	2.362
K0004360P002	Elcometer 4360/2	6	0.236	K0004360P018	Elcometer 4360/18	70	2.755
K0004360P003	Elcometer 4360/3	8	0.315	K0004360P019	Elcometer 4360/19	76	2.992
K0004360P004	Elcometer 4360/4	10	0.393	K0004360P020	Elcometer 4360/20	80	3.149
K0004360P005	Elcometer 4360/5	12	0.472	K0004360P021	Elcometer 4360/21	90	3.543
K0004360P006	Elcometer 4360/6	16	0.630	K0004360P022	Elcometer 4360/22	100	3.937
K0004360P007	Elcometer 4360/7	20	0.787	K0004360P024	Elcometer 4360/24	120	4.724
K0004360P008	Elcometer 4360/8	26	1.024	K0004360P025	Elcometer 4360/25	130	5.118
K0004360P009	Elcometer 4360/9	30	1.181	K0004360P027	Elcometer 4360/27	150	5.905
K0004360P010	Elcometer 4360/10	34	1.338	K0004360P030	Elcometer 4360/30	200	7.874
K0004360P011	Elcometer 4360/11	38	1.496	K0004360P031	Elcometer 4360/31	300	11.811
K0004360P012	Elcometer 4360/12	40	1.574	K0004360P032	Elcometer 4360/32	400	15.748
K0004360P014	Elcometer 4360/14	50	1.968	K0004360P033	Elcometer 4360/33	500	19.685

Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3



Elcometer 3520 Baker Film Applicator





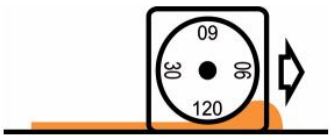


STANDARDS:
ASTM D 823-E

The Elcometer 3520 Baker Film Applicator is made of hardened stainless steel with a cylindrical applicator body. These gauges apply a coating of specified thickness and film width on flat, relatively firm substrates.

It can also be used with the Elcometer 4340 Motorised Film Applicators, see pages 17-3.

Each Elcometer 3520 Baker Film Applicator has four high precision specified coating thickness sizes for accuracy and is available in a range of film widths.



Elcometer 3520

Technical Specification

Part Number	Model	Film Thickness				Film Width*
Metric		µm				mm
K0003520M001	Elcometer 3520/1	30,	60,	90,	120	25
K0003520M002	Elcometer 3520/2	30,	60,	90,	120	50
K0003520M003	Elcometer 3520/3	30,	60,	90,	120	60
K0003520M101	Elcometer 3520/101	50,	100,	150,	200	60
K0003520M004	Elcometer 3520/4	30,	60,	90,	120	75
K0003520M005	Elcometer 3520/5	30,	60,	90,	120	100
K0003520M006	Elcometer 3520/6	30,	60,	90,	120	125
K0003520M007	Elcometer 3520/7	30,	60,	90,	120	150
K0003520M009	Elcometer 3520/9	30,	60,	90,	120	250



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3

* Add 30mm (1.2") to the Film Width to calculate the total width of the applicator

Adjustable Baker Film Applicators

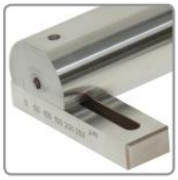
Elcometer 3525 & 3530

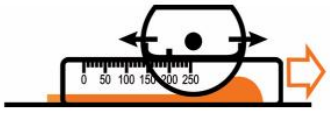
The Elcometer 3525 & 3530 are manufactured using the very latest machining techniques to ensure outstanding accuracy. These Baker Film Applicators allow the user to select the specific gap size required. The coating thickness gap size can be set to produce either a uniform film or a film wedge. Each film applicator has thickness markings down each side for fast set up.

Available in two gap size ranges and a number of film widths, these stainless steel applicators can be used manually or with the Elcometer 4340 Motorised Film Applicator, see page 17-3.

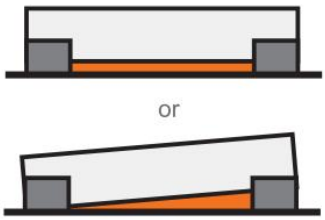








Elcometer 3530



STANDARDS:
ASTM D 823-E

Technical Specification

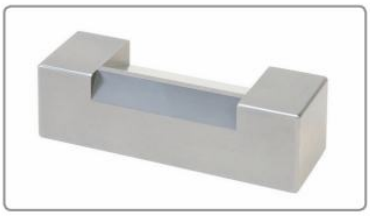
Part Number	Model	Film Thickness		Film Width*	
Metric		µm	mils	mm	inches
K0003525M001	Elcometer 3525/1	0 - 100	-	50	-
K0003525M002	Elcometer 3525/2	0 - 100	-	75	-
K0003525M003	Elcometer 3525/3	0 - 100	-	100	-
K0003525M004	Elcometer 3525/4	0 - 100	-	150	-
K0003525M005	Elcometer 3525/5	0 - 100	-	200	-
K0003525M006	Elcometer 3525/6	0 - 100	-	250	-
K0003530M001	Elcometer 3530/1	0 - 250	0 - 10	50	2
K0003530M002	Elcometer 3530/2	0 - 250	0 - 10	75	3
K0003530M003	Elcometer 3530/3	0 - 250	0 - 10	100	4
K0003530M004	Elcometer 3530/4	0 - 250	0 - 10	150	6
K0003530M005	Elcometer 3530/5	0 - 250	0 - 10	200	8
K0003530M006	Elcometer 3530/6	0 - 250	0 - 10	250	10

Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3



* Add 30mm (1.2”) to the Film Width to calculate the total width of the applicator

Elcometer 3550 Single Sided Film Applicators



The Elcometer 3550 Single Sided Film Applicators are easy to clean gauges manufactured to the highest accuracy. These precision ground stainless steel Single Sided Film Applicators have a flat edged prismatic body making them suitable for coatings applied to a flat and relatively strong substrate.

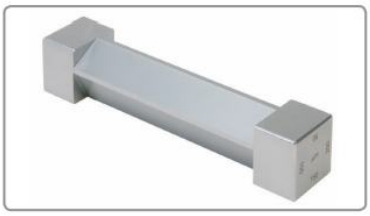
The Elcometer 3550 Single Sided Film Applicators can be used with the Elcometer 4340 Motorised Film Applicators, see page 17-3.

STANDARDS:
ASTM D 823-E

Technical Specification

Part Number	Model	Film Thickness		Film Width+	
Metric		µm	mils	mm	inches
K0003550M001	Elcometer 3550/1	50	2	50	2
K0003550M003	Elcometer 3550/3	50	2	150	6
K0003550M201	Elcometer 3550/1	75	3	50	2
K0003550M203	Elcometer 3550/3	75	3	150	6

Elcometer 3540 Four Sided Film Applicators



The Elcometer 3540 Four Sided Film Applicators are easy to clean gauges manufactured to the highest accuracy. These precision ground stainless steel Four Sided Film Applicators have 4 thicknesses per applicator each with a flat edged prismatic body making them suitable for coatings applied to a flat and relatively strong substrate.

Available in a range of film widths and can be used with the Elcometer 4340 Motorised Film Applicators, see page 17-3.

STANDARDS:
ASTM D 823-E

Technical Specification

Part Number	Model	Film Thickness		Film Width*		Certificate
Metric		µm	mils	mm	inches	
K0003540M001	Elcometer 3540/1	50, 100, 150, 200	2, 4, 6, 8	50	2	
K0003540M002	Elcometer 3540/2	50, 100, 150, 200	2, 4, 6, 8	75	3	○
K0003540M003	Elcometer 3540/3	50, 100, 150, 200	2, 4, 6, 8	100	4	
K0003540M004	Elcometer 3540/4	50, 100, 150, 200	2, 4, 6, 8	150	6	
K0003540M005	Elcometer 3540/5	50, 100, 150, 200	2, 4, 6, 8	200	8	
K0003540M006	Elcometer 3540/6	50, 100, 150, 200	2, 4, 6, 8	250	10	



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3

* Add 40mm (1.6") to the Film Width to calculate the total width of the applicator

○ Optional Calibration Certificate available.

Micrometric Film Applicators

Elcometer 3570

The Elcometer 3570 Micrometric Film Applicators are made of anodised aluminium with a reservoir and a bevelled blade applicator body, and are suitable for high-precision manual application of high viscosity fluids on to relatively firm substrates.

The gap can be adjusted, in 1 micron intervals, from 0 to 1mm by the inclination of the device, using a micrometric screw.









Elcometer 3570

STANDARDS:
ASTM D 823-E

Technical Specification

Part Number	Model	Film Thickness	Film Width*		Certificate
		µm	mm	inches	
K0003570M201	Elcometer 3570/1 Micrometric Film Applicator	0 - 1000	75	3	
K0003570M002	Elcometer 3570/2 Micrometric Film Applicator	0 - 1000	100	4	
K0003570M003	Elcometer 3570/3 Micrometric Film Applicator	0 - 1000	150	6	○
K0003570M004	Elcometer 3570/4 Micrometric Film Applicator	0 - 1000	200	8	

* Add 36mm (1.4") to the Film Width to calculate the total width of the applicator

○ Optional Calibration Certificate available.

Elcometer 3580 Casting Knife Film Applicator





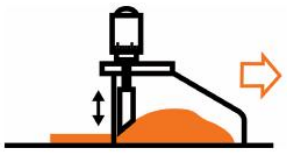


STANDARDS:
ASTM D 823-E

The Elcometer 3580 Casting Knife Film Applicators are the ideal gauge for the laboratory, available in a wide range of film widths and has extended sides to confine the coating during the application.

The film thickness can be adjusted in 10 micron steps from 0 to 6mm by means of two integrated micrometric screws.

Manufactured in anodised aluminium, with a bevelled blade applicator body, the Elcometer 3580 is recommended for manually applying thick, high viscosity fluids, on solid and flat substrates.



Elcometer 3580

Technical Specification

Part Number	Model	Film Thickness	Film Width*		Certificate
		µm	mm	inches	
K0003580M201	Elcometer 3580/1 Casting Knife Film Applicator	0 - 6000	50	2	○
K0003580M202	Elcometer 3580/2 Casting Knife Film Applicator	0 - 6000	75	3	
K0003580M203	Elcometer 3580/3 Casting Knife Film Applicator	0 - 6000	100	4	
K0003580M204	Elcometer 3580/4 Casting Knife Film Applicator	0 - 6000	125	5	
K0003580M005	Elcometer 3580/5 Casting Knife Film Applicator	0 - 6000	150	6	
K0003580M006	Elcometer 3580/6 Casting Knife Film Applicator	0 - 6000	175	7	○
K0003580M007	Elcometer 3580/7 Casting Knife Film Applicator	0 - 6000	200	8	○

* Add 15mm (0.6") to the Film Width to calculate the total width of the applicator

○ Optional Calibration Certificate available.

Cube Film Applicator

Elcometer 3505

The Elcometer 3505 Cube Film Applicator is manufactured from hardened stainless steel, this allows you to apply a single 12mm (0.5" wide) film stripe accurately.

Each cube film applicator is supplied with a set of nineteen thickness gauges from 30 - 1000µm (1 - 40mils) to adjust the film thickness.



STANDARDS:
ASTM D 823-E, ASTM D 1640-03

Technical Specification

Part Number	Model	Film Thickness		Film Width[1]		Number of
Metric		µm	mils	mm	inches	Stripes
K0003505M001	Elcometer 3505/1	30 - 1000	1 - 40	12	0.50	1

Accessories

KT003600P001	19 Metric Thickness Gauges for Calibration
	(30-40-50-60-70-80-90-100-150-200-250-300-400-500-600-700-800-900-1000µm)

4 Gap Applicator with Reservoirs

Elcometer 3508 & 3560

These film applicators are precision engineered from hardened stainless steel to provide four film thicknesses in one gauge. Simply rotate the applicator to the required thickness, fill the reservoir with the test coating and draw down a uniform stripe.

The Elcometer 3508 is supplied with two reservoirs, ideal for preparing samples for the Elcometer 1720 Abrasion and Washability Testers (see page 19-3) or for comparing two coatings simultaneously.



STANDARDS:
ASTM D 823-E (Elcometer 3560)

Technical Specification

Part Number	Model	Film Thickness		Film Width[2]	
Metric		µm	mils	mm	inches
K0003560M201	Elcometer 3560/1	30, 60, 90, 120	1, 2, 3, 4	60	2
K0003560M202	Elcometer 3560/2	50, 100, 150, 200	2, 4, 6, 8	60	2
K0003508M001	Elcometer 3508/1	100, 150, 200, 250	4, 6, 8, 10	2 x 50	2 x 2

[1] Elcometer 3505/1 total width: 26mm (1.0")
[2] Elcometer 3560 total width: 90mm (3.5"); Elcometer 3508 total width: 165mm (6.5")

Elcometer 4270 Sag Tester



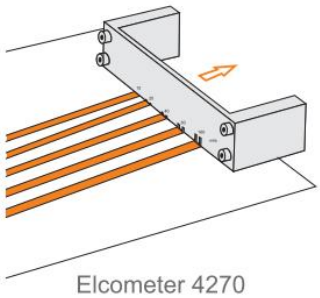




STANDARDS:
ASTM D 4400, FTMS 141 4494.1

Made from stainless steel, the straight scraper has 11 notches of increasing clearance. The Elcometer 4270 Sag Tester is used to establish a coating's resistance to sag due to gravity.

A contrast chart is immediately placed in a vertical position with the thinnest film at the top.



Elcometer 4270

Technical Specification

Part Number	Description*	Range		Notch Depth	
Metric		µm	mils	µm	mils
K0004270M001	Elcometer 4270/1	75 - 300	3 - 12	75, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300	3, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
K0004270M203	Elcometer 4270/3	350 - 1500	14 - 60	350, 400, 450, 500, 620, 750, 875, 1000, 1125, 1250, 1500	14, 16, 18, 20, 25, 30, 35, 40, 45, 50, 60
K0004270M204	Elcometer 4270/4	100 - 600	4 - 24	100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

* Elcometer 4270 total width: 127mm (5")



Film Application & Test Charts

Film Application & Tables 17-3

Bar Coaters, Applicators & Sag Tests 17-8

Test Charts 17-18

Elcometer 4695 Leneta Test Charts



STANDARDS:
AS/NZS 1580.213.1, ASTM D 344, ASTM D 2805, ASTM D 2486, ASTM D 5150, ASTM D 6441, BS 3900-D4, DIN 53162-2, FTMS 141 4121, ISO 2814

Elcometer supplies a wide range of Leneta Test Charts, from plain white to those having different patterns of black and white. Made from naturally bright, non-fluorescent white paper, these charts contain no optical brighteners that can affect instrumental colour measurements.

Leneta Test Charts are the market standard in today's coatings industry.

Foil Card substrates of steel, aluminium, glass and plastic are also available.

Leneta Test Charts are available in boxes & cases.

Elcometer 4695 Opacity Charts



Form 2A



Form 2C



Form 3B



Form 5C

The term "Opacity Chart" refers to charts on which the test pattern is a simple combination of black and white areas, large enough for wider aperture reflectance instruments, as well as for visual opacity and colour observations.

Used to test the hiding power of the coating, using large black and white areas.

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M003	K0004695M203	Leneta Chart 2A	140 x 254	5½ x 10	2.72kg (6lb)	250	6
K0004695M004	-	Leneta Chart 2C	194 x 260	7⅝ x 10¼	4.08kg (9lb)	250	4
K0004695M006	K0004695M206	Leneta Chart 3B	194 x 289	7⅝ x 11⅜	4.08kg (9lb)	250	4
K0004695M015	K0004695M215	Leneta Chart 5C	194 x 260	7⅝ x 10¼	4.08kg (9lb)	250	4



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3

Brushout Cards

Elcometer 4695

Designed for informal brushout applications, thicker paper is used for the testing of coatings applied with a brush or roller.

The paper stock is almost twice the thickness of regular chart paper to give greater rigidity for more convenient handling - nominal thickness 0.5mm (20 mils).

Brushout Cards are also used widely for drawdowns and colorimetric measurements.



Form 2DX



Form 5DX



Form WDX

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M005	K0004695M205	Leneta Chart 2DX	98 x 152	3⅞ x 6	3.18kg (7lb)	500	4
K0004695M016	K0004695M216	Leneta Chart 5DX	98 x 152	3⅞ x 6	3.18kg (7lb)	500	4
K0004695M102	K0004695M302	Leneta Chart WDX	98 x 152	3⅞ x 6	3.18kg (7lb)	500	4

Duplex Applicator Charts

Elcometer 4695

Originally made to be used with the Duplex Film Applicator, an instrument designed for rapid production of side-by-side drawdowns, they now serve mostly as generic paint test charts.



Form WF

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M103	-	Leneta Chart WF	76 x 184	3 x 7¼	2.27kg (5lb)	500	-

Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3



Elcometer 4695 Display Charts/Spreading Rate

Display Chart



Form 8B

Spreading Rate Chart



Form 8H

These charts employ time-tested, diagonally striped patterns, having a strong visual impact that emphasises variations in film opacity. They are frequently used for hiding power display purposes, by means of drawdowns or brushouts.

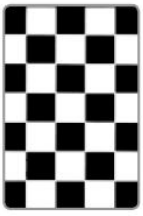
Spreading Rate Charts (Form 8H) are accurately 0.1 square metres (approximately one square foot) in area, and are used in brushout hiding tests at specified spreading rates as described in ASTM Method D 344.

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M022	K0004695M222	Leneta Chart 8B	194 x 289	7⅝ x 11⅜	4.08kg (9lb)	250	4
K0004695M023	-	Leneta Chart 8H	286 x 438	11¼ x 17¼	5kg (11lb)	125	-

Elcometer 4695 Checkerboard Charts

Display Chart



Form 10B

One of the earliest hiding power test surfaces was linoleum with a black and white checkerboard pattern, this was soon replaced by sealed paperboard charts.

Checkerboard Rate Charts are typically used in drawdown hiding tests.

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M030	-	Leneta Chart 10B	194 x 289	7⅝ x 11⅜	4.08kg (9lb)	250	4



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3

Plain White Charts

Elcometer 4695

These are available in varying thicknesses and size. The Leneta WDX card comes with a convenience hole at the top.



Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
Card thickness 0.5mm							
K0004695M102	K0004695M302	Leneta Chart WDX	98 x 152	3⅞ x 6	3.18kg (7lb)	500	4
Card thickness 0.3mm							
K0004695M103	-	Leneta Chart WF	76 x 184	3 x 7¼	2.27kg (5lb)	500	6

Unvarnished Test Charts

Elcometer 4695

Unvarnished Test Charts are ideal for testing applications of clear coatings and stains.

The unvarnished (semi-porous) surface simulates wood or unsealed wallboard.



Form N2A

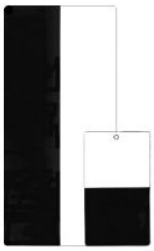
Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M064	K0004695M264	Leneta Chart N2A	140 x 254	5½ x 10	2.72kg (6lb)	250	6

Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-3



Elcometer 4695 Metopac™ Metal Test Panels



Painted steel panels, used for measuring the hiding power of powder coatings and industrial enamels.
Available in half black/half white and all black.

Black surface:
Solvent Resistant, Non bleeding, Reflective
- 1% maximum, measured according to ASTM Method E1347

White surface:
Solvent Resistant, Colour Retentive, Reflective, Reflectance
- 80% minimum, measured according to ASTM Method E1347

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M094	K0004695M294	Leneta Panel T12G	76 x 132	3 x 5 3/16	3.63kg (8lb)	125	4
K0004695M095	K0004695M295	Leneta Panel T12M	132 x 279	5 3/16 x 11	1.81kg (4lb)	50	4

Elcometer 4695 Spray Monitors - Self Adhesive Hiding Power



Form M12

These are pressure sensitive labels with a hiding power test pattern and a sealed, solvent-resistant surface. They are used primarily with metal panels on which the panel alone provides no visual clue as to the thickness of the applied paint film.

When placed on such a surface the Monitor presents a contrasting feature by which to observe how well the coating hides the surface, thereby facilitating film thickness control. It adheres firmly whether air-dried or baked, to present a permanent visual record of film opacity.

Technical Specification

Part Number		Description	Chart Dimensions		Box Weight	Quantity per Box	Boxes per Case
Box	Case		mm	inches			
K0004695M056	K0004695M256	Leneta Spray Monitor M12	25 x 25	1 x 1	0.91kg (2lb)	2000	4



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-3

Drying Time



Drying Time



When developing a coating process, it is important to know the exact time it takes for the coating to dry or cure. For multicoat paint systems, having knowledge of the drying time enables the operator to know when any subsequent layers can be applied.

There are many stages involved in the coating drying time. Once a coating has been applied, it levels off under gravity, and, as the coating begins to cure, a thin dry film appears on the surface. The coating then continues to dry until, finally, it is totally cured.

Permeability: describes how much and how fast moisture transfers through a film as vapour. The film is gripped between a ring fitted with a seal and the cup, which contains a quantity of water or desiccant.

Permeability Cups: when applying a multicoat system, it is often acceptable to apply a subsequent coat before the previous coat has fully cured. Payne Permeability Cups can be used to determine the degree to which the volatile liquid can permeate any subsequent layer.

Payne Permeability Cups

Elcometer 5100

The Elcometer 5100 Payne Permeability Cups are made of anodised aluminium and are used to determine the permeability of films of paints, varnish, plastic, cellophane, etc.

The water evaporates or is absorbed and, after a certain time, the weight change relative to the film thickness is calculated, indicating the degree of permeability or permeance.



STANDARDS:
ASTM D1653, ASTM E96,
ISO 7783-1, ISO 7783-2

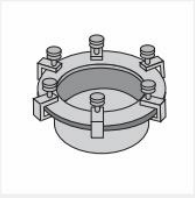
Technical Specification

Part Number	Description	Area		Volume	
		cm^2	$inches^2$	cm^3	$inches^3$
K0005100M201	Elcometer 5100/1 Payne Permeability Cup	10	1.55	15	0.91
K0005100M202	Elcometer 5100/2 Payne Permeability Cup	30	4.65	50	3.05
K0005100M203	Elcometer 5100/3 Payne Permeability Cup	30	4.65	75	4.58
Packing List	Elcometer 5100 Payne Permeability Cup, storage case and operating instructions				

Accessories

Part Number	Description	Chart Dimensions		Quantity per Box
		mm^2	$inches^2$	
K0004695M112	Leneta Chart RP-1K	219 x 286	8.62 x 11.26	250

How to use Payne Permeability Cups



Prepare the film to be tested using a film applicator and suitable test chart.



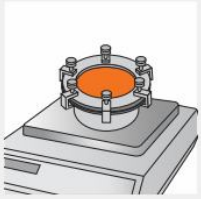
Disassemble the permeability cup.



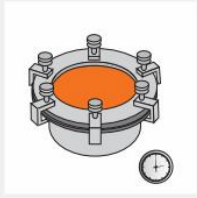
Fill with required liquid (typically water) or dry desiccant (absorbent).



Place the film on to the cup and reassemble making sure the gasket is fitted first.



Weigh the prepared permeability cup and record the result (in grams).



Leave for appropriate time, re-weigh, calculate the change in mass (Δm) & water vapour transmission rate.



For use with Elcometer 8720 compact balance, see page 14-7

Notes


elcometer
Measure
OVEN TEMPERATURE
PROFILING
FAST · REPEATABLE
ACCURATE · DURABLE
Accurately measure your product and oven temperature profiles with the Elcometer 215 Oven Data Logger and ElcoMaster® software.
See page 5-3



Washability & Abrasion

19

Washability & Abrasion



Improved mechanical resistance to wear is a key requirement of a wide range of products. From coatings to clothing, leather to upholstery, keypads to plastic toys, a product's ability to resist wear is an important characteristic.

There are testing methods relating to the 'abrasion by friction' concept. Others are based on the projection of abrasive particles on to the test specimen. These techniques provide valuable information about materials and processes.

These mechanical tests can make an accurate comparison between samples and can be used to determine lifetime wear.

Abrasion: the ability of a coating to resist damage caused by a defined material rubbing its surface. Abrasive wear is the erosion of material from a solid surface by the action of another solid.

Washability: the ability of a coating to withstand being washed using either wet or dry scrubbing action. The effect can be determined in terms of coating weight loss, loss of gloss or loss of thickness after the scrubbing process.

Washability & Abrasion Testers

Elcometer 1720

The **Elcometer 1720** is robust, reliable and extremely versatile and is designed for testing the washability, brushability and resistance of a wide range of materials.

Speed Cycles can be adjusted from 10 to 65 cycles per minute or set to the ISO Standard of 37 cycles/min

The durable and robust design is stable under test allowing repeatable results, even at the fastest stroke speeds

Can be used to test a wide range of materials including paint, lacquers, inks, coatings, leather, wood, plastics, printed material, fabrics etc.

Wide range of rapid change tools available for testing flat and curved samples



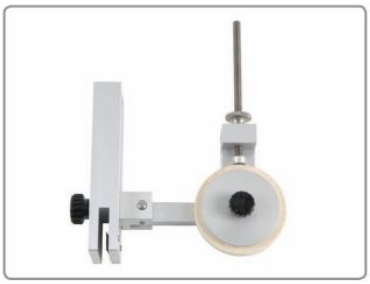
User adjustable stroke length from 10 to 300mm (0.4 to 11.8")

Test up to 4 samples simultaneously

STANDARDS:

AS/NZS 1580.459.1, ASTM D 2486, ASTM D 3450, ASTM D 4213, ASTM D 4488, ASTM D 4828, ASTM F 1319, DIN 53778-2:1983, ECCA T11, EN 13523-11, EN 233/C3.2-A, EN 233/C3.2-B, EN 233/C3.2-C, EN 60730-1-A, GME 60269, ISO 105-X12, ISO 11998, JIS K 5600-5-11, PSA D45 1010, ASTM D1792 - 06 ASTM D2198 -02, ASTM D3206 - 08, ASTM D6279 - 03(2007), MIL-C-3004, MIL-C-46057, MIL-E-11237, MIL-STD-1334B, MIL-P-15422C, FTMS 141, Method 6141, FTMS 141, Method 6142, FTMS Method 536/6701, Federal Specification P-D-220D, P-R-1760, P-W-155C, TT-P-26C(1), TT-P-29K, TT-P-30E(1), TT-P-47G, TT-E-505B, TT-E-506K(1), TT-E-509C, TT-C-535B(2), TT-C-555B(1)

Elcometer 1720 Washability & Abrasion Testers



Meeting Standards

- With the wide range of tools available many Standards can be tested in one unit
- All units can be used in accordance with ASTM, DIN, EN and ISO Standards
- Easily adjustable to customers unique applications using the special tools
- Washability and abrasion testing on flat and curved samples up to 13mm (0.51") thick



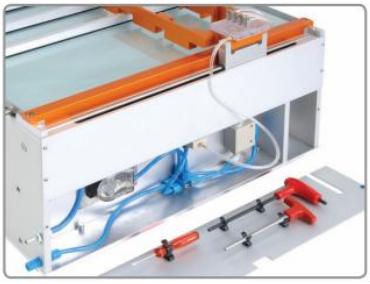
Interchangeable Tools

- All tools are interchangeable with the rapid tool change system, making the unit ideal for use in accordance with a wide range of Standards
- For the complete range of tools, see page 19-6



User Adjustable

- Stroke length can be quickly and easily changed by the user to meet their specific requirements between 10 - 300mm (0.4 - 11.8")
- Speed of carriage can be adjusted between 10 and 65 cycles per minute
- Cycle counter can be pre-set to a defined number of cycles from 1 - 32,760



Wet and Dry

- All stations can be tested wet or dry
- Versions are available with or without an internal liquid pump
- Samples can be tested under wet or dry conditions



Economic

- With the ability to test up to 4 different characteristics simultaneously, significant time can be saved
- With its rapid tool change system setting up tests is fast and easy
- Easy sample placement allows quick change between tests

Washability & Abrasion Testers

Elcometer 1720



Available in 2 versions:
2 station - undertakes two tests at a time.
4 station - tests up to four samples with 4 different tests.



Stroke speed can be varied between 10 and 65 cycles/min or set to 37 cycles/min to meet ISO Standards.



Stroke length can be adjusted by the user to meet specific requirements, from 10 to 300mm (0.4 to 11.8”).



Available with or without liquid dosers, allowing test liquids to be regulated automatically or independently.



Digital display allows easy, accurate speed variation and simple reporting.



The rapid tool change system allows the user to test the samples in accordance with a wide range of National and International Standards on both flat and curved samples simultaneously.

Technical Specification

Part Number	Description
K1720M202	Elcometer 1720 Abrasion Tester, 2 Station (110 - 240V)
K1720M204	Elcometer 1720 Abrasion Tester, 4 Station (110 - 240V)
K1720M302	Elcometer 1720 Abrasion & Washability Tester, 2 Station (110 - 240V)
K1720M304	Elcometer 1720 Abrasion & Washability Tester, 4 Station (110 - 240V)
Dimensions	550 x 460 x 320mm (21.7 x 18.1 x 12.6”)
Weight	2 Station: 31.5kg (70lb), 4 Station: 33kg (73lb)
Packing List	Elcometer 1720, 250µm (10mil) metal strip for ASTM D2486 Standard, sample drip tray, 1 x glass sheet (2 station), 2 x glass sheet (4 station), 1 x specimen holding frame (2 station), 2 x specimen holding frame (4 station), set of 3 tools for instrument set up, 3 x mains leads (UK, EUR and US) and operating instructions. Elcometer 1720 part numbers K1720M302 and K1720M304 also include a liquid dosing bottle, liquid delivery pipe and 2 liquid drain pipes. Tools are supplied separately, please order from the list on page 19-6.

Scrub Test Panels are also available - see page 19-8 for more information



Elcometer 1720 Washability & Abrasion Testers

The Elcometer 1720 can undertake tests according to a wide range of different Standards and Test Methods by simply changing the abrasive tools. For more information on Standards, please see section 23. Please select the required tools from the list on the following two pages. Samples can be tested in a combination of both wet and dry methods.



Tool 1: Wild Boar Brush

Wild boar hair brush and stainless steel brush holder.
Total weight: 250g (8.82oz)

Part Number: KT001720P003

STANDARDS:
DIN 53778-2:1983



Tool 2: Nylon Brush

Nylon bristle brush, stainless steel brush holder and 177g (6.2oz) mass.
Total weight: 454g (16.01oz)

Part Number: KT001720P030

STANDARDS:
ASTM D2486



Tool 3: Sponge

Sponge and stainless steel brush holder, 337g (11.9oz).
Total weight: 508g (17.92oz)

Part Number: KT001720P005

STANDARDS:
ASTM D4213:92, ASTM D4828



Tool 4: Sponge

Sponge and stainless steel brush holder, 337g (11.9oz) and 250g (8.8oz) mass to bring gross weight to 750g.
Total weight: 750g (26.45oz)

Part Number: KT001720P073

STANDARDS:
ASTM D3450



Tool 5: Sponge / Abrasive

Sponge & stainless steel holder abrasive pads - top and bottom & 76g (2.7oz) mass.
Total Weight: 232g (8.12oz)

Part Number: KT001720P029

STANDARDS:
ASTM D4213



Tool 6: Abrasive

Aluminium holder, abrasive pads (x5).
Total weight: 135g (4.76oz)

Part Number: KT001720P036

STANDARDS:
ISO 11998



Tool 7: Universal Material Clamp

Stainless steel holder which allows users to fix their own test sample or abrasive material. Ideal for abrasion and wear of labels, textiles, ink etc.

Part Number: KT001720P207



Tool 8: Linear Abrader "Crockmeter"

This tool is ideal for testing abrasion on both curved and flat surfaces and for testing colour fastness of fabrics. Supplied with a removable stainless steel rod, test felt, textile fixing ring and a set of additional masses - 2x100g (3.5oz), 1x200g (7oz), 1x500g (17.6oz). Total weight (excluding masses): 200g (7oz)

Part Number: KT001720P074

STANDARDS:
ASTM F1319, ISO 105-X12, PSA D45 1010

Washability & Abrasion Testers

Elcometer 1720



Tool 9: Linear Abrader

For testing the resistance to abrasion of automotive components, includes a felt disc of 10mm (0.4") diameter and 10mm (0.4") thick working under a mass of 400g (14.1oz).
Total weight: 400g (14.1oz)

Part Number: KT001720P075

STANDARDS:
GME 60269



Tool 9A: Linear Abrader

As Tool 9 but with 16mm (0.63") diameter felt wool disc.
Total weight: 820g (28.9oz)

Part Number: KT001720P075-1



Tool 9B: Linear Abrader

Felt holder for 16mm (0.63") diameter felt wool disc working under a mass of 900g (31.7oz)
Total weight: 900g (31.7oz)

Part Number: KT001720P075-2

STANDARDS:
EN 13523-11, ECCA T11



Tool 10: Curved Sample Tool

Height adjustable with an elbow joint for curved samples, this tool is ideal for testing abrasion resistance of both coatings and inks. Supplied with felt disc, rod for masses, 1x50g (1.75oz), 1x100g (3.5oz), 2x200g (7oz) and 2x500g (17.5oz) mass

Part Number: KT001720N003

STANDARDS:
EN 60730-1-A

Accessories

Part Number	Description
KT001720P004	Wild Boar Brush for Tool 1
KT001720P009	Nylon Brush for Tool 2
KT001720P006	Sponge (5) for Tools 3 & 4
KT001720P141	Sponge/Abrasive (5) for Tool 5
KT001720P037	Abrasive Pads (10) for Tool 6
KT001720P064	Abrasive Pads (100) for Tool 6
KT001720P051	Abrasive G 120 Sheets (4) for Tools 1 & 2
KT001720P008	25m Abrasive Roll for Tool 7
KT001720P062	Felt Disks (2) for Tool 10
KT001720N009	Non-Abrasive Scrub Medium - SC1
KT001720N002	Abrasive Scrub Medium - SC2
KT001720P016	50g Mass (To fit tools 1 - 8, 10)
KT001720P017	100g Mass (To fit tools 1 - 8, 10)
KT001720P018	200g Mass (To fit tools 1 - 8, 10)
KT001720P031	227g Mass (To fit tools 1 - 8, 10)
KT001720P019	500g Mass (To fit tools 1 - 8, 10)
KT001720P214	Glass Plate, 478 x 165mm
KT001720P012	ASTM Test Foil 250µm (10mils)
KT001720P013	10m Replacement Channel Gasket
K0004695M068	Scrub Test Panels - see page 19-8

Elcometer 4695 Scrub Test Panels



Form P121-10N



Fig 1. Typical failure using shim per ASTM D2486 Method A



Fig 2. Typical failure without

STANDARDS:
ISO 11998

In a typical scrub test, the coating is applied to the Leneta Scrub Test Panel at a specified film thickness, allowed to dry and then subjected to scrubbing with a straight-line scrub tester.

When used in accordance with ASTM D2486, Method A, a 10mil shim is inserted under the panel to accelerate failure and thereby reduce testing time. The scrub resistance is the number of scrub cycles required to remove the coating to a specified end point.

Alternatively, the loss in weight is determined after a specified number of scrub resistance cycles, with the calculation of equivalent loss in film thickness.

These Scrub Test Panels are ideal for use with the Elcometer 1720 Washability & Abrasion Tester, see page 19-3.

Technical Specification

Part Number		Description	Chart Dimensions		Quantity per Box	Boxes per Case
Box	Case		mm	inches		
K0004695M068	K0004695M268	Black Scrub Test Panel P121-10N	165 x 432	6½ x 17	100	5
K0004695M069	K0004695M269	White Scrub Test Panel P122-10N	165 x 432	6½ x 17	100	5

Accessories

KT001720P012	ASTM Test Foil 250µm (10mils)

Taber® Linear Abrasers

Elcometer 5750

Whatever your product, be it curved, round, big or small, the Linear Abraser from Taber® can test it all. Using a free floating head to follow the contours of the sample, the Taber® 5750 is the ideal abrasion tester for flat or curved surfaces. It may also be used as a scratch tool, using the scratch kit accessory.

Abrasion media, length of stroke, load and speed of stroke can all be user defined to meet specific requirements.

The Linear Abraser uses a range of Wearasers®. The size and shape of a pencil eraser, the Wearaser® uses the same high quality Taber® abrasive media as used on the Taber® Rotary Abrasers, simulating real-life wear conditions.

Features:

- Stroke lengths of 12.7, 25, 76 and 102mm (0.5, 1.0, 3.0 and 4.0")
- Variable stroke speed from 2 - 75 cycles per minute
- Preset stroke speed buttons for 2, 15, 25, 30, 40 and 60 cycles per minute
- Variable load from 350 - 2100g (12.4 - 74.1oz) with optional weights
- Stainless steel Wearaser® holder (Collet) for use with vitrified or resilient Wearasers®
- Laser alignment guide







STANDARDS:
AATCC Method 8, ASTM D 2197, ASTM D 5178, ASTM D 6279, ASTM F1319, ISO 105-X12, JIS L 0849

Technical Specification

Part Number	Description
ST985750	Elcometer Taber® 5750 Linear Abraser (230V/115V, 50/60Hz)
Dimensions	208 x 228 x 279mm (20 x 9 x 11")
Weight	10kg (22lb)
Packing List	Elcometer Taber® 5750 Linear Abraser, Wearaser® Collet and Spine Shaft, 3 x 250g (8.82oz) discs, 10 x CS-10 Wearasers®, 5 x H-18 Wearasers®, power cords (230V and 115V), allen key, Wearaser® depth tool gauge, 50 x S-14 refacing strips, hand brush and operating instructions

Accessories

Part Number	Description	Abrasive Action	Composition
ST130684	CS-10F Resilient Wearaser® (pack of 10)	Very Mild	Rubber and Abrasive Grain
ST130685	CS-10 Resilient Wearaser® (pack of 10)	Mild	Rubber and Abrasive Grain
ST130686	CS-17 Resilient Wearaser® (pack of 10)	Harsh	Rubber and Abrasive Grain
ST130681	H-18 Non-resilient Wearaser® (pack of 5)	Medium, Coarse	Vitrified Clay
ST130682	H-22 Non-resilient Wearaser® (pack of 5)	Very Coarse	Vitrified Clay
ST131852	Wearaser® Holder (collet) Kit - Aluminium		
ST130570	Crockmeter Kit*		

* Crockmeter kit includes finger, clamp ring and cloths

Elcometer 5135 & 5155 Taber® Rotary Abrasers





Used primarily in the testing of ceramics, plastics, textiles, metals, leather, rubber and painted, lacquered and electroplated surfaces, accelerated wear test procedures have also been written into many test specifications including ASTM, ISO, TAPPI and DIN - as well as automotive manufacturing procedures around the world.

The Taber® Rotary Abraser is an industry standard used in the wear and durability testing and is available with either a single test head or dual testing heads, which allows the user to test two different or identical materials simultaneously.

Choose from a wide variety of abrading wheels and abraser accessories to simulate real-life wear conditions.

Features :

- Platform speeds 60 and 72rpm
- Balanced, calibrated arms and wheel mounts
- Vacuum system with precision height adjustment
- Sealed aluminium housing with membrane control panel and digital display

STANDARDS:

ANSI INCITS 322, AS/NZS 1580.403.2, AS/NZS 4266.2, ASTM C1353, ASTM C217, ASTM C241, ASTM C501, ASTM D1044, ASTM D3389, ASTM D3884, ASTM D4060, ASTM D6037, ASTM D-7255, ASTM F1478, ASTM F1978, ASTM F362, ASTM F 510, BS 5599, DIN 52347, DIN 53109, DIN 53754, DIN 53799, DIN 68861-2, ECCA T16, EN 13329, EN 13523-16, EN 14323, EN 14327, EN 14354, EN 14431, EN 14688, EN 14864, EN 1504-2, EN 438-2, EN 660-2, EN 13696, FORD BN108-02, GM9515P, ISO 10074, ISO 14656, ISO 24338, ISO 3537, ISO 4586-2, ISO 5470-1, ISO 7784-1, ISO 7784-2, ISO 9352, JIS A 1453, JIS H 8503, JIS K 5600-5-8, JIS K 5600-5-9, JIS K 6404-22, JIS K 6902, JIS K 7205, NEMA LD 3, NF Q03-055, SAE J 1530, SAE J 1847, SAE J 365, SAE J 948, SIS 923509, SS 923509, TAPPI T 476, UNE 135203-1, UNE 48250, UNE 56842, UNE 56843, UNE 56868, UNE 57095

Technical Specification

Part Number UK/EUR 230V	Part Number US 115V	Description		Certificate
ST985135-2	ST985135-1	Elcometer Taber® 5135 Single Head Abraser		•
ST985155-2	ST985155-1	Elcometer Taber® 5155 Dual Head Abraser		•
Dimensions & Weights		Elcometer Taber® 5135:	279 x 406 x 279mm (11 x 16 x 11"), 19.50kg (43lb)	
		Elcometer Taber® 5155:	482 x 355 x 279mm (19 x 14 x 11"), 31.75kg (70lb)	
		Vacuum unit:	279 x 279 x 610mm (11 x 11 x 24"),10.00kg (22lb)	
Packing List		Elcometer Taber® Abraser, auxiliary weights - 1 x 500g (17.64oz) load and 1 x 1000g (35.27oz) load, specimen holder 109.2mm (4.3") O/D (E-100-125), holding down ring (E-100-101), 100 x refacing discs (S-11), Calibrase® Wheel set (CS-10), Calibrade® Wheel set (H-18), vacuum unit with suction hose, round brush, power cords (230V and 115V) and operating instructions		



For the complete range of Accessories, see pages 19-11 to 19-13

• Calibration Certificate supplied as standard.

Taber® Abrading Wheels

Elcometer 5135 & 5155

Taber® Abrading Wheels are available in five levels of abrasiveness to suit a wide range of material testing applications.

Wool, felt or plain rubber wheels test delicate materials or abrasiveness of materials such as dental powders.

Wheels featuring abrasive particles in a resilient matrix of rubber or a hard matrix of vitrified clay are suitable for stiffer materials.

- *Calibrase®*: resilient abrasive wheel - rubber and aluminium oxide
- *Calibrade®*: a non-resilient abrasive wheel - vitrified clay and silicon carbide
- *Plain Rubber*: contains no abrasive particles unless used with sandpaper strips
- *Tungsten Carbide*: severe cutting and tearing action with helical teeth for use on resilient materials such as rubber, leather and floor coverings



Technical Specification

Elcometer 5135 and 5155 Taber® Rotary Abrasers (2 wheel set)

Part Number	Description	Abrasive Action	Composition
ST125319	CS-5 Resilient Wheel (Pack of 2)	None	Wool Felt
ST125321	CS-10F Resilient Wheel (Pack of 2)	Very Mild	Rubber and Abrasive Grain
ST125320	CS-10 Resilient Wheel (Pack of 2)	Mild	Rubber and Abrasive Grain
ST125322	CS-17 Resilient Wheel (Pack of 2)	Harsh	Rubber and Abrasive Grain
ST125345	S-35 Non-resilient Wheel (Pack of 2)	Severe Cutting	Tungsten Carbide
ST125323	H-10 Non-resilient Wheel (Pack of 2)	Coarse	Vitrified Clay
ST125324	H-18 Non-resilient Wheel (Pack of 2)	Medium, Coarse	Vitrified Clay
ST125325	H-22 Non-resilient Wheel (Pack of 2)	Very Coarse	Vitrified Clay
ST125326	H-38 Non-resilient Wheel (Pack of 2)	Very Fine, Hard	Vitrified Clay
ST125344	CS-0, S-32 Resilient Wheel (Pack of 2)	Very Mild	Non-Abrasive Rubber
ST125564	Sand Paper Strips for use with CS-0, S-42	Medium	Sand Paper Strips (pack of 100)
ST121124	Sand Paper Strips for use with CS-0, S-33	Fine	Sand Paper Strips (pack of 100)

For use with the Elcometer 5135 & 5155 Taber® Rotary Abrasers, see page 19-10



Elcometer 5135 & 5155 Taber® Rotary Abraser Accessories

Accessories



Multi-Media Attachment

This attachment is used to recreate contact surface wear caused by liquids, fluids and powders. Measures the abrasivity of materials including paints, pigments, adhesives, sealants, pastes, additives etc.

If you require either the Elcometer Taber® 5135 or Taber® 5155 ready assembled with the Multi-Media Attachment, please contact Elcometer.

Part Number: ST985500



Sample Cutter

The Model 5000 Sample Cutter will cut a precise 106mm (4.2”) circular sample with a 6.35mm (0.25”) centre hole to prepare your specimens for use with the Elcometer Taber® Abrasers.

An easy counter-clockwise cutting motion allows you to cut a variety of materials. Optional pads, which allow cutting thicknesses of 0.03mm (0.001”) to 6.35mm (0.25”), are also available.

Part Number: ST985000



Grit Feeder Attachment

Provides a unique method to evaluate 3-body abrasion resistance on a variety of materials. Aluminium oxide grit particles are evenly distributed on to the specimen wear path and pass under a pair of leather wheels. This loose grit acts as an abradant aiding the action that contributes to the physical breakdown of materials.

The Abraser Vacuum is attached to the grit feeder and continuously removes both abraded material and used grit.

The Grit distributor and vacuum removal nozzle heights are adjusted using a thumbscrew.

Two versions are available, Model 155 and Model 255. The 155 uses an alignment guide screw to set the position of the instrument. The 255 has an alignment block incorporated into the base to ensure the correct location of the grit feeder in relation to the Abraser.

Both models are supplied complete with:

- S-39 Leather wheel set
- S-38 Standardisation Plates
- S-41 #240 Aluminium oxide
- Alignment guide and mounting hardware

Part Number: ST980503-1	Model 155
Part Number: ST980503-2	Model 255

Taber® Rotary Abraser Accessories

Elcometer 5135 & 5155

Quiet Cabinet



Comprising an upper and lower unit, this solid wood cabinet is suitable for use in a laboratory environment and achieves an approximate 20% reduction in operating sound level.

The top cabinet provides a convenient, dust-free workspace for the Abraser and features a Plexiglas® viewing window to monitor testing and a removable front for easy transfer of the Abraser in and out of the cabinet.

The base cabinet holds the Abraser Vacuum Unit and includes an inbuilt exhaust system for effective air circulation.

Both cabinets offer ample room to store test specimens, supplies and accessories. The Quiet Cabinet can be purchased as a complete unit or the top and base separately. The lower cabinet exhaust system is available for 230V/50Hz or 115V/60Hz.

Technical Specification

Part Number	Description
ST129497	Complete 230V - both upper and base cabinets
ST128372	Complete 115V - both upper and base cabinets
ST129498	Base unit only 230V - includes vacuum unit
ST128371	Base unit only 115V - includes vacuum unit
ST128370	Upper unit only - workspace and viewing window

Calibration Verification Kit



A cost effective method that enables users to verify that an instrument is in calibration, or requires attention. Each kit is individually calibrated providing a reliable check system.

Kit allows you to verify:

- Longitudinal alignment of abraser arm
- Transverse alignment of abraser arm
- Wheel tracking and wear pattern
- Bearing integrity (tracking pattern compliance)
- Vacuum nozzle orifice size
- Minimum vacuum nozzle suction force
- S-30 Weartrac precision wheels (x1 set)

Supplied complete with:

- S-45 Wheel tracking cards (x15)
- Vacuum nozzle suction and orifice gauge
- Vacuum nozzle O-ring
- Dual unit vacuum plug
- Taber® Abraser clean-up hose

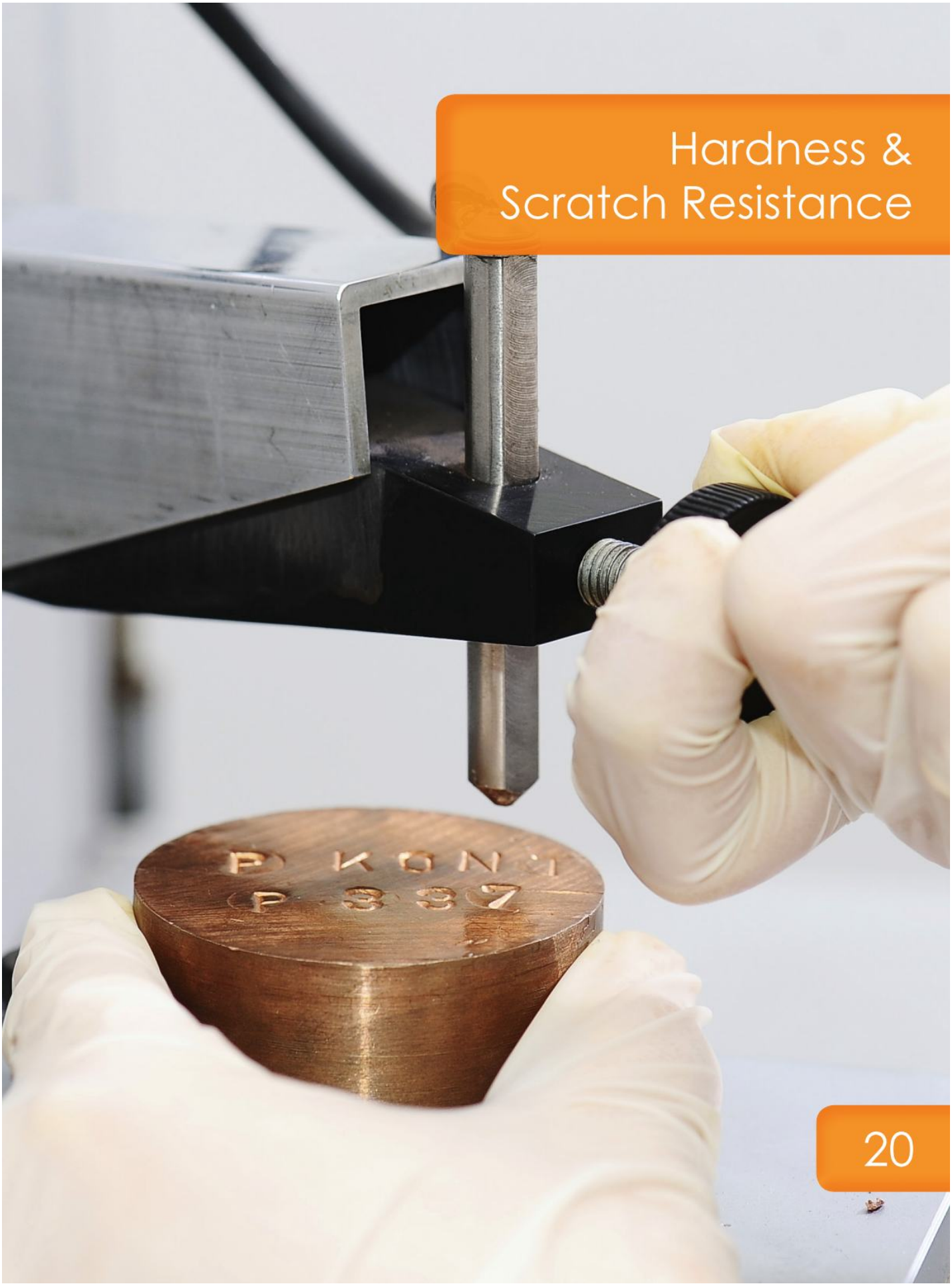
Technical Specification

Part Number	Description
ST132030	Calibration Verification Kit

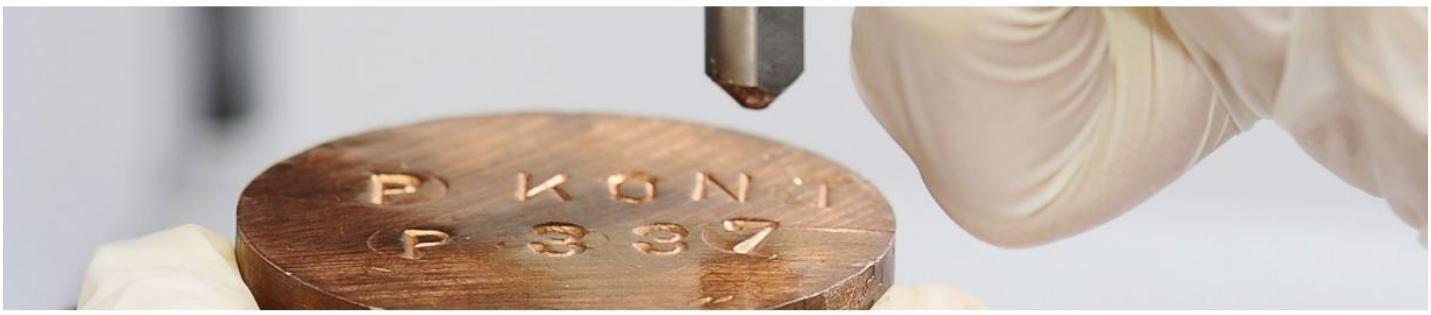
Notes


elcometer
Measure
GLOSS
FAST · REPEATABLE
ACCURATE · DURABLE
530
847
926
Measure the shine of your product quickly and accurately with the hand-held Elcometer 480 Glossmeter.
See page 13-5

Hardness & Scratch Resistance



Hardness & Scratch Resistance



Hardness can be defined as a material's resistance to permanent deformation. In the coatings industry, hardness measurement can be used to determine the resistance of the coating to scratching from general wear and tear and also if a coating is fully cured.

Hardness: Hardness can be defined as a material's resistance to permanent deformation.

The term "Hardness" is used to refer to different properties of material, specifically:

- Resistance to scratch and wear
- Resistance to penetration/indentation

Depending on the requirements, there are various methods for testing hardness. Some are dedicated to characterise coatings and others are more suitable for testing bulk materials such as metals, plastics, rubber or elastomers.

Scratch Resistance:

To assess a coating's resistance to scratch there are a number of different instruments that can be used:

- Pencil Hardness Tester (Wolff-Wilborn)
- Sclerometer
- Clemen Apparatus
- Scratching and Shearing Instrument

Resistance to Indentation:

There are many instruments available to assess the resistance to penetration. For coatings in particular, there are three common methods where the depth of penetration of a weighted tool is used to show the coating's resistance to penetration:

- Buchholz
- Barcol
- Shore

Pencil Hardness Tester

Elcometer 3080

This is a simple and effective technique to evaluate the hardness of many coatings.

The pencil lead, sharpened beforehand by using the special pencil sharpener and rubbing it on fine abrasive paper (400 grade), is maintained at an angle of 45° and pushed with uniform pressure on to the sample, leaving either a superficial trace or causing destruction down to the substrate.

The Elcometer 3080 Pencil Hardness Tester is supplied complete with stand and a series of 14 pencils, ranging from 6B to 6H hardness values.







STANDARDS:
ASTM D 3363, ECCA T4,
EN 13523-4, ISO 15184:2012,
JIS K 5600-5-4

Technical Specification

Part Number	Description
K0003080M203	Elcometer 3080 6B to 6H Pencil Hardness Tester with Stand
Dimensions	330 x 280 x 330mm (13 x 11 x 13”)
Weight	1kg (2.2lb)
Packing List	Elcometer 3080 Pencil Hardness Tester, Pencil set - (14x pencils, grades 6B - 6H), 2x pencil sharpeners, abrasive paper block, storage stand and operating instructions

Accessories

Part Number	Description	Part Number	Description
T99923042-1	12 Hardness Pencils (6B)	T99923042-8	12 Hardness Pencils (F)
T99923042-2	12 Hardness Pencils (5B)	T99923042-9	12 Hardness Pencils (H)
T99923042-3	12 Hardness Pencils (4B)	T99923042-10	12 Hardness Pencils (2H)
T99923042-4	12 Hardness Pencils (3B)	T99923042-11	12 Hardness Pencils (3H)
T99923042-5	12 Hardness Pencils (2B)	T99923042-12	12 Hardness Pencils (4H)
T99923042-6	12 Hardness Pencils (B)	T99923042-13	12 Hardness Pencils (5H)
T99923042-7	12 Hardness Pencils (HB)	T99923042-14	12 Hardness Pencils (6H)
T99923039	Set of 14 Pencils (6B to 6H)		
T99923040-1	Pencil Sharpener (6H to 2B)		
T99923040-2	Pencil Sharpener (3B to 6B)		

Elcometer 501 Pencil Hardness Tester







STANDARDS:
ASTM D 3363, ECCA T4,
EN 13523-4, ISO 15184:2012,
JIS K 5600-5-4

The pencil hardness test, also referred to as the Wolff-Wilborn test, uses the varying hardness values of graphite pencils to evaluate a coating's hardness.

The Elcometer 501 has been designed to ensure that the cylindrical pencil lead is maintained at a constant angle of 45° and exerts a force of 7.5N (1.68lbF).

The pencil lead, sharpened beforehand using the special sharpener and abrasive paper, is inserted into the Elcometer 501 and pushed over the smooth, flat coated surface. The lowest hardness value of the pencil which marks the coating determines the coating's hardness rating.

Technical Specification

Part Number	Description	Certificate
H501----1	Elcometer 501 Pencil Hardness Tester	○
Dimensions (with Pencils)	130 x 130 x 50mm (5 x 5 x 2")	
Weight	2.1kg (4lb)	
Packing List	Elcometer 501 Pencil Hardness Tester, pencil set (14x pencils, grades 6B - 6H), positioning block, 2x pencil sharpeners, abrasive paper block, carry case and operating instructions	

Accessories

Part Number	Description	Part Number	Description
T99923042-1	12 Hardness Pencils (6B)	T99923042-8	12 Hardness Pencils (F)
T99923042-2	12 Hardness Pencils (5B)	T99923042-9	12 Hardness Pencils (H)
T99923042-3	12 Hardness Pencils (4B)	T99923042-10	12 Hardness Pencils (2H)
T99923042-4	12 Hardness Pencils (3B)	T99923042-11	12 Hardness Pencils (3H)
T99923042-5	12 Hardness Pencils (2B)	T99923042-12	12 Hardness Pencils (4H)
T99923042-6	12 Hardness Pencils (B)	T99923042-13	12 Hardness Pencils (5H)
T99923042-7	12 Hardness Pencils (HB)	T99923042-14	12 Hardness Pencils (6H)
T99923039	Set of 14 Pencils (6B to 6H)		
T99923040-1	Pencil Sharpener (6H to 2B)		
T99923040-2	Pencil Sharpener (3B to 6B)		

○ Optional Calibration Certificate available.

Sclerometer Hardness Tester

Elcometer 3092

The Elcometer 3092 tests the hardness of a coating by moving a Tungsten Carbide Tip over the coating with predetermined force.

The body of the instrument contains a cursor fitted with a screw lock and a round tip, compressed by one of the four springs corresponding to the four printed scales:

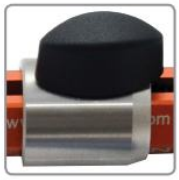
- *Grey spring:* 0-3N (0.671lbF)
- *Red spring:* 0-10N (2.248lbF)
- *Blue spring:* 0-20N (4.49lbF)
- *Green spring:* 0-30N (6.74lbF)

The spring force can be set by the “collar”; compressing the spring increases the force with which the tip is pushed on to the surface of the test piece. By making short, straight movements while gradually increasing the load, the user can observe the force at which the tip leaves a mark or destroys the coating.

Each Elcometer 3092 is supplied in a case with a 0.75mm (0.03”) diameter tungsten carbide tip and 3 springs (grey, red and blue). An optional green spring of 0 to 30N is also available to order seperately.







STANDARDS:
AS 3894.4, EN 438-2, ISO 4586-2

Technical Specification

Part Number	Description
K0003092M201	Elcometer 3092 Sclerometer Hardness Testers - 3 ranges
Dimensions	165 x 24 x 16mm (6.5 x 1 x 0.6”)
Weight	370g (13oz)
Packing List	Elcometer 3092 Sclerometer, tool with 0.75mm (0.03”) diameter tungsten carbide tip, 3 springs (grey, red and blue), carry case and operating instructions

Accessories

Part Number	Description
KT003092P001	0.5mm (0.02”) Tungsten Carbide Tip
KT003092P002	0.75mm (0.03”) Tungsten Carbide Tip
KT003092P003	1.0mm (0.04”) Tungsten Carbide Tip
KT003092P008	90° Diamond Point Cone, 90µm (3.54mils) Radius - ISO Type
KT003092P004	Grey Spring 0 - 3N (0 - 0.67lbF)
KT003092P005	Red Spring 0 - 10N (0 - 2.248lbF)
KT003092P006	Blue Spring 0 - 20N (0 - 4.49lbF)
KT003092P007	Green Spring 0 - 30N (0 - 6.74lbF)

Elcometer 3000 Motorised Clemen Unit







STANDARDS:
AS/NZS 1580.403.1, BS 3900-E2, DIN 53799, ECCA T12, EN 13523-12, ISO 1518-1:2011, JIS K 5600-5-5

The Elcometer 3000 Motorised Clemen Unit is a robust and accurate instrument for evaluating the resistance to scratching of a coated surface. The sample can be metal, wood, glass, plastic or other hard materials.

A tool is fitted with an hemispherical tip of 1mm (0.04") diameter (standard), lowered gradually on to the sample surface which is then pulled linearly 60mm (2.36").

As the sample is pulled the tool lowers automatically on to the sample, moves along the sample and gently rises up at the end of the stroke.

To ensure consistent, repeatable and reproduceable tests, the Motorised Clemen Unit automatically brings the tool gently in contact with the sample, moves across the coating and then lifts it with the automatic Start/Stop function. Depending on the load applied, varying degrees of penetration of the tool into the coating are observed - from a superficial trace to total destruction.

If the coating is completely removed during the test, the contact of the tool with the metallic substrate is indicated by a lamp and voltmeter indicator.

Elcometer offer a range of cutting tools, please see Accessories below.

Technical Specification

Part Number	Description			Certificate
K3000M003	Elcometer 3000 Motorised Clemen Unit			○
Sample Width	75mm (2.95")	Variable Load	0 - 5000g (176.4oz)	
Dimensions	460 x 280 x 330mm (18 x 11 x 13")			
Weight	20kg (44lb)			
Packing List	Elcometer 3000 Motorised, 1kg (35.27oz) x4 weights, 1mm (0.04") ball tool and operating instructions			

Accessories

Part Number	Description
KT003000P021	1mm (0.04") Ball Tool in Tungsten Carbide
KT003000N001	2mm (0.08") Cutting Tool in Tungsten Carbide
KT003000N013	VW Cutting Tool
KT003000N015	Adjustment Kit to test from 5 to 20mm (0.02 to 0.8")
KT007210M001	Illuminated Microscope (x30)
KT003025P007	Magnifier (x10)

○ Optional Calibration Certificate available.

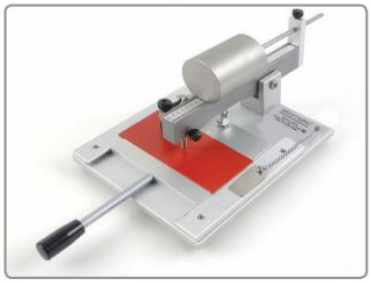
Manual Clemen Unit

Elcometer 3000

The Elcometer 3000 Manual Clemen Unit is a robust and simple to use instrument for evaluating the resistance to scratching of a coated surface.

A tool is fitted with an hemispherical tip of 1mm (0.04”) diameter (standard), lowered gradually on to the sample surface which is then pulled linearly 60mm (2.36”).

Depending on the load applied, varying degrees of penetration of the tool into the coating are observed - from a superficial trace to total destruction.



STANDARDS:
AS/NZS 1580.403.1, BS 3900-E2, DIN 53799, ECCA T12, EN 13523-12, ISO 1518-1:2011, JIS K 5600-5-5

Technical Specification

Part Number	Description			Certificate
K0003000M001	Elcometer 3000 Manual Clemen Unit			○
Sample Width	75mm (2.95”)	Variable Load	0 - 2000g (70.5oz)	
Dimensions	410 x 200 x 155mm (16.1 x 7.9 x 6.1”)			
Weight	6kg (13.2lb)			
Packing List	Elcometer 3000 Manual, 1mm (0.04”) ball tool and operating instructions			

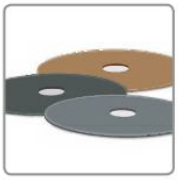
Accessories

Part Number	Description
KT003000P021	1mm (0.04”) Ball Tool in Tungsten Carbide
KT003000N001	2mm (0.08”) Cutting Tool in Tungsten Carbide
KT003000N013	VW Cutting Tool
KT003000N015	Adjustment Kit to test from 5 to 20mm (0.02 to 0.8”)
KT007210M001	Illuminated Microscope (x30)
KT003025P007	Magnifier (x10)

○ Optional Calibration Certificate available.

Elcometer 3025 Scratch/Shear Tester







STANDARDS:
EN 438-2, ISO 4586-2

The motorised Elcometer 3025 tests the resistance of many materials to scratching, shearing, gouging, marring, scraping and engraving. This portable tester measures materials up to 12.7mm (½") thick by 101mm (4") square or round.

The height of the scale beam is adjusted by the user to match the thickness of the sample. The tool, a conical diamond tip, is then placed on the sample and the instrument is activated by the user with the On/Off switch.

The tip leaves a trace mark and the extent of this, in relation to the load used, indicates the degree of coating or material hardness. The turntable rotates at a constant 5rpm to ensure repeatability and reproducibility of tests. By changing the load on the tool, from 0 to 1000g (0-2.2lb), the sample's scratch resistance can be evaluated.

Sample Cutter

The Sample Cutter cuts precise 106mm (4.2") circular samples with a 6.35mm (0.25") centre hole to prepare specimens for use with the Taber® Abrasers.

An easy counter-clockwise cutting motion allows the user to cut a variety of materials. Optional pads allowing cutting thicknesses of 0.03mm (0.001"), 4.74mm (0.187") and 6.35mm (0.25") are available.

Technical Specification

Part Number			Description
UK 240V	EUR 220V	US 110V	
K0UK3025M001	K0003025M001	K0US3025M001	Elcometer 3025 Scratch/Shear Tester
Dimensions	445 x 190 x 150mm (17 x 7.8 x 6")		
Weight	6.8kg (14.9lb)		
Packing List	Elcometer 3025 and operating instructions		

Accessories

Part Number	Description
ST985000	Sample Cutter
ST131569	Sample Cutter Upper Pad – 4.74mm (0.187")
ST131570	Sample Cutter Upper Pad – 6.36mm (0.250")
KT003025P007	Magnifier (x10)

Buchholz Hardness Tester

Elcometer 3095

Measuring a coating's hardness using the indentation method, the Elcometer 3095 Buchholz Hardness Tester consists of a bevelled disc indenting tool which is fitted into a stainless steel block exerting a constant test load of 500g (17.6oz).

The gauge is placed on to the coating and then removed after 30 seconds. The length of any subsequent indentation in the coating is measured using the graduated microscope.

The result is expressed as units of Buchholz Indentation Resistance using the scale provided.



STANDARDS:
BS 3900-E9, DIN 53153, ISO 2815, NF T30-052

Technical Specification

Part Number	Description	Certificate
K0003095M001	Elcometer 3095 Buchholz Hardness Tester	○
Dimensions	360 x 310 x 120mm (14.2 x 12.2 x 4.7")	
Weight	2.9kg (6.4lb)	
Packing List	Elcometer 3095 Buchholz Hardness Tester, indentation tool with bevelled disc and two locating pins, pin adjusting shim, x20 illuminated microscope, indentation locator template, hexagonal wrench, plastic carry case and operating instructions	

Accessories

Part Number	Description
KT003095P001	Spare Pin Supports (x2)
KT003095P002	Bevelled Hardened Steel Disc Indenter

Measure of Buchholz Hardness

Indentation Length		Indentation Resistance	Indentation Depth		Minimum coating thickness for which a measurement is valid	
µm	mm		µm	mils	µm	mils
20	0.8	125	5	0.2	15	0.59
21	0.85	118	6	0.24	20	0.79
23	0.9	111	7	0.28	20	0.79
24	0.95	105	7	0.28	20	0.79
25	1.0	100	8	0.31	20	0.79
38	1.05	95	9	0.35	20	0.79
28	1.1	91	10	0.39	20	0.79
29	1.15	87	11	0.43	25	1
30	1.2	83	12	0.47	25	1
33	1.3	77	14	0.55	25	1
35	1.4	71	16	0.63	30	1.18
38	1.5	67	18	0.71	30	1.18
41	1.6	63	21	0.83	35	1.38
43	1.7	59	24	0.94	35	1.38

○ Optional Calibration Certificate available.

Elcometer 3101 Barcol Impressor Hardness Tester







STANDARDS:
AS 3894.4, ASTM B 648, ASTM D 2583, NF P38-501

These easy to use hardness testers are ideal for testing the hardness of soft metals, plastics, glass fibre and leather.

Making sure the indenter point is perpendicular to the surface being tested, the instrument is placed on to the sample and a light pressure is exerted against the instrument driving the spring-loaded indenter point into the material. The hardness reading is instantly indicated on the dial.

There are three models in the range:

Elcometer 3101/1	Model 934-1: for soft metals such as aluminium and its alloys, brass, copper, glass fibre and some of the harder plastics. This unit meets ASTM Standard D2583.
Elcometer 3101/2	Model 935: for softer plastics and very soft metals.
Elcometer 3101/3	Model 936: for extremely soft materials such as lead, linoleum and leather.

To ensure the Barcol Hardness Tester is in calibration, a number of Standard Test Discs are available. Please select the appropriate test disc from the list of Accessories below to supplement the disc supplied.

All results are recorded in Barcol Units (BU).

Technical Specification

Part Number	Description
K0003101M001[a]	Elcometer 3101/1 Barcol Hardness Tester Type 934/1 at 25-150 Brinell Hardness
K0003101M002[b]	Elcometer 3101/2 Barcol Hardness Tester Type 935 at 50-100 Rockwell
K0003101M003[c]	Elcometer 3101/3 Barcol Hardness Tester Type 936
Dimensions	152 x 106 x 50mm (6 x 4 x 2")
Weight	900g (2lb)
Packing List	Elcometer 3101, adjusting spanner, 2x indenting points, appropriate standard test disc and operating instructions

Accessories

Part Number	Description	
KT003101P001	Spare Indenter Point for Elcometer 3101/1 and Elcometer 3101/2	
KT003101P006	Spare Indenter Point for Elcometer 3101/3	
KT003101P202	Standard Test Disc 934-1; (x1)	87 - 89 BU
KT003101P002	Certified Test Disc 934-1; (x5)	87 - 89 BU
KT003101P203	Standard Test Disc 934-1; (x1)	43 - 48 BU
KT003101P003	Certified Test Disc 934-1; (x5)	43 - 48 BU
KT003101P204	Standard Test Disc 935; (x1)	87 - 89 BU
KT003101P004	Certified Test Disc 935; (x5)	87 - 89 BU
KT003101P205	Standard Test Disc 936; (x1)	43 - 48 BU
KT003101P005	Certified Test Disc 936; (x5)	43 - 48 BU

[a] Supplied with Standard Test Disc 934-1; 43 - 48 BU, Standard Test Disc 934-1; 87 - 89 BU
[b] Supplied with Standard Test Disc 935; 87 - 89 BU
[c] Supplied with Standard Test Disc 936; 43 - 48 BU

Shore Durometer

Elcometer 3120

The Elcometer 3120 range of durometers is widely used to test the hardness of soft materials. A round point indents the material under a fixed force spring and the hardness is displayed on the dial in Shore Hardness Units.

The instrument can be used either hand-held or fitted to an optional stand for increased repeatability.

Note: the Elcometer 3120 range of Shore Durometers encompasses a number of hardness values. Please refer to the table below.







STANDARDS:
ASTM D 2240, BS 7442-3.2, DIN 53505, FIAT 50411, ISO 868, ISO 7267-2, NF T51-123, NF T 51-174

Technical Specification

Part Number Without Certificate	With Certificate	Description	Certificate
K0003120M001	K0003120M015	Elcometer 3120 Shore Durometer A	○
K0003120M008	-	Elcometer 3120 Shore Durometer A with Max indicator	
-	K0003120M025	Elcometer 3120 Shore Durometer A with Max indicator and 10N weight	○
K0003120M005	K0003120M018	Elcometer 3120 Shore Durometer D	○
K0003120M009	-	Elcometer 3120 Shore Durometer D with Max indicator	
Dimensions		50 x 50 x 110mm (1.9 x 1.9 x 4.3")	
Weight		300g (10.58oz)	
Packing List	Elcometer Shore Durometer and operating instructions. A Check Piece is supplied with Elcometer Shore Durometers A and D		

Accessories

Part Number	Description
KT003120N002	Test Stand BS 61 II with 10N Load for Shore A, B & O
KT003120N005	Test Stand BS 61 II with 50N Load & Control Ring for Shore D, C & DO

Material Relative Hardness Range

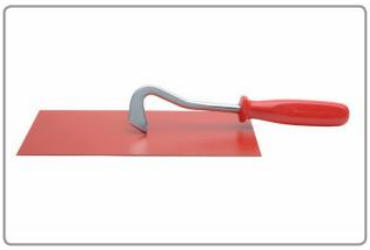
← Soft	Medium	Hard →

Shore A ASTM D2240, DIN 53505, ISO 868, ISO 7267-2

Shore D ASTM D2240, DIN 53505, ISO 868, ISO 7267-2

○ Calibration Certificate available under the separate part number listed.

Elcometer 1537 ISO Scratching Tool



STANDARDS:
BS 7479, EN 22063, ISO 2063, ISO 7253, ISO 9227, NF A91-124

The Elcometer 1537 ISO Scratching Tool is a simple but effective instrument which is used to scratch the surface of samples in preparation for adhesion, salt spray and corrosion tests. The tool is held horizontally and pulled across the sample to produce the scratch.

The Elcometer 1537 has a tungsten carbide blade which is set to give a 90° cutting angle with a 75° cutting edge.

Certificate of Conformity available upon request.

Technical Specification

Part Number	Description	Certificate
K0001537M001	Elcometer 1537 ISO Scratching Tool	○
Dimensions	200 x 45 x 20mm (7.8 x 1.7 x 0.8")	
Weight	100g (3.5oz)	
Packing List	Elcometer 1537 ISO Scratching Tool, operating instructions	

Elcometer 1538 DIN Scratching Tool



STANDARD:
BS EN ISO 4628-8:2012, DIN 53167, DIN EN ISO 4628-8:2012

The Elcometer 1538 has interchangeable carbide cutters for the preparation of specimens to be used for corrosion testing. Supplied complete with a 0.5mm (0.02") or 1mm (0.04") cutter.

An adjustment device to ensure accurate setting of the blade is available as an optional accessory.

Technical Specification

Part Number	Description
K0001538M201	Elcometer 1538 DIN Scratching Tool with 1mm (0.04") Cutter - CASS Test
K0001538M202	Elcometer 1538 DIN Scratching Tool with 0.5mm (0.02") Cutter - Salt Spray Test
K0001538M004	Elcometer 1538 DIN Scratching Tool with 0.5mm (0.02") Cutter - Renault Version
K0001538M005	Elcometer 1538 DIN Scratching Tool with 1mm (0.04") Cutter - Renault Version
Weight	113g (4oz)
Packing List	Elcometer 1538 DIN Scratching Tool, hexagonal wrench, cutter & storage case

Accessories

KT001538N002	Spare 0.5mm (0.02") Cutter	KT001538N001	Spare 1mm (0.04") Cutter
KT001538M103	Blade Adjustment Device		

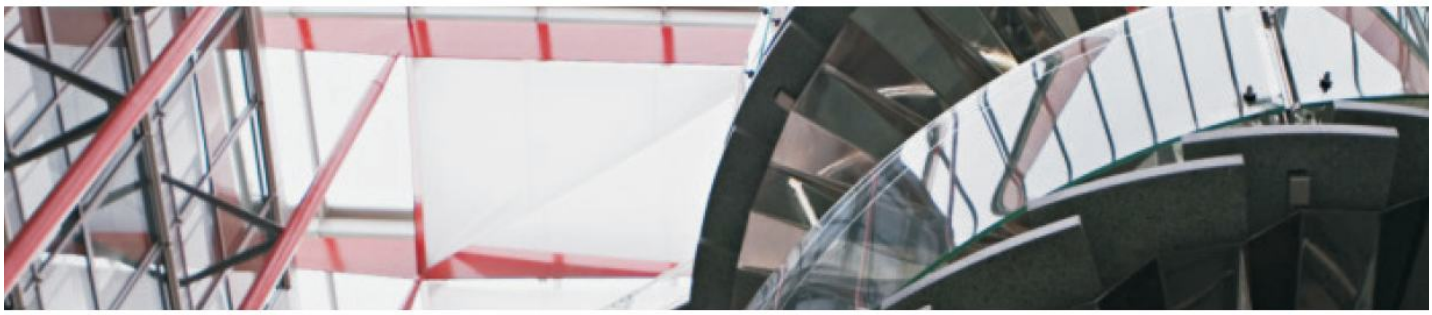
○ Optional Certifcate of Conformity Available



Elasticity & Deformation

21

Elasticity & Deformation



The performance of coatings when influenced by external stresses caused by stretching, bending or impact, determines their suitability for their designed application.

A coating designed for use in the coil coating industry, for example, should have the ability to stretch as the substrate is formed into its desired shape without damage.

Deformation or damage can reduce the protective quality and appearance of the coating including colour change, adhesion, gloss, etc.

A coating designed for industrial use should be able to withstand an acceptable level of impact during the life of the product.

In order to characterise a coating's performance to elongation and deformation, a number of repeatable and reproducible tests have been developed.

Cylindrical & Conical Mandrel Bend Test: A coated metal sheet is bent over a conical or cylindrical mandrel and any subsequent cracks, colour change, adhesion etc. of the coating are evaluated. Corresponding results, produced by decreasing mandrel sizes, indicate the degree of elasticity of the coating.

A conical mandrel allows the user to perform fewer tests to achieve a similar result to cylindrical mandrels.

Cupping Test: a coated metal sheet is subjected to a gradual deformation by a polished die being pushed from beneath the coating i.e. from the reverse side of the sheet.

Variable Impact Tests: there are two methods; either a weight with a punch attached falls on a coated metal sheet or a weight falls on to a punch which is resting on the coated metal sheet. In either test, the damage caused is observed and evaluated. These methods are used to identify how the coating performs under a rapid deformation process.

Cylindrical Mandrel on a Stand

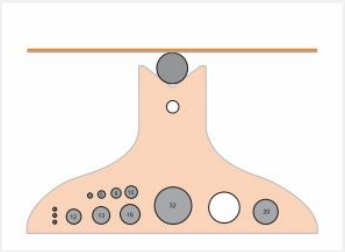
Elcometer 1500

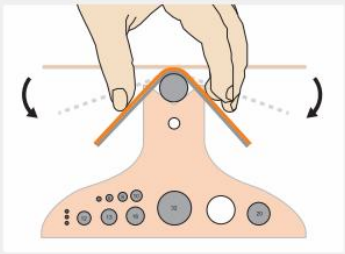
The Elcometer 1500 is a simple instrument for determining the elasticity, adhesion and cracking of dry paint on flat specimens, consisting of a mandrel support which also serves as a test stand.

Coated metal sheets, maximum 150mm (5.9”) in length x 100mm (3.93”) wide, are manually and successively bent around mandrels of decreasing diameter until cracks appear.



How to use the Cylindrical Mandrel on a Stand







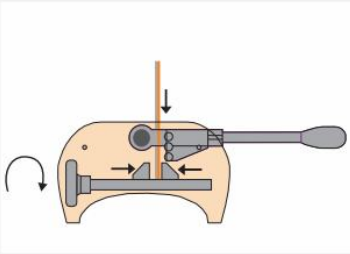


STANDARDS:
AS/NZS 1580.402.1, ASTM D 2485, ASTM D 522-B, ASTM D 1737, BS 3900-E1, DIN 53152, ISO 1519-1, JIS K 5600-5-1, NF T30-040

Technical Specification

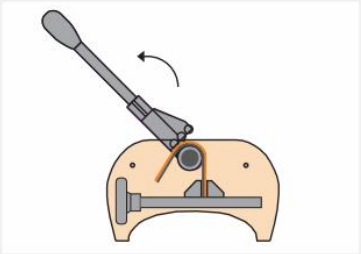
Part Number	Description
K0001500M002	Elcometer 1500/2 Metric Set of 13 Cylindrical Mandrels on a stand from 2 to 32mm
K0US1500M001	Elcometer 1500/1 Imperial Set of 7 Mandrels from ⅛” to 1”
Mandrel Size	Metric Version: 2, 3, 4, 5, 6, 8, 10, 12, 13, 16, 20, 25, and 32mm
	Imperial Version: ⅛, ¼, ⅜, ½, ⅝, ¾, 1”
Dimensions	178 x 138 x 145mm (7 x 5.3 x 5.7”)
Weight	3.3kg (7.26lb)
Packing List	Set of 7 mandrels (Elcometer 1500/1), Set of 13 mandrels (Elcometer 1500/2) and operating instructions

How to use a Cylindrical Mandrel Bend Tester



Insert large diameter mandrel followed by the coated test panel, making sure that the painted area faces away from the mandrel.

Tighten the vice by rotating the vice handle.

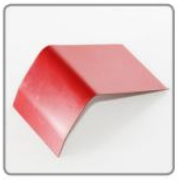


With a smooth action pull the lever around the mandrel. Check coating for damage.

Repeat as necessary with smaller diameter mandrels.

Elcometer 1506 Cylindrical Mandrel Bend Tester







STANDARDS:
AS/NZS 1580.402.1, ASTM D 2485, ASTM D 522-B, ASTM D 1737, ISO 1519-2, JIS K 5600-5-1

The Elcometer 1506 is similar in use to the Elcometer 1510, being a very robust mechanical unit for determining the elasticity, adhesion and elongation properties of cured coatings on sheet metal.

The frame has a bending lever with height-adjustable rollers and a sliding vice for clamping the sample which means the test pieces are bent perfectly and regularly on decreasing mandrels until the desired effect can be observed.

The instrument can be adjusted to the diameter of the mandrel used as the mandrels are easily changed.

A wide range of Metric and Imperial mandrels are available. Mandrel sets or individual mandrels should be ordered separately - please see accessories below.

Technical Specification

Part Number	Description
K1506M201	Elcometer 1506 Cylindrical Mandrel Bend Tester
Test Piece Width	Maximum: 64mm (2.5”)
Test Piece Length	Maximum: 80 to 100mm (3.15 to 3.93”) depending on the size of the mandrel used
Dimensions	320 x 135 x 130mm (12.6 x 5.3 x 5.1”)
Weight	4.3kg (9.5lb)
Packing List	Elcometer 1506 Cylindrical Mandrel Bend Tester and operating instructions

Accessories

KT001506P201	Elcometer 1506 Metric Mandrel Set, 2 to 32mm (one of each of the Metric Mandrels below)		
KTUS1506P201	Elcometer 1506 Imperial Mandrel Set, 1/8 to 1” (one of each of the Imperial Mandrels below)		
	Metric		**Imperial**
KT001506F002	2mm Mandrel	KTUS1506F022	⅛” Mandrel
KT001506F003	3mm Mandrel	KTUS1506F023	¼” Mandrel
KT001506F004	4mm Mandrel	KTUS1506F024	⅜” Mandrel
KT001506F005	5mm Mandrel	KTUS1506F025	½” Mandrel
KT001506F006	6mm Mandrel	KTUS1506F026	⅝” Mandrel
KT001506F007	8mm Mandrel	KTUS1506F027	¾” Mandrel
KT001506F014	10mm Mandrel	KTUS1506F028	1.0” Mandrel
KT001506F015	12mm Mandrel		
KT001506F016	13mm Mandrel		
KT001506F017	16mm Mandrel		
KT001506F018	19mm Mandrel		
KT001506F019	20mm Mandrel		
KT001506F020	25mm Mandrel		
KT001506F021	32mm Mandrel		

Conical Mandrel Bend Tester

Elcometer 1510

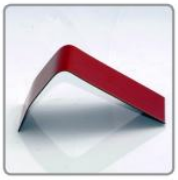
The Elcometer 1510 Bend Tester is a mechanical tester used to determine the effects of bending on the elasticity, adhesion and elongation properties of cured coatings on sheet metal.

The frame has a bending lever with a roller which pivots on a steel conical mandrel with a diameter from 3.2 to 38.1mm (0.12 - 1.5”). A graduation indicates the mandrel diameter in both millimeters and inches.

The specimen can be bent on part of, or along, the entire length of the mandrel, and the results (cracks) corresponding to different test diameters can be observed in a single operation. This is ideal for use in conjunction with the cylindrical mandrel, as it identifies the stop point for more focused testing.

As the instrument is machined out of a solid block of steel, the particularly robust and rigid construction provides excellent resistance to wear and provides a long service life. A large, sturdy anodised base, which can be permanently fixed to a workstation, ensures stability during testing.







STANDARDS:
ASTM D 522-A, BS 3900-E11, ISO 6860

Technical Specification

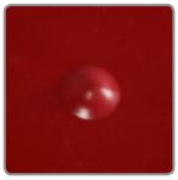
Part Number	Description	Certificate
K0001510M001	Elcometer 1510 Conical Mandrel Bend Tester	○
Diameter Range	3.2 - 38.1mm (0.1 x 1.5”)	
Sample Size	180 x 100 x 0.8mm (7 x 4 x 0.03”)	
Dimensions	325 x 350 x100mm (12.8 x 13.8 x 4”)	
Weight	9kg (20lb)	
Packing List	Elcometer 1510 Conical Mandrel Bend Tester and operating instructions	

○ Optional Calibration Certificate available.

Elcometer 1620 Cupping Tester







STANDARDS:
BS 3900 E4, DIN 53156, DIN 53232, ECCA T6, EN 13523-6, ISO 1520, JIS K 5600-5-2, NBN T22-104, NF T30-019

This robust and user-friendly tester is used for assessing the cupping ability of coatings applied to metal sheets up to 1.2mm (0.05") thick.

The Elcometer 1620 has a 27mm (1.06") diameter hardened steel die in a clamping device and a 20mm (0.79") diameter punch. A hand-rotated crank and reduction drive moves the punch progressively into the sample.

The Elcometer 1620 has a digital gauge with an illuminated magnifier to accurately view the resultant damage and provides accurate readings of the cupping depth on an integrated gauge. Direct viewing of the fissures, cracks and tears in the coating of up to 10µm (0.4mil) can be viewed through the supplied illuminated x10 magnifying glass.

Technical Specification

Part Number	Description	Gauge Type	Certificate
K0001620M004	Elcometer 1620/4 Manual Cupping Tester	Digital (mm, mils)	○
Dimensions	300 x 240 x 500mm (12 x 10 x 20")		
Weight	24kg (53lb)		
Packing List	Elcometer 1620 Cupping Tester, gauge, gauge holder, zero setting sheet, illuminated x10 magnifying glass with magnet and operating instructions		

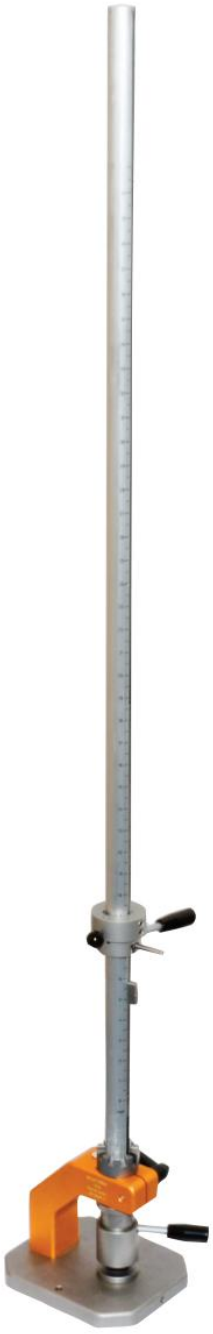
○ Optional Calibration Certificate available.

Variable Impact Tester

Elcometer 1615

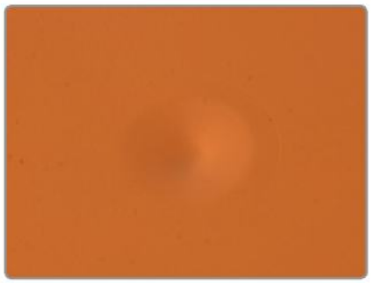
The **Elcometer 1615** Variable Impact Tester is a simple to use gauge ideal for evaluating the resistance of a coating to impact (elongation, cracking or peeling).

- Stop collar with 10 settings to change the depth of impact when working in accordance with ISO Standards, supplied with Kits A, D and F
- Integrated bubble level to ensure the tester is perpendicular for repeatable accurate results
- Comes as one universal assembly with the option of six different kits
- Quick, safe weight release mechanism
- Magnifier x10
- Easy to fix sample clamp - the test sample can be secured or released by a simple twist of the clamp handle supplied with Kits A, D and F
- Graduated tube engraved in both kg-cm & lb-inch (1m, 39" height) Metric and Imperial units
- Heavy-duty, passivated base plate and anodised arm to prevent rusting
- Tube height 1000mm (39")



STANDARDS:
ASTM D 2794, ASTM D 5420, AS/NZS 1580.406.1, BS 6496:1984, BS 3900-E13, ECCA T5, EN 12206-1:2004, EN 13523-5, ISO 6272:1993, ISO 6272-1, ISO 6272-2, JIS K 5600-5-3:1999, NF T30-017:1989

For impact tester kits, see page 21-9



A panel after being tested by the Elcometer 1615.

Elcometer 1615 Variable Impact Tester



This simple to use gauge is ideal for evaluating the resistance of a coating to impact (elongation, cracking or peeling), and is designed to meet a wide range of National and International Standards. The Elcometer 1615 is suitable for use on both direct and indirect methods:

- Direct: A weight with a hemispherical punch attached falls on to a coated metal sheet
- Indirect: A weight falls on to a hemispherical punch which is resting on the coated metal sheet

The Elcometer 1615 Impact Tester comes as one universal assembly with the option of seven different kits providing the functionality for various testing methods. The base unit is common to all tests. Simply select the appropriate kit to meet your requirements, for more information see page 21-9 and attach the punch, die and accessories to the base unit.

The test specimen is fixed into position by the quick release clamp. The weight is lifted to the predetermined height and can be set by the adjustable collar device. The weight is then released and the resulting deformation is observed.

Interchangeable dies - enable the user to match the die to the size of the relevant punch to conform to the required Standard or method.



Technical Specification

Part Number	Description
K0001615M201	Elcometer 1615 Impact Tester Universal Base Unit and Tube
Weight	10.6kg (23.34lb)
Dimensions	1460 x 200 x 165mm (57.5 x 8.0 x 6.5”)
Packing List	Elcometer 1615 Impact Tester with passivated base, integrated bubble leveller, graduated tube, collar release mechanism and operating instructions

Elcometer Impact Tester Kits

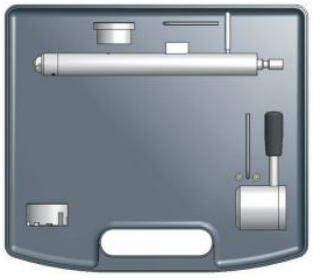
Elcometer 1615

In order to test a sample in accordance with a specified Standard, a number of kits have been created to provide a single impact tester which, by using the appropriate kit, allows the user to work in accordance with a wide range of National and International Standards.

Part Number	Description	Certificate
KT001615KITA	Elcometer Impact Tester Kit A	○

Kit A: Falling 1kg (2.2lb) weight with a 20mm (0.79”) punch; 27mm (1.06”) die with fixing screw; sample clamp with two fixing screws; stop collar*; 3mm (0.12”) and 4mm (0.16”) hexagonal wrench

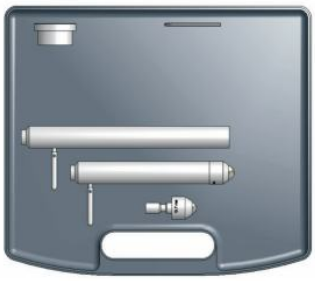
STANDARDS:
ISO 6272:1993, EN 13523, JIS K 5600-5-3, DIN EN ISO 6272-1



Part Number	Description	Certificate
KT001615KITB	Elcometer Impact Tester Kit B	○

Kit B: Falling 1kg (2.2lb) weight with static indenter with 15.9mm (0.6”) punch; 12.7mm (0.5”) punch; 16.3mm (0.64”) die with fixing screw; 3mm (0.12”) hexagonal wrench

STANDARDS:
ASTM D 2794, BS EN ISO 6272-2, ISO 6272-2 :2002, Qualicoat



Part Number	Description	Certificate
KT001615KITC	Elcometer Impact Tester Kit C	○

Kit C: Falling 2lb (908g) weight with static indenter with 15.9mm (0.6”) punch; 16.3mm (0.64”) die with fixing screw; 3mm (0.12”) hexagonal wrench

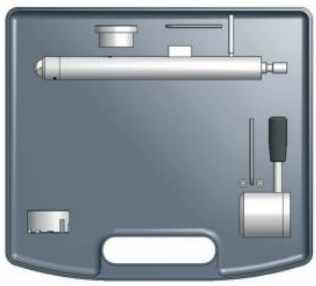
STANDARDS:
ASTM D 2794, BS6496:1984, EN 12206-1



Part Number	Description	Certificate
KT001615KITD	Elcometer Impact Tester Kit D	○

Kit D: Falling 1kg (2.2lb) weight with 20mm (0.79”) punch and stop key; 27mm (1.06”) die with fixing screw; stop collar*; sample clamp with fixing screws; 3mm (0.12”) and 4mm (0.16”) hexagonal wrench

STANDARDS:
ISO 6272-1, BS EN ISO 6272-1, NF EN ISO 6272-1



* Values: 2, 3, 4, 5, 6, 7, 8, 9, 10 & 15mm (0.08, 0.12, 0.16, 0.20, 0.24, 0.28, 0.31, 0.35, 0.39 & 0.60”)
○ Optional Calibration Certificate available.

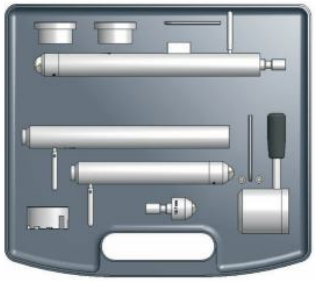
Elcometer 1615 Elcometer Impact Tester Kits



Part Number	Description	Certificate
KT001615KITE	Elcometer Impact Tester Kit E	○

Kit E: Falling 400g (0.9lb) weight with 23mm (0.90”) punch; 22mm (0.87”) die with fixing screw; 3mm (0.12”) hexagonal wrench

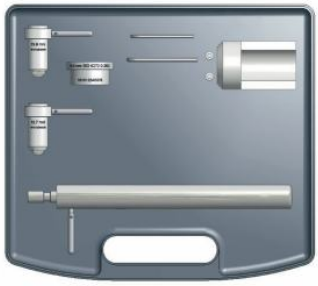
STANDARDS:
NF T30-017:1989



Part Number	Description	Certificate
KT001615KITF	Elcometer Impact Tester Kit F	○

Kit F: Falling 1kg (2.2lb) weight with a 20mm (0.79”) punch; 27mm (1.06”) die with fixing screw; Falling 1kg (2.2lb) weight with 12.7mm (0.5”) punch; sample clamp with two fixing screws; 16.3mm (0.64”) die with fixing screw; stop collar*; static indenter with 15.9mm (0.6”) punch; 3mm (0.12”) hexagonal wrench; 4mm (0.16”) hexagonal wrench

STANDARDS:
ASTM D 2794, BS EN ISO 6272, DIN EN ISO 6272-1, EN 13523-5, ISO 6272, Qualicoat 2006, SN EN ISO 6272-1



Part Number	Description	Certificate
KT001615KITG	Elcometer Impact Tester Kit G	○

Kit G: Falling 1kg (2.2lb) weight with a 15.9mm (0.62”) static indenter with handle and punch; 12.7mm (0.5”) static indenter with handle and punch; 16.3mm (0.64”) die with fixing screw; guide bracket with two fixing screws; 3mm (0.12”) hexagonal wrench; 4mm (0.16”) hexagonal wrench

Additional 1kg (2.2lb) weights are available as an optional extra.

STANDARDS:
BS EN ISO 6272-2:2011



For a full range of kits, dies and other accessories to meet a wide range of National and International Standards see page 21-9

○ Optional Calibration Certificate available.

Variable Impact Tester Accessories

Elcometer 1615

The following range of accessories have been designed to help you evaluate the resistance of a coating to impact (elongation, cracking or peeling) when used in conjunction with the Elcometer 1615 Variable Impact tester.

Punches are universal and can be used either fitted to a falling weight or as a punch resting on the sample.



Accessories

		Suitable for Kit						
		A	B	C	D	E	F	G
KT001615N201	1kg (2.2lb) Falling Weight, 24.6mm (0.97") Diameter				■			
KT001615N221	1kg (2.2lb) Falling Weight, 25.0mm (0.98") Diameter	■					■	■
KT001615N226	20mm (0.79") Diameter Punch (Outside Diameter 25mm)	■					■	
KT001615N215	12.7mm (0.5") Diameter Punch		■				■	
KT001615N205	15.9mm (0.6") Diameter Punch		■	■			■	
KT001615N206	20mm (0.79") Diameter Punch (Outside Diameter 24.6mm)				■			
KT001615N207	23mm (0.9") Diameter Punch					■		
KT001615N216	Static Indenter with 12.7mm/0.5" Diameter Punch							■
KT001615N217	Static Indenter with 15.9mm/0.6" Diameter Punch							■
KT001615N208	Stop Ring Collar	■			■		■	
KT001615N209	Sample Clamp Mechanism	■			■		■	
KT001615N210	Weight Release Mechanism	■	■	■	■	■	■	■
KT001615N211	Replacement Graduated Tube	■	■	■	■	■	■	■
KT001615N212	16.3mm (0.64") Die		■	■			■	
KT001615N232	16.3mm (0.64") Die (with 1.5mm Radius)							■
KT001615N213	22mm (0.87") Die					■		
KT001615N214	27mm (1.06") Die	■			■		■	

Notes


elcometer
Measure
COATING ADHESION
FAST · REPEATABLE
ACCURATE · DURABLE
Test your coating's adhesion quickly and accurately, all at the press of a button. The Elcometer 510 Automatic Adhesion Gauge.
See page 9-3



Concrete Inspection & Metal Detection

22

Concrete Inspection & Metal Detection



A covermeter, or rebar locator, is a gauge that measures the thickness of concrete cover over steel reinforcement bars and metal pipes. The covermeter can tell you the depth of the rebar, the location and orientation of reinforcement bar (rebar) and determine the diameter of the rebar.

A rebar locator is used to determine the presence and orientation of steel reinforcement rebars under the surface of the concrete.

A contractor engaged in maintenance work will be familiar with the problem of accurately locating the exact position of rebar, wall ties, studs and other metal fasteners. These low cost, simple to use gauges can meet their everyday requirements.

Test hammers are used to determine the surface hardness of concrete and are one of the most widely used instruments to assess concrete compressive strength. It is the quickest, simplest and least expensive method to obtain an estimate of the quality and strength of the concrete.

Test Hammers with both analogue and digital displays are available.

Many concrete structures have a protective or cosmetic coating. Premature failure of this coating can, at the very least, result in additional costs of rework.

Adhesion tests verify that both surface preparation and coating application are within specification.

Concrete structures are porous and will absorb moisture, our range of moisture meters and climate monitoring gauges allows moisture content to be measured.

The range also includes gauges used for the measurement of crack width in concrete and other structures.

The Elcometer Metal Detection range includes Valve Box Locators that are rugged and simple to use making them the ideal choice for all location work in all types of terrain.

Analogue Concrete Test Hammer

Elcometer 181

The concrete test hammer provides a quick, simple and inexpensive method for non-destructive evaluation of concrete compression strength and other masonry materials. Concrete test hammers are one of the most widely used instruments in the field of non-destructive testing.

This gauge consists of a spring loaded plunger which, when released, strikes the surface with fixed and constant impact energy. During the rebound stroke, the mass moves a pointer that indicates the maximum point of return and at the same time indicates a reference value called Rebound Number.

This number, converted by the correlations available on the hammer, gives the compression resistance value in respect of the impact angle.

Key Features:

- Impact Energy 2.207 Nm
- Supplied with grinding stone to prepare test surface
- Aluminium body
- Rebound value indicated on test hammer
- Rebound value chart on body, for quick calculation of compressive strength
- Curve selection on chart dependant on testing angle



STANDARDS:

ASTM C805, BS 1881:202, DIN 1048, EN 12504-2, ISO 8045, NFP18-417, UNI 9189

Technical Specification

Part Number	Description	Certificate
W181----1	Elcometer 181 Analogue Concrete Test Hammer - MPa / psi scale	○
Accuracy	Better than ±2 Rebound Number (When tested on Calibration Anvil at 80)	
Resolution	2 Rebound Number(s)	
Range	10 to 100 Rebound Number(s)	
Dimensions	Hammer: 280mm (11.02") length x 55mm (2.17") diameter In Case: 350mm (13.78") length x 80mm (3.15") diameter	
Weight	1.5kg (3.3lbs) with case	
Packing List	Elcometer 181 analogue concrete test hammer, plastic storage case, abrasive stone & operating instructions	

Accessories

TW99919563	Calibration Anvil (supplied complete with Test Certificate)

○ Optional Calibration Certificate available.

Elcometer 331HM Half-Cell Meter

The rugged **Elcometer 331HM** half-cell meters measure the condition and potential corrosion of rebars and steel structures within concrete.

- Single handed operation: All functions can be accessed & controlled through 4 simple keys/buttons
- Interchangeable Half-Cell probes are available (see page 22-14)
- Measures the condition and potential corrosion of rebars and steel structures within concrete quickly
- Memory and data logging with data output to PC or direct to printer
- Up to 240,000 readings can be stored on the gauge for detailed reporting
- Links to CoverMaster™ software

STANDARDS:
ASTM C876-91, DGZfP:B3, Concrete Society Technical Report 60, UNI 10174



How does a Half-Cell Meter work?

When corrosion occurs the ferric oxide protective layer surrounding the concrete breaks down allowing an electrochemical reaction between the steel and the concrete.

In the half-cell test, a reference electrode is passed over the surface of the concrete and the potential voltage difference is recorded. These potential voltage readings show where corrosion is likely to be, or is currently present.

Elcometer 331HM Half-Cell Meter is supplied with memory and allows users to store up to 240,000 readings in either linear or grid batches.

Half-Cell Meter

Elcometer 331HM

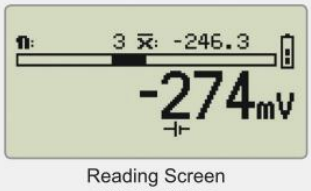
Product Features

	Elcometer 331HM
Description	
Model	HM
Part Number	W331HM--4
Half-Cell measurement	■
Large graphics display with backlight	■
Multiple language menu structure	■
Rugged waterproof case (IP65)	■
Adjustable beep volume & earphone socket	■
CoverMaster™ software	■
Statistics	■
Number of readings *(η)*, Mean (average) *($\bar{x}$)*	■
Standard deviation *(σ)*, Coefficient of variation *(CV%)*	■
Lowest reading ( ), Highest Reading ( )	■
Under range (<<)	■
Low Limit (⩒ or <), Within Limit (⊦⊦), High Limit (⩓ or >)	■
Over range (∞)	■
Blank readings( )	■
Date & Time	■
Memory	■
Linear batch memory	Up to 200 batches of 1,000 readings[1]
Grid batch memory	Up to 240,000 readings[1]
Graphics plot	■
Threshold plot	■

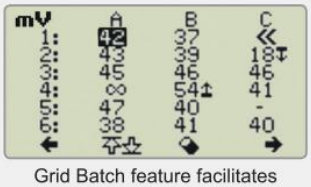
Technical Specification

Range	-999mV to +999mV	Accuracy	±5mV
Operating temperature	0 to 50°C (32 to 120°F)		
Power supply	7.4V battery pack provides up to 32 hours of continuous use (20 hours if backlight is on). Rechargeable in 4 hours, using an external charger, either inside or outside the gauge.		
Dimensions	230 x 130 x 125mm (9 x 5.1 x 4.9")	Weight	1.6kg (3.5lbs)
Packing List[2]	Elcometer 331HM Half Cell Meter, 25m extension cable on spool, 1.7m red rebar connecting cable with connecting clip, 1.7m black half-cell connecting cable, rechargeable battery pack & charger (UK, US & EU), earphone, shoulder strap, plastic carry case, operating instructions, CoverMaster™ software & PC cable		

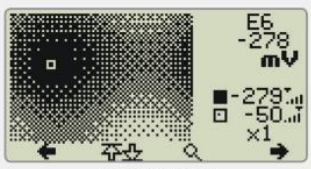
Displays



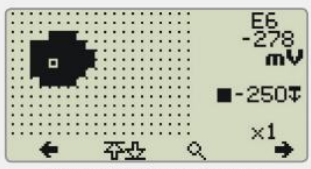
Reading Screen with Statistics



Grid Batch feature facilitates fast surveying for Half-Cell readings



Graphics plot
Allows an immediate visual indication of results



Threshold plot for a quick pass or fail analysis

[1] Linear Batch Mode: up to 200 batches of 1,000 readings each. Grid Batch Mode: up to 1,000 batches, maximum number of readings: 240,000
[2] Search Heads and Half-Cell Probes are not included as standard and must be ordered separately, see page 22-14

Elcometer 331B Covermeter

The easy to use **Elcometer 331B** covermeter quickly and accurately locates/orientates reinforcement bars in concrete and measures the depth of cover over the rebar.



Locate and determine orientation of rebar quickly, easily & accurately

Single handed operation: All functions can be accessed & controlled through 4 simple keys/buttons

Range of fully interchangeable search heads (see page 22-14)

International bar sizes:
User selectable bar sizes: Metric, Imperial, ASTM/Canadian and Japanese

STANDARDS:

ACI 318, ASTM C876-91, BS1881:201, BS1881:204, BS8110, CP 110, DGZfP:B2, DGZfP:B3, DIN 1045, EC2, SIA 262, SS-EN 206, UNI 10174, Concrete Society Technical Report 60,

How does a Covermeter work?

To identify the location and orientation of the rebar under the surface of the concrete, a search head is connected to the Covermeter and is used to scan across the designated search area of the concrete.

When the search head approaches a reinforcement bar, the LED on the search head will start to glow. The Covermeter will start to emit a sound which will increase in pitch and the signal strength indicator bar on the display will increase in length.

When the bar is positioned below the centre of the search head then the pitch of the sound will be at its highest and the depth of cover will be shown on the Covermeter display. The signal strength indicator bar is at its maximum.

If the reinforcement bar is too deep to measure, the depth of cover will be displayed as infinite.

The Elcometer 331B Covermeter is an entry level gauge without memory that is only used to quickly locate and measure the depth of cover over the rebar.

Covermeter

Elcometer 331B

Interchangeable Search Heads & Borehole Probes

A range of fully interchangeable search heads and borehole probes are available to suit the requirements without the need to return your gauge to Elcometer.

There are four types of search heads available for use with the Elcometer 331B; Standard, Narrow Pitch, Deep Cover and Borehole.

The Standard Search Head is designed to meet most of the measurement requirements whereas the Narrow Pitch Search Head accurately measures the cover thickness when the gaps (pitch) between each of the rebars are close together.

The Deep Cover Search Head is ideal for accurately measuring rebars that are deep within the structure. The Borehole Probe is ideal for locating tendon ducts and multiple layers of rebar lying deep within the concrete.

Changing from one type of search head to another is quick and easy; simply switch off the Covermeter, swap search heads, switch on again and zero the Covermeter.

For full details on search heads please see page 22-14.



Product Features

Description	Elcometer 331B
Model	B
Part Number	W331B---4
Covermeter/rebar location	■
Rebar orientation	■
Depth of cover	■
Large cover (thickness) reading mm or inches	■
Large graphics display with backlight	■
Multiple language menu structure	■
Signal strength bar	■
Interchangeable heads with LED & keypad	■
User selectable bar range sizes & numbers	■
Rugged waterproof case (IP65)	■
Adjustable beep volume & earphone socket	■
Measurement sound modes	
Locate *(tone increases as head approaches rebar)*	■

Technical Specification

Operating temperature	0 to 50°C (32 to 120°F)
Power supply	7.4V battery pack provides up to 32 hours of continuous use (20 hours if backlight is on). Rechargeable in 4 hours, using an external charger, either inside or outside the gauge.
Dimensions	230 x 130 x 125mm (9 x 5.1 x 4.9") Weight 1.6kg (3.5lbs)
Packing List	Elcometer 331B Covermeter, standard search head & search head connecting cable, rechargeable battery pack & charger (UK, US & EU), earphone, shoulder strap, plastic carry case & operating instructions.

Elcometer 331 Covermeters & Half-Cell Meters

The **Elcometer 331** is an all in one gauge that combines the rebar locator, concrete covermeter and half-cell measurement, making site visits quicker and more convenient.

Locate and determine orientation of rebar quickly, easily & accurately in Cover Mode

Measures the condition and potential corrosion of rebars and steel structures within concrete quickly in Half-Cell Mode

Up to 240,000 readings can be stored on the gauge for detailed reporting

Single handed operation: All functions can be accessed & controlled easily through 4 keys/buttons

Memory and data logging with data output to PC or direct to printer



Links to CoverMaster™ software

International bar sizes:
User selectable bar sizes: Metric, Imperial, ASTM/Canadian and Japanese Available in Cover Mode

Full range of interechangeable search heads, borehole probe & half-cell probes available to suit the requirements
(see page 22-14)



STANDARDS:
ACI 318, ASTM C876-91, BS1881:201, BS1881:204, BS8110, CP 110, DGZfP:B2, DGZfP:B3, DIN 1045, EC2, SIA 262, SS-EN 206, Concrete Society Technical Report 60, UNI 10174

Covermeters & Half-Cell Meters

Elcometer 331

Interchangeable Search Heads, Borehole Probes & Half-Cell Probes

A range of fully interchangeable search heads, borehole probes and half-cell probes are available to suit the requirements without the need to return your gauge to Elcometer.

Changing from one search head to another is quick and easy; simply switch off the Covermeter, swap search heads, switch on again and zero the Covermeter.



Standard Search Head

- Designed to meet most measurement requirements



Narrow Pitch Search Head

- Accurately measures the cover thickness when the gaps (pitch) between each of the rebars are close together



Deep Cover Search Head

- Ideal for accurately measuring rebars that are deep within the structure



Dual Search Head

- Designed to locate high tensile steel & stainless steels



Borehole Probe

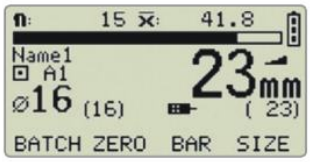
- Ideal for accurately measuring rebars that are deep within the structure

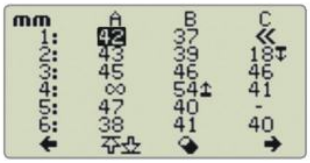


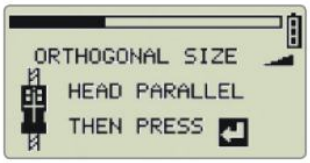
Half-Cell Kit

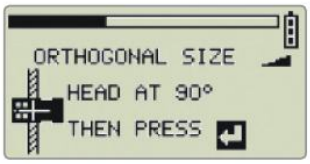
- Consists of either a copper electrode in a copper sulphate solution or a silver electrode in a sodium chloride solution
- Each half cell is a sealed unit - no need to mix chemicals
- Supplied with a 25m/80' cable
- Every half-cell probe is guaranteed for 5 years

Cover Mode Displays

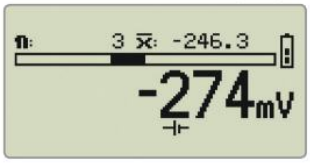


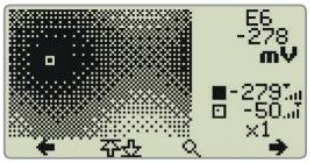


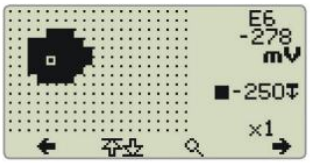


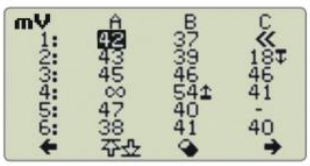


Half-Cell Mode Displays









Elcometer 331 Covermeters & Half-Cell Meters

Product Features

Description	Covermeter & Half Cell			
Model	BH	SH	TH	THD
Part Number	W331BH--4	W331SH--4	W331TH--4	W331THD-4
Covermeter	■	■	■	■
Half-Cell measurement	■	■	■	■
Rebar orientation	■	■	■	■
Depth of cover	■	■	■	■
Large cover (thickness) reading mm or inches	■	■	■	■
Large graphics display with backlight	■	■	■	■
Multiple language menu structure	■	■	■	■
Signal strength bar	■	■	■	■
Interchangeable heads with LED & keypad	■	■	■	■
User selectable bar range sizes & numbers	■	■	■	■
Rugged waterproof case (IP65)	■	■	■	■
Adjustable beep volume & earphone socket	■	■	■	■
Measurement Sound Modes				
Locate *(tone increases as head approaches rebar)*	■	■	■	■
Under Cover *(tone only sound for low cover)*		■	■	■
Maxpip™ *(tone only as head passes rebar centre)*		■	■	■
Large half cell reading mV	■	■	■	■
Automatic bar size estimate		■	■	■
Orthogonal bar size calculation		■	■	■
RS232 Output - direct to printer or PC		■	■	■
CoverMaster™ software		■	■	■
Statistics		■	■	■
Number of readings *(η)*		■	■	■
Mean (average) *($\bar{x}$)*		■	■	■
Standard deviation *(σ)*		■	■	■
Coefficient of variation *(CV%)*		■	■	■
Lowest reading ( ) , Highest Reading ( )		■	■	■
Under range (<<)		■	■	■
Low Limit (or <), Within Limit (), High Limit (or >)		■	■	■
Over range ( )		■	■	■
Blank readings( )		■	■	■
Minimum & maximum cover limits		■	■	■
Date & Time		■	■	■
Memory		■	■	■
Linear batch memory		10 linear batches of 1,000 readings each	Up to 200 batches of 1,000 readings*	Up to 200 batches of 1,000 readings*
Grid batch memory			Up to 240,000 readings*	Up to 240,000 readings*
User customised batch size			■	■
Graphics plot			■	■
Threshold plot			■	■
Stainless Steel Measurement Mode				■

* Linear Batch Mode: up to 200 batches of 1,000 readings each Grid Batch Mode: up to 1,000 batches, maximum number of readings: 240,000

Covermeters & Half-Cell Meters

Elcometer 331

Technical Specification

Range	-999mV to +999mV	Accuracy	±5mV
Operating temperature	0 to 50°C (32 to 120°F)		
Power supply	7.4V battery pack provides up to 32 hours of continuous use (20 hours if backlight is on). Rechargeable in 4 hours, using an external charger, either inside or outside the gauge.		
Dimensions	230 x 130 x 125mm (9 x 5.1 x 4.9")	Weight	1.6kg (3.5lbs)
Packing List:	Elcometer 331 Covermeter & Half-Cell Meter, half-cell & search head connecting cable, rechargeable battery pack & charger (UK, US & EU), earphone, shoulder strap, plastic carry case, operating instructions, CoverMaster™ software (SH, TH & THD) & PC cable (SH, TH & THD)		

Cover Mode and Half-Cell Mode

This all in one gauge combines the rebar locator, concrete covermeter and half-cell measurement, which allows the user to easily switch from Cover Mode to Half-Cell Mode depending on the type of measurement required on site.

Cover Mode: Measures the depth of cover over the rebar, detecting the location, orientation and depth of the rebar under the surface of the concrete using either a Standard, Narrow Pitch, Deep Cover, Dual Search Head or a Borehole Probe.

Half-Cell Mode: Measures the condition and potential corrosion of rebars and steel structures within concrete using either a copper electrode in a copper sulphate solution or a silver electrode in a silver chloride solution.

The Elcometer 331 Covermeter and Half-Cell meter is available in four models - Model BH, SH, TH and THD.

Elcometer 331 Model BH: entry level gauge without memory.

Elcometer 331 Model SH: intermediate level gauge supplied with memory and allows users to store up to 1,000 readings in linear batches.

Elcometer 331 Model TH: supplied with memory and allows users to store up to 240,000 readings in either linear or grid batches.

Elcometer 331 Model THD: supplied with memory and allows users to store up to 240,000 readings in either linear or grid batches. Also able to detect stainless steel reinforcement bars.

Elcometer 331 Covermeters & Half-Cell

Bar Size Dimensions available on the Elcometer 331 Models B, BH, SH, TH & THD in Cover Mode

The bar size can be selected when using a Covemeter only or the Covermeter & Half-Cell meter in Cover Mode. Dimensions of reinforcement bars are stored in the Elcometer 331 Models B, BH, SH, TH & THD and includes the following four standards bar series: Metric, US Bar, ASTM/Canadian and Japanese. Due to this wide selection of bar sizing, the Elcometer 331 Covermeters can be utilised worldwide with accurate results.

When taking measurements for high tensile steel or Grades 304, 316 and Duplex Stainless Steel using the Elcometer 331 Model THD, details for the Bar Grade and Bar Size can be manually input into the covermeter, alternatively the gauge can be used in Autosizing Mode.

Metric	
Bar Size	Diam. (mm)
5	5
5.5	5.5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
14	14
16	16
18	18
20	20
22	22
25	25
28	28
32	32
36	36
40	40
44	44
50	50

Imperial	
Bar Size	Diam. (Inch)
#2	0.250
#3	0.375
#4	0.500
#5	0.625
#6	0.750
#7	0.875
#8	1.000
#9	1.125
#10	1.250
#11	1.375
#12	1.500
#13	1.625
#14	1.750
#15	1.875
#16	2.000
#18	2.250

ASTM/Canadian	
Bar Size	Diam. (mm^2)
10M	100
15M	200
20M	300
25M	500
30M	700
35M	1000
45M	1500
55M	2500

Japanese	
Bar Size	Diam. (mm)
6	6
10	10
13	13
16	16
19	19
22	22
25	25
29	29
32	32
35	35
38	38
41	41
44	44
48	48
51	51
57	57

CoverMaster™ Software

Elcometer 331

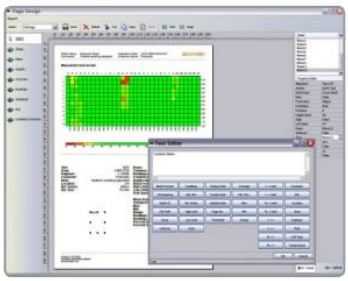
Elcometer's CoverMaster™ software will manage your data efficiently and effectively.

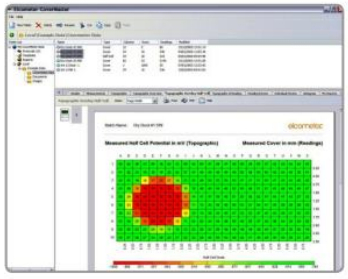
Available with the Elcometer 331 Models HM, SH, TH & THD.

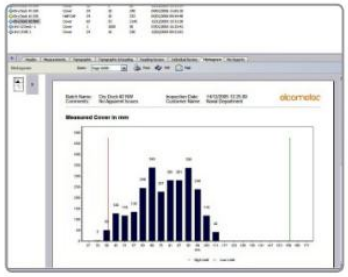


Data is transferred quickly into the CoverMaster™ software data management system via RS232 connection.

Both Covermeter and Half-Cell readings can be stored together with associated photos, Word documents, Excel spreadsheets and other files.







CoverMaster™ software is supplied free of charge with all Elcometer 331 models that have batch data storage.

Features:

- Data easily translated into a typographic view giving you all the information you need at a glance
- Data for each reading can be presented in colour or can be shown in greyscale, complete with reading values in each grid
- Site survey data from both cover and half cell measurements can be shown on the same typographic (or gradient) chart
- Reports can be fully customised allowing corporate logos, photos and memos to be added providing a fully comprehensive report for clients
- All survey information in one place, CoverMaster™ links directly with Excel™, Word™ and PowerPoint™ files, it is simple to analyse and assess your results
- CoverMaster™ - one platform for the storage of data, notes, photos, PDF files for the creation of comprehensive reports

Elcometer 331 Accessories

For the Elcometer 331 BH, SH, TH and THD models, all search heads, the borehole probe and half-cell probes are fully interchangeable there is no requirement to return your gauge to Elcometer.

Elcometer 331 SH, TH and THD models are also supplied with CoverMaster™ & EDTS Excel link transfer software and PC Cable.

The Elcometer 331 Model B does not have half-cell capability and cannot be used with the half-cell probes.



Standard Search Head
Designed to meet most of your measurement requirements.

Part Number	TW33119124-1A
Range	40mm / 1.6" bar 15mm to 95mm / 0.6" to 3.75" 8mm / 0.3" bar 8mm to 70mm / 0.3" to 2.75"
Dimensions	155 x 88 x 42mm / 6.1 x 3.5 x 1.65"
Sensing area	120 x 60mm / 4.72 x 2.36"



Narrow Pitch Search Head
Accurately measures the cover thickness when the gaps (pitch) between each of the rebars are close together.

Part Number	TW33119124-2A
Range	40mm / 1.6" bar 8mm to 80mm / 0.3" to 3.1" 8mm / 0.3" bar 5mm to 60mm / 0.2" to 2.4"
Dimensions	155 x 88 x 42mm / 6.1 x 3.5 x 1.65"
Sensing area	120 x 60mm / 4.72 x 2.36"



Deep Cover Search Head
The ideal search head for accurately measuring rebars that are deep within the structure.

Part Number	TW33119171A
Range	40mm /1.6" bar 35mm to 180mm / 1.4" to 7" 8mm / 0.3" bar 25mm to 160mm / 1" to 6.3"
Dimensions	170 x 94 x 54mm / 6.7 x 3.7 x 2.1"
Sensing area	160 x 80mm / 6.3 x 3.15"



Dual Search Head for high tensile and stainless steels
The search head is designed to locate High Tensile and Stainless Steel.

Part Number	TW33120014D
Range	40mm /1.6" bar 35mm to 180mm / 1.4" to 7" 8mm / 0.3" bar 25mm to 160mm / 1" to 6.3"
Dimensions	170 x 94 x 54mm / 6.7 x 3.7 x 2.1"
Sensing area	160 x 80mm / 6.3 x 3.15"

Accessories

Elcometer 331

Borehole Probe

The solution for locating tendon ducts and multiple layers of rebar lying deep within the concrete.



		Metric	Imperial
Part Number	Short	TW33119223-1A	TW33119223-3A
	Long	TW33119223-2A	TW33119223-4A
Measurement depth	Short Probe: 0 - 40cm / 0 - 16" Long Probe: 0 - 100cm / 0 - 40"		
Approximate detection ranges	Tendon duct (70mm / 2.75" diameter): up to 90mm / 3.54"		

Half-Cell Kit

Consists of either a copper electrode in a copper sulphate solution or a silver electrode in a sodium chloride solution, each half cell is a sealed unit - no need to mix chemicals. Supplied with a 25m / 80' cable, every half-cell probe is guaranteed for 5 years.



Part Number	TW331CUKIT	Copper/Copper Sulphate
	TW331AGKIT	Silver/Silver Chloride

Extension Cable 100m / 325ft

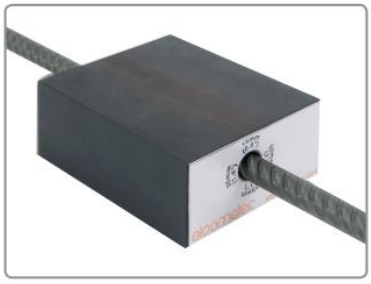
The extension cable for use with the half-cell kits gives the flexibility to take readings in difficult to reach areas.



Part Number	TW33119683

Verification Block

The verification block allows the user to check the calibration of their gauge in order to ensure maximum measurement accuracy.



Part Number	TW33119218

Extension Arm Kit

This kit allows the user to scan bridge decks and floor areas using the hand-held search heads from a standing position as both the standard or narrow pitch search head can be attached to the extension arm.



Part Number	TW33119222

Elcometer P500 Metal Box Locator



Although originally designed to accurately locate valve boxes and manhole covers, the Elcometer P500 can also be used as a general metal detector. It is straight forward to use and very rugged making it a popular choice in the market.

Detects metal objects to a maximum depth of 1m (39.4”), the Elcometer P500 has a number of key unique features:

- Manufactured from a single moulded design, in high impact ABS plastic, the Elcometer P500 stands up to a tough environment
- A balanced, lightweight unit with a single control button for ease of use
- Audio signal with headphone socket and an ultra-bright LED visual indicator identify when metal has been detected

Technical Specification

Part Number	Description
W500157F	Elcometer P500 Metal Box Locator
Overall Length	96cm (38”)
Search Head Diameter	21cm (8”)
Weight	1.1kg (2.5lb)
Power Supply	4 x 1.5V AA Cells or 4 x 1.5V NiMH Rechargeable Cells
Packing List	Elcometer P500 Metal Box Locator, 4x LR6 (AA) batteries, operating instructions

Approximate Detection Ranges

Typical Object Type	Metric	Imperial
Stop Top Box	50cm	19”
Fire Hydrant Cover	87cm	34”
Inspection Cover	95cm	37”

Metal Box Locator

The Elcometer P500 submits a strong, focused downwards search field ensuring the accurate location of objects, even when close to metal fencing and vehicles,

The metal box locator ignores any ghost signals from cigarette packets, drinks cans and other metallic waste materials, making your search more efficient.



Crack Width Ruler

Elcometer 143

This simple gauge is designed specifically to provide inspectors with a low cost alternative to a graduated microscope when determining the width of a crack in concrete or other building materials.

Similar in size to a standard credit card, this transparent gauge is marked with a range of graded lines. Each line is a specified width.

To use, position the gauge over the crack and identify which line is a similar width to the crack. Read off the width value.





Technical Specification

Part Number	Description
E143----1	Elcometer 143 Crack Width Ruler
Range	0.10 - 2.50mm / 0.004 - 0.100 inches

This section lists all Standards included in this catalogue. Current Standards are shown in orange and superseded Standards are shown in grey. For further information please see the catalogue introduction. For the most up to date information, please refer to our website.

Standard	Refrence	Elcometer Model	Page
AATCC			
AATCC Method 8	Washability & Abrasion	5750	19.9
ACI			
ACI 318	Concrete	331	22.6
ANSI			
ANSI INCITS 322	Washability & Abrasion	5135, 5155	19.10
ANSI/AWWA C 203	Porosity	280	10.5
ANSI/AWWA C 213	Porosity	266, 236	10.9, 10.12
ANSI/AWWA C 214	Porosity	280	10.5
AS			
AS 1580.108.2	Dry Film Thickness	121/4, 141	7.58, 7.60
AS 1580.408.4	Adhesion	107, 1542	9.23, 9.27
AS 1580.408.4	Dry Film Thickness	121/4	7.58
AS 1580.408.5	Adhesion	107, 1542	9.23, 9.27
AS 2331.1.3	Dry Film Thickness	211, 101	7.50, 7.52
AS 2331.1.4	Dry Film Thickness	456, 355	7.10, 7.45
AS 3894.1	Porosity	280, 266, 236	10.5, 10.9, 10.12
AS 3894.2	Porosity	270	10.3
AS 3894.3-A	Dry Film Thickness	211	7.50
AS 3894.3-B	Dry Film Thickness	456, 355	7.10, 7.43
AS 3894.4	Hardness	3092, 3101	20.5, 20.10
AS 3894.5	Surface Preparation	125	2.23
AS 3894.6-A	Surface Preparation	138, 138B, 138/2	2.39, 2.40, 2.43
AS 3894.6-C	Surface Preparation	142	2.48
AS 3894.6-D	Surface Preparation	138/2	2.43
AS 3894.9	Adhesion	107, 1542	9.23, 9.27
AS 3894.9	Dry Film Thickness	121/4	7.58
AS/NZS			
AS/NZS 1580.107.3	Wet Film & Powder	112, 115	6.5, 6.5
AS/NZS 1580.107.3	Wet Film & Powder	3236, 3238, 3230	6.3, 6.4, 6.6
AS/NZS 1580.108.1	Dry Film Thickness	211, 415	7.50, 7.39
AS/NZS 1580.108.1	Dry Film Thickness	456, 355, 311	7.32, 7.46, 7.43
AS/NZS 1580.204.1	Dispersion & Density	2020, 2050	14.3, 14.4
AS/NZS 1580.213.1	Film Application	Leneta	17.18
AS/NZS 1580.214.2	Viscosity	2354 cup 4 only	15.4
AS/NZS 1580.402.1	Elasticity & Deformation	1500, 1506	21.3, 21.4
AS/NZS 1580.403.1	Hardness	3000	20.6
AS/NZS 1580.403.2	Washability & Abrasion	5135, 5155	19.10
AS/NZS 1580.406.1	Elasticity & Deformation	1615	21.7
AS/NZS 1580.408.5	Adhesion	510, 506, 106	9.3, 9.12, 9.15
AS/NZS 1580.459.1	Washability & Abrasion	1720	19.3
AS/NZS 1580.601.3	Appearance	6085	13.14
AS/NZS 1580.602.2	Appearance	480	13.5
AS/NZS 4266.2	Washability & Abrasion	5135, 5155	19.10
ASME			
ASME B46	Surface Preparation	7061	2.24
ASTM			
ASTM B 244	Dry Film Thickness	355 (N1, N4)	7.45
ASTM B 499	Dry Film Thickness	456, 415	7.10, 7.39
ASTM B 499	Dry Film Thickness	355, 211, 101	7.46, 7.51, 7.52
ASTM B 648	Hardness	3101	20.10
ASTM C 1353	Washability & Abrasion	5135, 5155	19.10
ASTM C 1583	Adhesion	510	2.3
ASTM C 217	Washability & Abrasion	5135, 5155	19.10
ASTM C 241	Washability & Abrasion	5135, 5155	19.10
ASTM C 501	Washability & Abrasion	5135, 5155	19.10
ASTM C 523	Appearance	480	13.5
ASTM C 536	Porosity	266, 236	10.9, 10.12
ASTM C 537	Porosity	266, 236	10.9, 10.12
ASTM C 584	Appearance	480	13.5
ASTM C 609	Appearance	6085	13.14
ASTM C 805	Concrete	181	22.3
ASTM C 876-91	Concrete	331	22.8
ASTM D 1044	Washability & Abrasion	5135, 5155	19.10
ASTM D 1084-D	Viscosity	2210	15.10
ASTM D 1186-B	Dry Film Thickness	456, 355	7.10, 7.45
ASTM D 1186	Dry Film Thickness	415	7.39
ASTM D 1200	Viscosity	2351, 2435	15.5, 15.7
ASTM D 1210	Dispersion & Density	2020, 2050	14.3, 14.4
ASTM D 1212-A	Wet Film & Powder	3230	6.6
ASTM D 1212-B	Wet Film & Powder	3233	6.7
ASTM D 1316	Dispersion & Density	2070	14.5
ASTM D 1400	Dry Film Thickness	456, 415, 355	7.10, 7.40, 7.45
ASTM D 1455	Appearance	480	13.5
ASTM D 1475	Dispersion & Density	1800	14.6
ASTM D 1640-03	Film Application	3505	17.15
ASTM D 1653	Drying Time	5100	18.3
ASTM D 1655	Flash Point	6910	16.3 - 16.8
ASTM D 1737	Elasticity & Deformation	1500, 1506	21.3, 21.4
ASTM D 1792-06	Washability & Abrasion	1720	19.3
ASTM D 2197	Washability & Abrasion	5750	19.9
ASTM D 2198-02	Washability & Abrasion	1720	19.3
ASTM D 2200	Surface Preparation	128	2.12
ASTM D 2240	Hardness	3120	20.11
ASTM D 2244	Appearance	6085	13.14
ASTM D 2457	Appearance	480, 408	13.5, 13.10
ASTM D 2486	Film Application	Leneta	17.18
ASTM D 2485	Elasticity & Deformation	1500, 1506	21.3, 21.4
ASTM D 2486	Washability & Abrasion	1720, 1720 Tool 2	19.3, 19.6
ASTM D 2583	Hardness	3101	20.10
ASTM D 2794	Elasticity & Deformation	1615	21.7
ASTM D 2805	Film Application	Leneta	17.18
ASTM D 3206-08	Washability & Abrasion	1720	19.3
ASTM D 3278	Flash Point	6910	16.3 - 16.8
ASTM D 3359-B	Adhesion	107, 1542	9.25, 9.27
ASTM D 3359-B	Dry Film Thickness	121/4 Adhesion	7.58

Standards

Standard	Refrence	Elcometer Model	Page
ASTM D 3363	Hardness	3080, 501, 3086	20.3, 20.4
ASTM D 3389	Washability & Abrasion	5135, 5155	19.10
ASTM D 344	Film Application	Leneta	17.18
ASTM D 3450	Washability & Abrasion	1720, 1720 Tool 4	19.3, 19.6
ASTM D 3828	Flash Point	6910	16.3 - 16.8
ASTM D 3884	Washability & Abrasion	5135, 5155	19.10
ASTM D 4039	Appearance	480	13.5
ASTM D 4060	Washability & Abrasion	5135, 5155	19.10
ASTM D 4138-A	Dry Film Thickness	121/4, 141	7.59, 7.60
ASTM D 4147	Film Application	4361, 4360	17.8, 17.9
ASTM D 4212	Viscosity	2310, 2210	15.9, 15.10
ASTM D 4213	Washability & Abrasion	1720, 1720 Tool 5	19.3, 19.6
ASTM D 4213:92	Washability & Abrasion	1720 Tool 3	19.6
ASTM D 4400	Film Application	4270	17.6
ASTM D 4414-A	Wet Film & Powder	112, 115, 3236, 3238	6.3, 6.4
ASTM D 4417-A	Surface Preparation	125	2.23
ASTM D 4417-B	Surface Preparation	224, 123	2.16, 2.21
ASTM D 4417-C	Surface Preparation	122, 124	2.22, 2.23
ASTM D 4449	Appearance	480	13.5
ASTM D 4488	Washability & Abrasion	1720	19.3
ASTM D 4541	Adhesion	106, 508, 108	9.15, 9.19, 9.21
ASTM D 4541	Porosity	506, 510	9.3, 9.12
ASTM D 4787	Porosity	280, 266, 236	10.5, 10.9, 10.12
ASTM D 4828	Washability & Abrasion	1720, 1720 Tool 3	19.3, 16.6
ASTM D 4940	Inspection Kits	138 ASTM	12.15
ASTM D 5150	Film Application	Leneta	17.8
ASTM D 5162	Porosity	280	
ASTM D 5162-A	Porosity	270	10.3
ASTM D 5162-B	Porosity	266	10.9
ASTM D 5162-B	Porosity	236	10.12
ASTM D 5178	Washability & Abrasion	5750	19.9
ASTM D 522-A	Elasticity & Deformation	1510	21.5
ASTM D 522-B	Elasticity & Deformation	1500, 1506	21.3
ASTM D 523	Appearance	480, 408	13.5, 13.10
ASTM D 5420	Elasticity & Deformation	1615	21.7
ASTM D 5767	Appearance	480, 408	13.5, 13.10
ASTM D 6037	Washability & Abrasion	5135, 5155	19.10
ASTM D 6132	Dry Film Thickness	500	7.4
ASTM D 6279	Washability & Abrasion	5750	19.9
ASTM D 6441	Film Application	Leneta	7.18
ASTM D 7091	Dry Film Thickness	456, 355	7.10, 7.45
ASTM D 7091	Dry Film Thickness	465 IPC, 415	7.36, 7.39
ASTM D 7127	Surface Preparation	7062	2.24
ASTM D 7234	Adhesion	506, 106/6	9.12, 9.17
ASTM D 7234-12	Adhesion	510	9.3
ASTM D 7255	Washability & Abrasion	5135, 5155	19.10
ASTM D 7378-A	Dry Film Thickness	155	6.8
ASTM D 7378-C	Film Application	3550	17.12
ASTM D 823-C	Film Application	4340	17.3
ASTM D 823-E	Film Application	3505, 3520, 3525, 3530, 3540,3550, 3560, 3570,3580	17.10-17.15
ASTM D 891-B	Dispersion & Density	1800	14.6

Standard	Refrence	Elcometer Model	Page
ASTM E 1164	Appearance	6085	13.14
ASTM E 2387	Appearance	480	13.5
ASTM E 2501	Porosity	260	10.14
ASTM E 308	Appearance	6085	13.14
ASTM E 313	Appearance	6085	13.14
ASTM E 337-B	Climatic Testing	116	4.8
ASTM E 376	Dry Film Thickness	456, 355	7.10, 7.45
ASTM E 376	Dry Film Thickness	415, 311	7.40, 7.42
ASTM E 430	Appearance	480, 408	13.5, 13.10
ASTM E 502	Flash Point	6910	16.3 - 16.8
ASTM E 70	Surface Preparation	148	2.6
ASTM E 797	Material Thickness	MTG	8.4
ASTM E 96	Drying Time	5100	18.3
ASTM F 1319	Washability & Abrasion	1720	19.9
ASTM F 1319	Washability & Abrasion	1720, 1720 Tool 8	19.3, 19.6
ASTM F 1478	Washability & Abrasion	5135, 5155	19.10
ASTM F 1978	Washability & Abrasion	5135, 5155	19.10
ASTM F 362	Washability & Abrasion	5135, 5155	19.10
ASTM F 510	Washability & Abrasion	5135, 5155	19.10
ASTM G 12	Dry Film Thickness	456, 355	7.10, 7.45
ASTM G 12	Dry Film Thickness	211, 101	7.50, 7.52
ASTM G 6	Porosity	270	10.3
ASTM G 62-A	Porosity	270	10.3
ASTM G 62-B	Porosity	266	10.9
ASTM G 62-B	Porosity	236	10.12
BS			
BS 1344-11	Porosity	266	10.9
BS 1344-11	Porosity	236	10.12
BS 1881:201	Concrete	331	22.6
BS 1881:202	Concrete	181	22.3
BS 1881:204	Concrete	331	22.6
BS 1881-207	Adhesion	510, 506, 106/6	9.3, 9.12, 9.17
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BS 3900-C5-6A	Dry Film Thickness	211	7.50
BS 3900-C5-6A	Dry Film Thickness	456, 415, 355	7.10, 7.40, 7.45
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DIN 53167	Hardness	1538	20.12
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DIN 53162-2	Film Application	Leneta	17.18
DIN 53167	Hardness	1538	20.12
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DIN 53217-2	Dispersion & Density	1800	14.6
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What is the correct probe for each Coating/Substrate?

The table below shows common coating/substrate combinations. If you do not see your coating/substrate combination, please contact Elcometer to discuss your particular requirement.

Elcometer offers a free Test Sample Report. Contact us to arrange for our Technical Department to establish the most appropriate gauge for your process or application.

	SUBSTRATE									
COATING	Aluminium	Brass	Bronze	Copper	Steel	Magnesium	Stainless Steel	Titanium	Uranium	Zinc
Aluminium	-	-	-	-	F	-	-	-	-	-
Anodising	NF	-	-	-	-	NF	-	-	-	-
Brass	-	-	-	-	F	-	-	-	-	-
Bronze	-	-	-	-	F	-	-	-	-	-
Cadmium	-	-	-	-	F	-	-	-	-	-
Ceramic	-	-	-	-	F	-	-	-	-	-
Chrome (Hard)	NF*	-	-	NF*	F	-	-	-	-	-
Copper	-	-	-	-	F	-	-	-	-	-
Eloxal	NF	-	-	-	F	-	-	-	-	-
Epoxy	NF	NF	NF	NF	F	-	NF	NF	-	NF
Galvanising	-	-	-	-	F	-	-	-	-	-
Lacquer	NF	NF	NF	NF	F	-	NF	-	-	NF
Metal Spray	-	-	-	-	F	-	-	-	-	-
Molybenum Disulphide	-	-	-	-	F	-	NF	-	-	-
Nickel (Electroless)	NF*	NF*	-	NF*	F	-	-	-	-	-
Paint	NF	NF	NF	NF	F	NF	NF	NF	NF	NF
Plastic	NF	NF	NF	NF	F	NF	NF	NF	NF	NF
Plating	-	-	-	-	F	-	-	-	-	-
Rubber	NF	-	-	-	F	-	-	-	NF	-
Resist	-	-	-	NF	-	-	-	-	-	-
Tin	-	-	-	-	F	-	-	-	-	-
Varnish	NF	NF	NF	NF	F	-	-	-	-	-
Zinc	-	-	-	-	F	-	-	-	-	-

NF : use Non-Ferrous probe
F : use Ferrous probe
* : known sample required for calibration

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