
Software
Physical Test Equipment
Coating Inspection
Appearance
Concrete Inspection
ElcoMaster™
Dispersion
Washability
Density
Film Application
Climatic Testing
Dry Film Thickness
Wet Film Thickness
DOI
Gloss
Haze
Covermeters
Adhesion Testing
ElcoCalc™
Elasticity & Deformation
Fineness of Grind
Viscosity
Abrasion
Salt Contamination
Material Thickness
Surface Profile
Colour
Opacity
Concrete Hardness
Rebar Locators
Drying Time
Hardness
Viscosity
Pinhole & Porosity
Adhesion
Powder Thickness
Rspec
Industrial Metal Detection
elcometer®
inspection equipment

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Software



1

ElcoMaster™ data management software

Surface Preparation



2

Cleanliness, comparators & surface profile

Wet Film Thickness



7

Combs, wheels & pfund thickness

Dry Film Thickness



8

Digital, mechanical & destructive coating thickness

Inspection Kits



13

Powder, protective, automotive & industrial kits

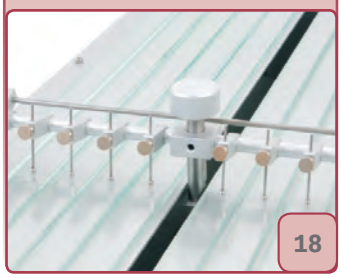
Appearance



14

Gloss, haze, DOI & colour

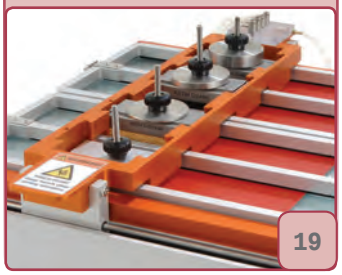
Drying Time



18

Permeability & linear drying time recorders

Washability & Abrasion



19

Linear & rotary abraders

elcometer®

Elcometer's product range follows the coating process from coating development to post application inspection. For more information please contact Elcometer.

Moisture & Corrosion Under Insulation



3

Digital moisture measurement & corrosion under insulation

Climatic Testing



4

RH, dewpoint & temperature

Oven Temperature Profile



5

Oven temperature data loggers

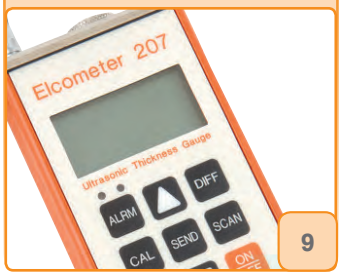
Powder Thickness



6

Non-contact powder gauge & powder combs

Material Thickness



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Ultrasonic thickness gauges

Adhesion



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Viscosity Cups



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Dip cups & flow cups

Rotational Viscosity



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Krebs & rotational viscosity

Film Application & Test Charts



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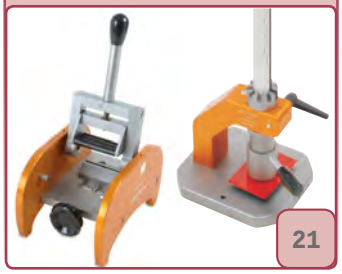
Hardness



20

Pencil hardness, clemen, shear & scratch testers

Elasticity & Deformation



21

Mandrel bend & variable impact testers

Concrete Inspection & Metal Detection

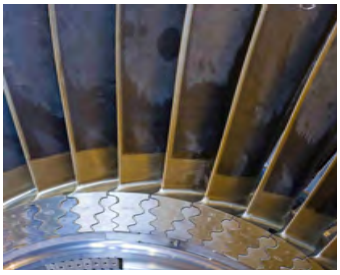


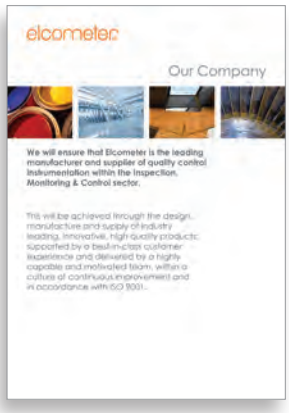
22

Covermeters, half-cell & rebar locators

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 and we take a responsible approach to environmental management.

Elcometer has a programme of continuous improvement to reduce our impact on the environment.

We adopt procedures to ensure:

- Relative legal requirements are met
- Environmental performance is monitored and reviewed
- Emissions to air, releases to water, or disposal of solid waste to landfill do not cause unacceptable environmental effects
- Our business is conducted in a way that respects our neighbours

For more than sixty five 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
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- 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's commitment to quality is reflected in our ISO 9001 Quality and ISO 14001 Environmental certifications.

It is the Company philosophy to integrate quality into all aspects of the product - whether it be the initial product design, the manufacture of our product or in our commitment to our customers.

Elcometer is committed to reducing its impact on the environment, including product manufacture, packaging, catalogue production and our waste management. All our products are lead and mercury free and, where required, CE and RoHS compliant.



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.

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Data Management Software











Coating inspection regimes require data to be collected on many of the parameters of the coating process: surface profile, surface cleanliness, climatic conditions, film thickness and adhesion. All of these inspections generate a large amount of data.

Elcometer have designed a series of data management software packages that will link directly with the data collection devices (gauges) and instantly produce professional reports, offering full traceability of the inspection proving compliance to the relevant standard being followed.

Our free software package, ElcoMaster™ is the most flexible data management software on the market. Designed to meet the demanding needs of the quality inspector whilst offering the ultimate flexibility for managing data into 'projects' for ease of use.

Producing professional reports is easily achieved using the standard report templates within the software package or by using the customisation options to produce customer specific reports.

Making full use of data transfer technology - Bluetooth® and Cloud applications, Elcometer provides fast and efficient means of transferring and sharing data and allows fully comprehensive project reports to be generated.

Any document (even hand written notes) can be scanned, converted to .pdf and then stored in the project file within ElcoMaster™.

For those users wanting to transfer data into other software applications ElcoMaster™ can be configured to export data directly, there is no need to use the data management aspect of the software.

As with our gauges this software is dynamic in that Elcometer are always adding new features as our customers require them.

Updates to the software are freely available over the internet and it is also possible to upgrade our inspection gauges when they are connected to ElcoMaster™.

ElcoMaster™ is the complete solution.

ElcoMaster™
data management software

Data Management Software

ElcoMaster™ is a fast, easy to use software and mobile app for all your data management, reporting and quality assurance needs.

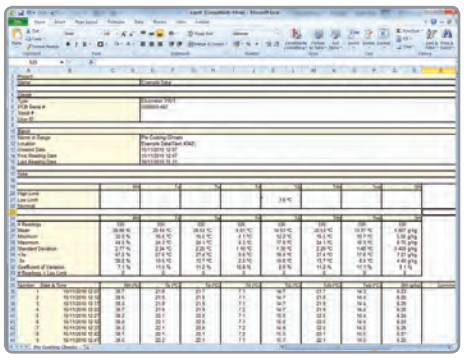
It's not just taking measurements but what you do with the collected data that matters.

What ElcoMaster™ can do:

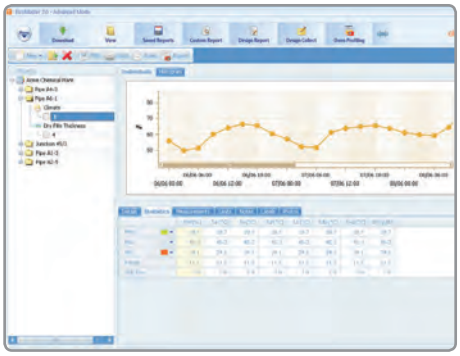
- Import and combine measurements via Bluetooth® or USB from a full range of Elcometer gauges, including;
  - Surface Profile
  - Salt Contamination
  - Climatic Conditions
  - Oven Data Logging
  - Coating Thickness
  - Corrosion Thickness
  - Adhesion Testing
  - Gloss Measurements
- No need to learn different software for different gauges, all Elcometer products use the same expert platform
- Store data in a simple file tree, by project and 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.



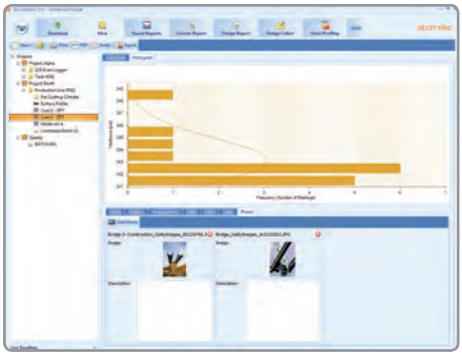
Easy to connect
Using ElcoMaster's™ gauge wizard, connecting a gauge & downloading data (via Bluetooth® or USB) is fast and easy



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



Data can be stored in a simple file tree, by project and by inspection type.



Add photographs and notes to your reports.

ElcoMaster™
data management software

As inspectors can spend up to 30% of their work week producing reports, ElcoMaster™ saves time and money by producing professional bespoke reports in seconds - even when out on site.



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

- Generates 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) together with images, notes and other project specific information in bespoke quality reports to set you apart from the competition.
- In many industries multiple sites/locations/ production lines are used to fabricate the product components which are brought together at the final assembly line. Different inspection parameters all need to be combined to approve the final product. Using Cloud technology ElcoMaster™ gives you real time quality control monitoring inspection projects in any location.

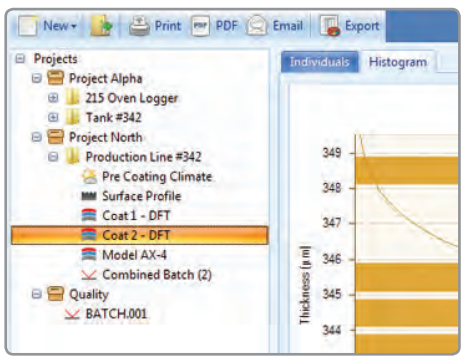
Import existing reports
Scan your existing report into ElcoMaster™ and drag & drop all your data where you want it, then simply save and print

Cloud
Multi-site access through secure cloud computing





Using the Report Designer within ElcoMaster™, measurements can be quickly displayed on an image or drawing.



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



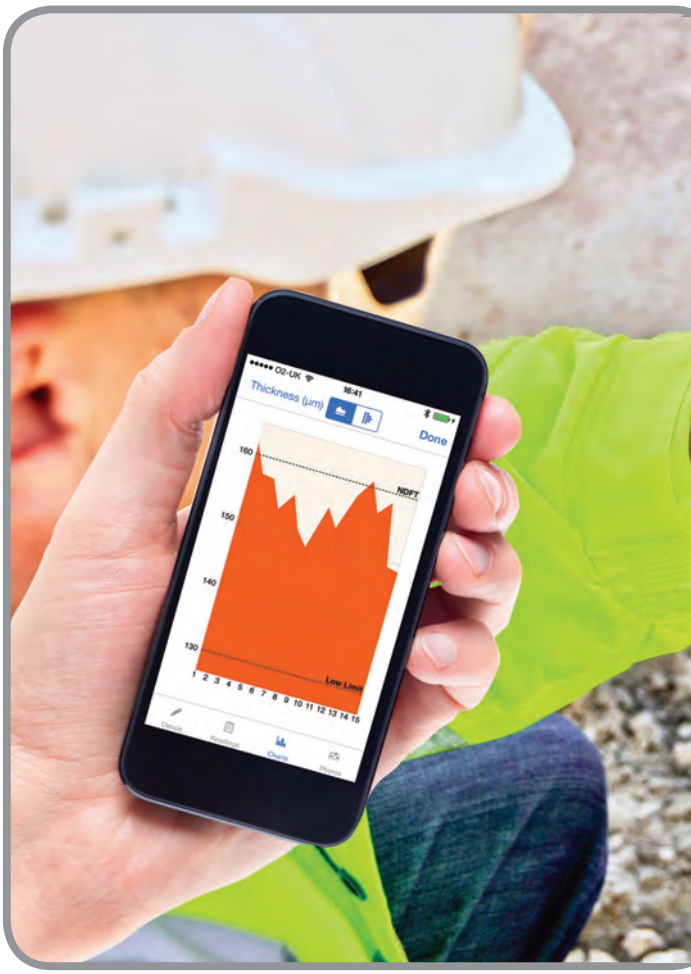
Generate .pdf reports combining all your inspection data and share via email or the cloud at the click of a button.

ElcoMaster™
data management software

Data Management Software

ElcoMaster™ Mobile App brings the office to where you are.

You can connect Elcometer Bluetooth® enabled inspection gauges directly to iPhone, iPad and iPods or Android™ mobile phones and tablets via ElcoMaster™ Mobile App.



When out in the field or on site, you can review data instantly using our free ElcoMaster™ Mobile App. Press 'Generate PDF' and watch the ElcoMaster™ 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.

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

ElcoMaster™ Mobile App shares many features of ElcoMaster™ for PC:

- Download batches from Elcometer Bluetooth® enabled gauges
- Add notes, photographs and diagrams
- Pdf.[1] and email reports
- Using the phone's GPS[2] feature, add this data to batch files
- Use collection batch measurement location points on photos or images to indicate to users where each measurement needs to be taken

[1] Available on iOS devices only



Bluetooth®

- Surface Profile
- Salt Contamination
- Climatic Conditions
- Coating Thickness
- Corrosion Thickness
- Adhesion Testing
- Gloss Measurements

ANDROID APP ON Google play

Download on the App Store

ElcoMaster™
data management software

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.





Connect
Connect gauge via Bluetooth® to phone to see live readings directly on the phone and save them into batches.



Review
Review average, maximum and minimum readings instantly.

Analyse
Analyse data via sequential readings, statistics, charts & histograms or on images.



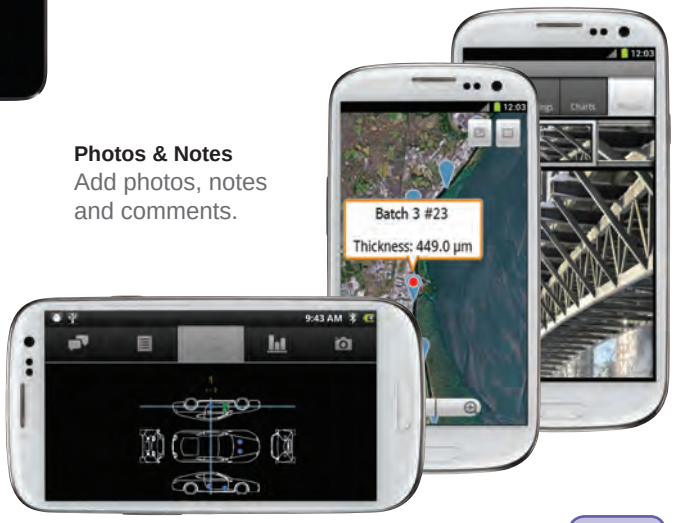
Manage & Print
Store all data; dry film thickness, surface profile, climate and manual reports in easy to manage folders.

Send
Email inspection data from a mobile device to a PC for further analysis and reporting or transfer data via the Cloud.

Cloud

Email

GPS
Store GPS locations in batches and view location on Google Maps[2].

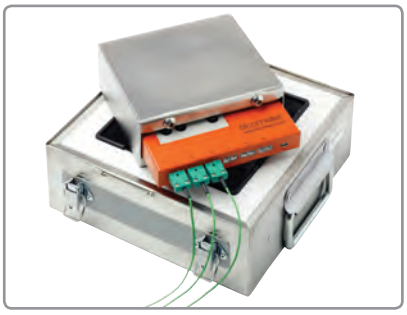


Photos & Notes
Add photos, notes and comments.

[2] Available on Android™ only

Elcometer 215

Oven Data Logger



High Temperature Barrier Kit
Themal barrier & heat sinks for longer time at temperature



Standard Thermal Barrier Kit
With thermal barrier - ideal for single runs

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:

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.

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

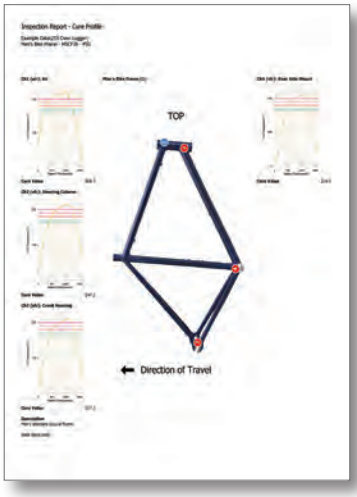
Product Probe Maps - Simply drag and drop up to 6 probe ID markers on to your product photo or drawing to record exact probe placement for each production run.

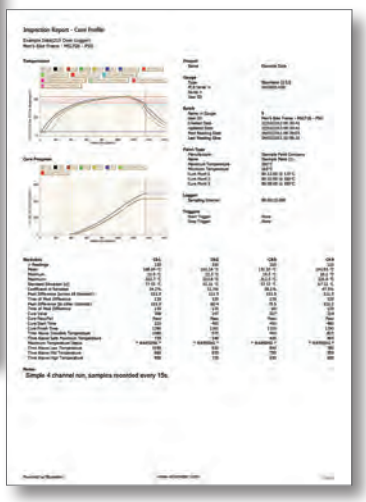
Customisable Templates - Create your own comprehensive inspection profile - simply choose a relevant gauge setup, paint parameter and product probe map from your library and assign them to your logger data, providing instant, meaningful and professional reports.

Elcometer Cure Value - Using the industry accepted cure value calculation ElcoMaster™ 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.







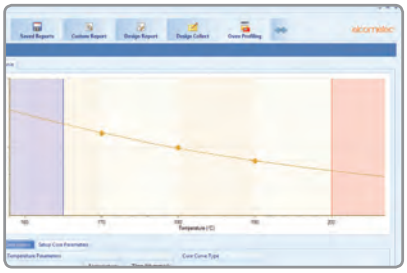
Oven Data Logger

Elcometer 215

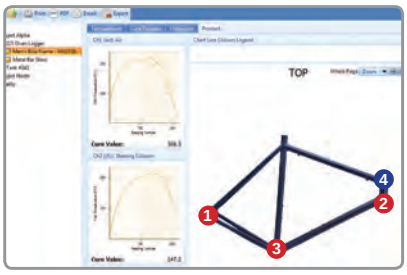
ElcoMaster™ Software Oven Profiling Key Features	
Oven Logger set up & programming	■
Paint/Powder parameter library	■
Product probe maps	■
Fully customisable inspection templates	■
Selectable probe/channel traces	■
Statistical analysis by probe/channel Max, Min, standard deviation, coefficient of variation	■
Temperature profile, cure progress, histogram & individual cure value graphs against product	■
Time at temperature, time of peak difference	■
Time above maximum absolute & minimum cross link temperatures	■
Fully customisable inspection reports	■
Combined reports - coating thickness, gloss, adhesion, profile, climate, surface cleanliness	■
Report generator wizard & PDF generator	■
Email or export data	■
Import photo's, data sheets, critical data, inspection notes, etc & include on inspection reports	■
Cloud computing - allows for cross site collaboration, including internal text messaging tool	■
Overlay temperature profiles, review and compare multiple oven profiles over time	■



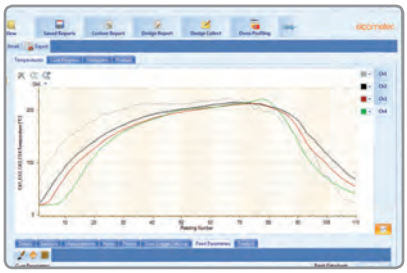
Create and store unique oven profile setups and transfer them to the gauge.



Set up a library of individual paint parameters.



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



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



Statistical analysis by probe/channel.

ElcoMaster™ data management software

How ElcoMaster™ Works

The different ways ElcoMaster™ can help you do your job better

ElcoMaster™ has been designed to be a very intuitive method of developing professional reports, it is however extremely versatile. Here are just a few ways ElcoMaster™ can be used in day-to-day activities of a coating professional.

1. Gauge to PC to Excel



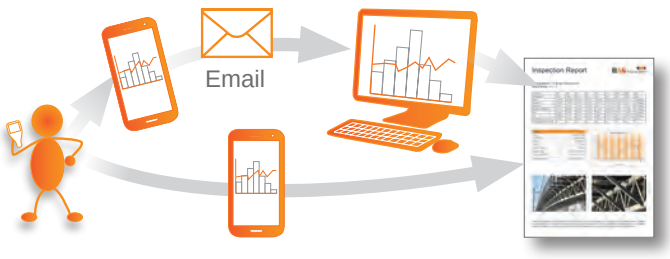
Transferring inspection data straight into Microsoft Excel via Bluetooth® or USB is simple and easy.

2. Gauge to PC data transfer into ElcoMaster™



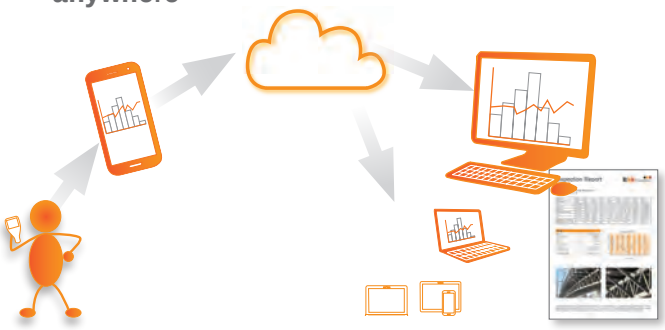
Using Bluetooth® or USB, ElcoMaster™ transfers inspection data in seconds, archiving data and generating reports at the click of a button.

3. ElcoMaster™ Mobile App for immediate data transfer from the site to the office



Transfer inspection data straight to mobiles and tablets via Bluetooth® when on site for instant analysis, generate .pdf reports[1] and email them back to the office for storing, review and QA reporting.

4. Upload to a cloud for real time analysis anywhere



Using ElcoMaster™ Mobile App you can upload inspection data, photos, notes and GPS coordinates direct to a Cloud[2] account of your choice via 3G/4G or WiFi.

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

5. Seamlessly link multiple sites or production lines



ElcoMaster™ gives you real time quality control monitoring from multiple inspection projects in any location.
You can compare and combine inspection data from different production lines or different locations, to produce specific Project Inspection Reports quickly and easily.

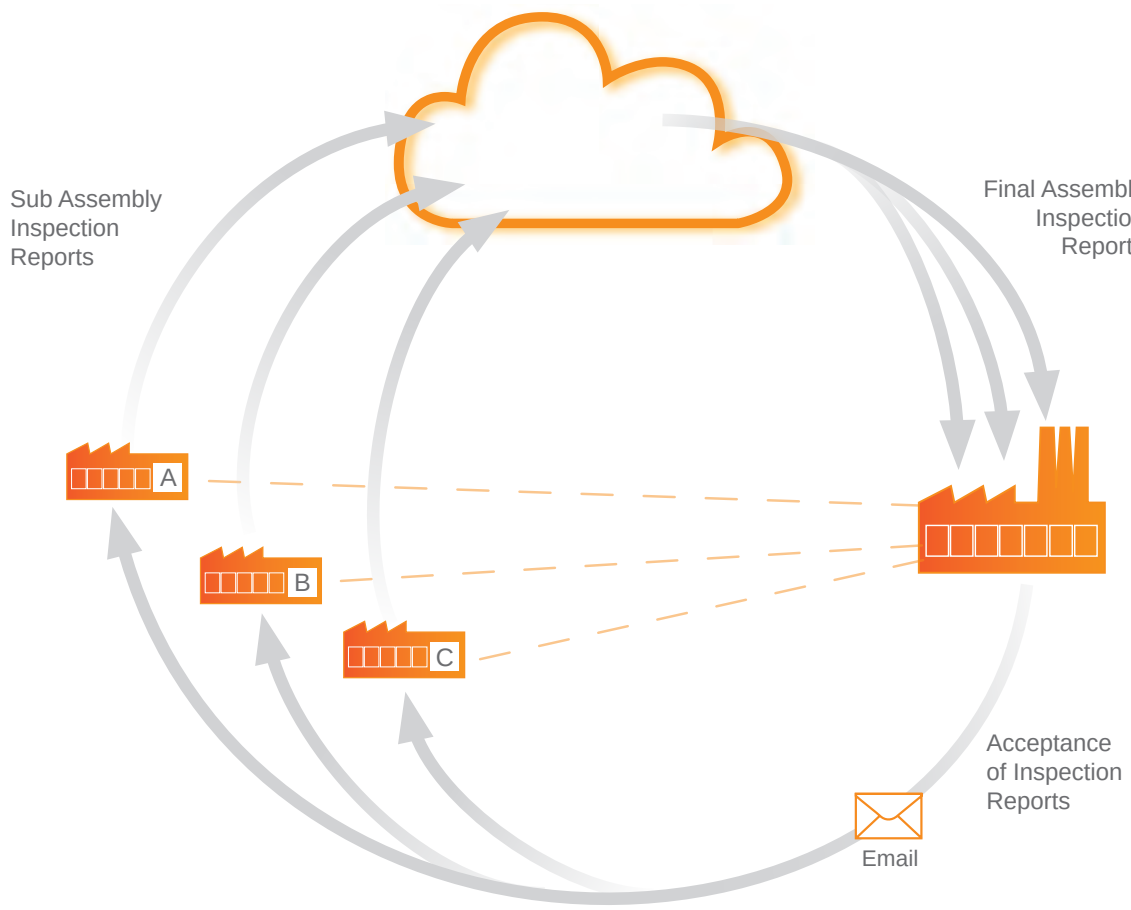
[1] Available on iOS devices only

[2] Available on Android™ only

How ElcoMaster™ Works

ElcoMaster™ data management software

6. Real time collaboration for multi-site projects



Real time collaboration for multi-site projects
When working with manufacturers of sub-assemblies across the globe ElcoMaster™ 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.
- Have multi-site collaboration, real time dialogue and decision making to improve efficiency and quality throughout the production process.

Real time communication
Featuring instant messaging the ElcoMaster™ Mobile App lets you add messages to inspection data, projects and files, allowing you to immediately discuss key points with your colleagues, managers or clients, send work instructions and store messages within the project file.

Your data - your choice - your control
ElcoMaster™ allows you to decide which Cloud service provider to use. It is your data, it is secure as only approved users can have access, no third parties can see your data.
ElcoMaster™ Mobile App is compatible with a range of cloud service providers and FTP servers including:

works with Google Drive FTP server Dropbox

ElcoCalc™ Mobile App

Google play

Download on the App Store

Viscosity Cup Converter & SCM 400 Adjusted Measurement Calculator App

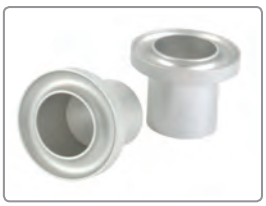
Fast and easy to use, ElcoCalc™ instantly converts viscosity cup flow time in seconds into Centistokes (cSt). In addition this software calculates the adjusted measurement for the Elcometer SCM 400 Salt Contamination Meter when used with Elcometer 130 High Purity Filter Papers in µg/cm².

Viscosity Cup Converter



SCM 400 Adjusted Measurement Calculator





Elcometer 2350, 2351, 2352, 2353, 2354
Viscosity Flow Cups



Elcometer 2210
Zahn Viscosity Dip Cups

Adjusted measurements explained:

If the Elcometer 130 High Purity Filter Papers are used with the Elcometer SCM 400 the reading should be corrected using the formula: $y = 0.95x - 0.4$ where y is the cleanliness value in µg/cm² and x is the Elcometer SCM 400 meter reading in µg/cm². Option to apply the temperature compensation of 1.7% per °C.

By using ElcoCalc™ it automatically calculates the correct reading.



Elcometer 2434, 2435, 2436, 2437
Frikmar Viscosity Dip Cups



Elcometer 2310
Shell Viscosity Dip Cups



Elcometer SCM 400
Salt Contamination Meter



Elcometer 130
Salt Contamination Meter with High Purity Filter Papers

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.

Android™ is a trademark of Google Inc.
iOS is a trademark or registered trademark of Cisco in the U.S. and other countries and is used under license.
iPhone, iPod, iPod touch, iPad and App Store are trademarks of Apple Inc., registered in the US and other countries.



Surface Preparation

Surface Profile & Surface Cleanliness

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 utilising a weld comparator and weld gauges measure a range of quality parameters.

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.

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:

Technical Specification

	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 waterjetting
	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.

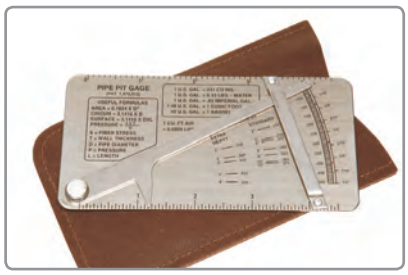
Pit Gauge

Elcometer 119

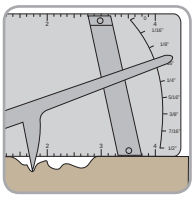
The Elcometer 119 Pipe Pit Gauge is a pocket size gauge designed to identify the condition of a pipe.

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

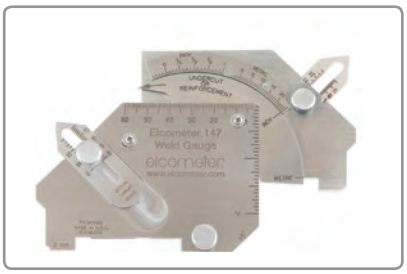
Part Number	Description
E119-----	Elcometer 119 Pipe Pit Gauge
Range	0 - 500mils (0 - 0.5”)
Graduation	10mils and 1/16”
Dimensions	68 x 133 x 4mm (21 x 5.25 x 0.18”)
Weight	227g (8oz)

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

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 of 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

Elcometer 138/2

pH Test Strips



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 affect.

Technical Specification

Part Number	Description
T13820562	100 x pH Test Strips



For Chloride Ion Test Kits for surfaces see page 2-30

pH Tester

Elcometer 148

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
- ºC / ºF 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.







STANDARDS:
ASTM E 70

Technical Specification

Part Number	Description	
H148----1	Elcometer 148 pH Tester	
	pH	Temperature
Range	0 to 14pH	0 to 89ºC (32 to 192ºF)
Resolution	0.01pH	0.1ºC (0.1ºF)
Accuracy	±0.03pH	±0.5ºC (±1ºF)
Battery	4 x AAA batteries	
Calibration	3 point at 7pH, 4pH and 9pH	
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

Elcometer 134A

Chloride Ion Test Kit for Abrasives



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		

Elcometer 134W

Chloride Ion Test Kit for Water



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 2-30

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	0-160 psi		
Dimensions	130 x 55 x 26mm (5.12 x 2.16 x 1.02")	Weight	184g (6.49oz)
Packing List	Elcometer 102 Needle Pressure Gauge, pressure gauge guard, spare hypodermic needle, protective pouch and operating instructions.		

Blast Nozzle Gauge

Elcometer 103

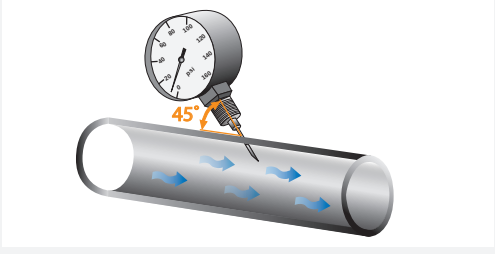
The Elcometer 103 Blast Nozzle Gauge measures the orifice size of an abrasive blasting nozzle. This gauge is used to determine the nozzle orifice wear which leads to low nozzle pressure and decreased efficiency in the performance of the nozzle's venturi. Nozzle orifice wear results in decreased productivity and increased abrasive media consumption.



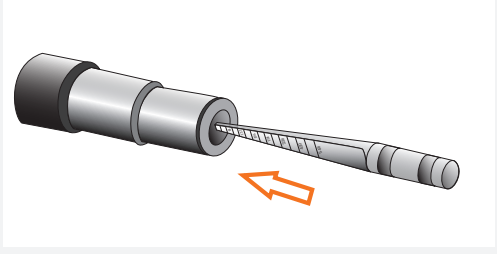
Technical Specification

Part Number	Description		
E103----A	Elcometer 103 Blast Nozzle Gauge		
T10323558	Replacement Wax/Grease Pencil (Pack of 12)		
Measuring Range	1/4 - 5/5" (81-548 CFM)		
Dimensions	200 x 19mm (7.87 x 0.75")	Weight	150g (0.67oz)
Packing List	Elcometer 103 Blast Nozzle Gauge, wax/grease pencil (inside gauge), protective pouch and operating instructions.		

How to use a Needle Pressure Gauge



How to use a Blast Nozzle Gauge



Elcometer 224 Digital Surface Profile Gauge

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



Stores up to 150,000 readings in up to 2,500 alpha numeric batches

Time and date stamped measurements

Accurate, immediate and repeatable results

User replaceable tough tungsten carbide tips

Integral & separate probe options for flat and convex* surfaces

Auto rotating display with tap awake feature

Dust and water resistant rugged design equivalent to IP64



2.4” colour screen provides enhanced reading visibility at all angles



Ergonomic design for comfort during continuous use



Integral or separate probes measure profiles up to 500µm (20mils) on flat or curved surfaces*

Digital Surface Profile Gauge

Elcometer 224

compatible with ElcoMaster™

available with Bluetooth® wireless technology

Suitable for use in Cloud Computing

Measures on flat and convex surfaces

Fast reading rate of 50+ readings per minute^

Review batch data or last 20 readings in a graph format



USB and Bluetooth® data output to ElcoMaster™ software, see page 1-2



Android™

Made for iPod iPhone iPad

The Elcometer 224 provides the very latest in surface profile measuring technology for measuring profile on either flat or curved surfaces. Fast, accurate and very user friendly, the Elcometer 224 is available with or without memory and Bluetooth®.

* Patent applied for

^ Convex probe up to 25 readings per minute

Elcometer 224 **Digital Surface Profile Gauge**

Designed with you in mind

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

- Measurement capability to ±5%
- 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
- 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* or Android™ devices
- Stores up to 150,000 readings in 2,500 batches
- Measures profiles up to 500µm (20 mils)



*Compatible with iPod, iPhone and iPad.

Digital Surface Profile Gauge

Elcometer 224

Product Features

	Model B	Model T
Fast, accurate reading rate; *50+ 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 back light*	■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*	■	■
Large positive feedback buttons	■	■
Flat & convex surfaces*	■	■
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 mode	■	■
Gauge software updates[1]; *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, *COV*	■	■
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	■#	■
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		■

■ Standard □ Optional ‡ Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.

[1] Internet connection required # Up to the last 5 readings can be deleted * Patent applied for ^Up to 25 readings per minute for the convex probe

† The Elcometer 224 is extendable within 60 days from date of purchase, free of charge, to 2 years via www.elcometer.com.
Elcometer 224 probes are covered by a 1 year warranty.

Elcometer 224 Digital Surface Profile Gauge

Model Options			C
Part Number		Description	Certificate
Integral Gauge	Separate Gauge^		
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#	
Minimum Headroom	Integral:	185mm (7.3")
	Separate:	See page 2-13
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*: ±5% or ±5µm (±0.2mil); Resolution: 1µm (0.1mil)	
Packing List†	Elcometer 224 gauge, glass zero tile†, 2 x calibration foils†, wrist harness, plastic transit case (T), protective case, screen protector, probe protection cap†, 2 x AA batteries, test certificate, operating instructions, USB cable (T) & ElcoMaster™ software (T)	

Elcometer Digital Inspection Kits



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™ Data Management Software for professional reporting and analysis.

For more information see page 13-2.

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)

* Whichever is the greater

^ Probes are supplied separately, see page 2-13 for details

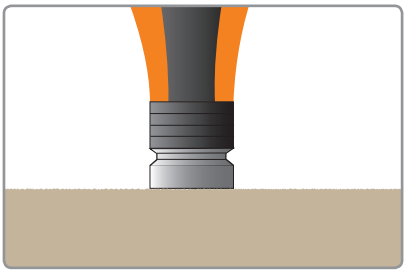
Using default settings & lithium batteries, alkaline or rechargeable batteries may differ.

† For separate gauges, the test foils, glass zero tile and probe protection cap are supplied with the separate probe.

● Test Certificate supplied as standard.

Digital Surface Profile Probes

Elcometer 224



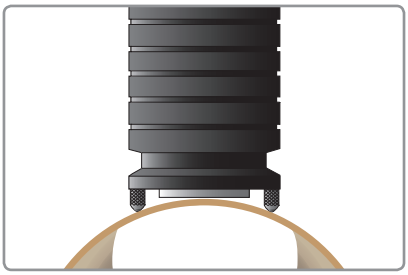
Flat Surface Profile Probes
Supplied with either standard cables or armoured metal reinforced heavy duty cables, Elcometer surface profile probes are supplied with a glass zero plate, calibration test foils; nominal values 125µm (5.0mils) & 508µm (20mils) and an Elcometer test certificate.



Technical Specification C

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 C

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® Adaptor (V2.0+) - for PC’s without Bluetooth®
T99922341	T99922341	Self Adhesive Screen Protectors (x10)
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

* Patent applied for

Elcometer 123

Surface Profile Gauge



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 223 and Elcometer 224.

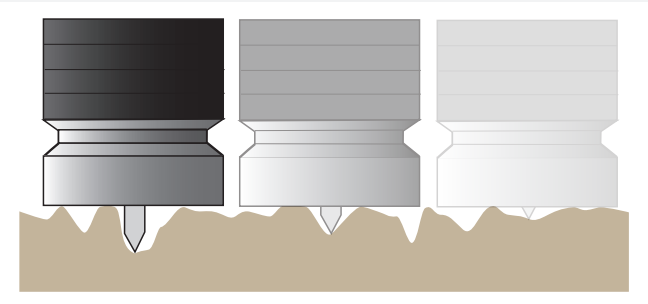
- Metric and Imperial versions available

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

Technical Specification C

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 (0.1 mil)
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		

How to measure 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.

○ Optional Calibration Certificate available.

Testex® Replica Tape

Elcometer 122

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.



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

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

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, BS 7079-C5, ISO 8503-5, NACE RP0287, US Navy NSI 009-32, US Navy PPI 63101-000

Technical Specification

C

Part Number	Description	Range	Dimensions	Weight	Scale Resolution	Certificate
E124---3M	Elcometer 124 Metric	5mm	125 x 95 x 25mm	270g	2µm	○
E124---3E	Elcometer 124 Imperial	0.2”	4.9 x 3.6 x 1.0”	9.6oz	0.1mil	○

○ Optional Calibration Certificate available.

Elcometer 125

Surface Comparators



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

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

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

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	

Rubert & Rugotest Surface Comparators

Elcometer 129

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

Elcometer 7061

MarSurf PS1 Surface Roughness Tester







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

The Elcometer 7061 is a light weight 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.

Measurements of Surface Roughness are expressed in terms of Ra, Rz or Rt. 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

Technical Specification

Part Number	Description	Certifcate
K7061M001	Elcometer 7061 MarSurf PS1 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	Ra, Rq, Rz equiv. to Ry (JIS), Rz (JIS), Rmax, Rp, Rp (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr equiv. to Tp (JIS, ASME), RSm, R, Ar, Rx	
Measuring Range	0-350µm (0-13.78mils) Resolution 8nm-32nm (0.315-1.260mils)	
Filter	Phase-correct profile filter (Gaussian filter) according to DIN EN ISO 11562, special filter according to DIN EN ISO 13565-1, ls filter according to DIN EN ISO 3274 (can be disabled)	
Cutoff (lc)	0.25mm, 0.8mm, 2.5mm; automatic (0.010”, 0.030”, 0.100”)	
Traversing Length(Lt)	1.75mm, 5.6mm, 17.5mm; automatic (0.069”, 0.22”, 0.69”)	
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 5 sampling lengths	
Memory Capacity	Max. 15 profiles, max. 20,000 results	
Battery	Rechargeable battery 100V to 264V power supply	
Dimensions	140mm × 50mm × 70mm (5.51” × 1.97” × 2.76”) Weight 400g (0.88lbs)	
Packing List	Elcometer 7061 MarSurf PS1 base unit, drive unit, 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.

* Other stylus pick-ups are available

MarSurf PS1 Surface Roughness Tester

Elcometer 7061

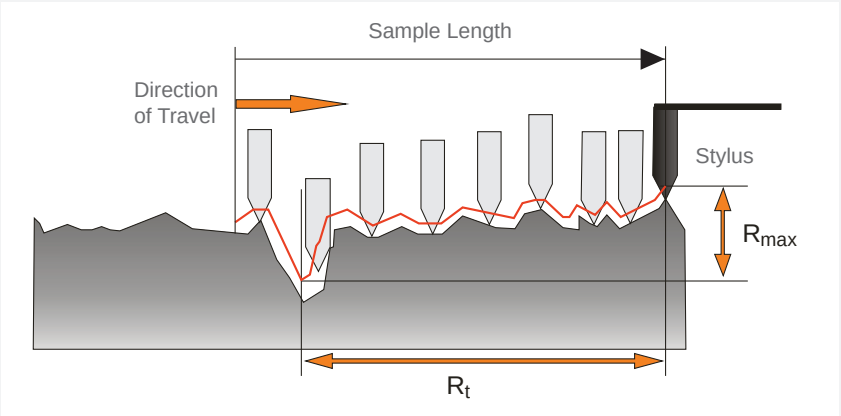
Accessories

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 7061 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
KT007061P016	**MarSurf PS1 Explorer Evaluation Software** Available as an optional accessory PS1 Explorer Evaluation Software allows the Elcometer 7061 to be connected to a PC or laptop; using the USB cable supplied to document protocol profiles, results, statistics and to print out all your measurement results.

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

Elcometer 130

STANDARDS:
SSPC Guide 15

Salt Contamination Meter

The Elcometer 130 quickly and accurately measures the level of soluble salts on surfaces nearly 5 times faster than Bresle equivalent test methods.

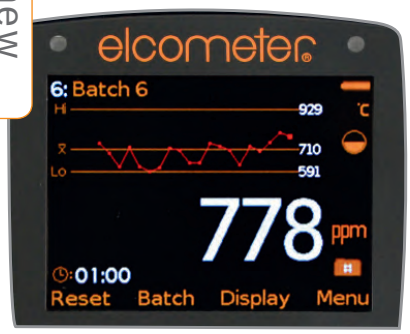
Android™



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

Fully portable hand-held, ergonomic design ideal for use in the field

new

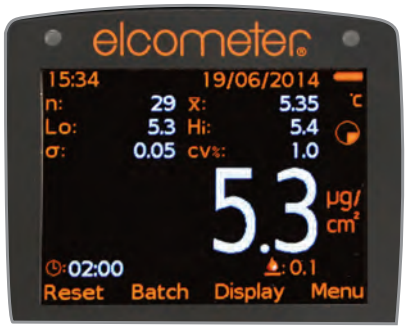


On-screen run graph shows last 20 measurement values

Pressure plate ensures a constant and uniform pressure to paper

Automatic detection of paper size and automatic adjustment of reading value





Offset calibration allows use of non-pure water

Dust and water resistant rugged design equivalent to IP64

USB and Bluetooth® data output to ElcoMaster™ software, see page 1-2

Salt Contamination Meter

Elcometer 130

compatible with ElcoMaster™

available with Bluetooth® wireless technology

Suitable for use in Cloud Computing

Measures on flat and convex surfaces

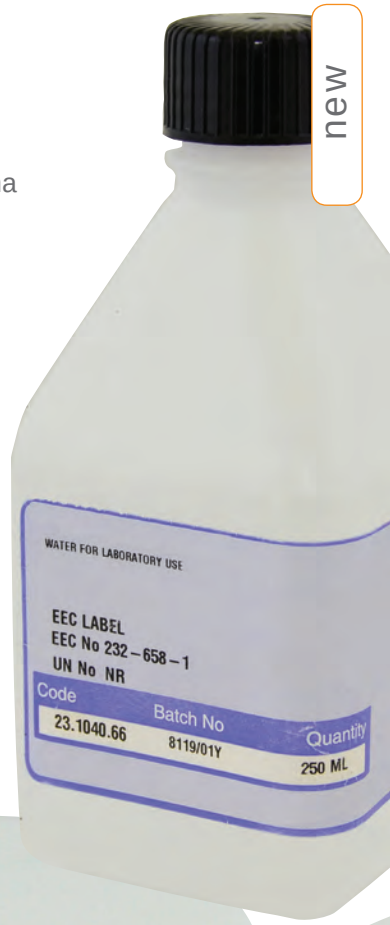
Automatic temperature compensation ensures accurate results

Fast reading rate allows multiple tests to be completed efficiently

Non-oxidising gold plated contacts ensures lifetime accuracy

Stores up to 150,000 readings in 2,500 alpha numeric batches







Elcometer 130 **Salt Contamination Meter**

Designed with you in mind

User Friendly

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

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

new

Reliable

- Repeatable and reproducible measurements
- 2 year gauge warranty
- Supplied with fully traceable Test Certificates
- Batch & individual readings are stored with date and time stamp, temperature and size of test paper



Calibration Verification Tiles available for verifying the accuracy of the gauge

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

Efficient

- Instant readings allows multiple tests to be completed efficiently
- Alpha numeric batch identification
- Compatible with ElcoMaster™ and ElcoMaster™ Mobile App
- Powersave mode with 'tap awake' feature
- Calibration offset allows the use of non-pure water up to 2µg/cm²

Powerful

- Measuring range up to 50µg/cm² (3000ppm)
- USB and Bluetooth® data output
- Stores up to 150,000 readings in 2,500 batches
- Soluble salt and conductivity meter in one gauge



Supplied in a robust carry case

Salt Contamination Meter

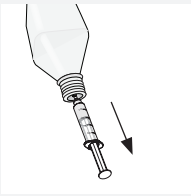
Elcometer 130

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 back light*		■	■
Scratch & solvent resistant display; *2.4" (6cm) TFT*		■	■
2 year gauge warranty*		■	■
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		■	■
Automatic paper size detection (full, half & quarter size)		■	■
Gauge software updates; *via ElcoMaster™ software*		■	■
Data output		USB	USB & Bluetooth®
On screen statistics			■
Number of readings, *n;* Mean (average), $\bar{x}$ *;* Standard deviation, σ; Highest reading, *hi;* Lowest reading, *lo;* Coefficient of variation, *COV;* Number of readings above high limit			■
Gauge memory			■
Number of readings			150,000
Number of batches			2,500
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			■
ElcoMaster™ software & USB cable		□	■
Individual reading stored with date, time, temperature and paper size			■
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			■

*The Elcometer 130 is extendable within 60 days from date of purchase, free of charge, to 2 years via www.elcometer.com

Elcometer 130 Salt Contamination Meter

How to use a Salt Contamination Meter

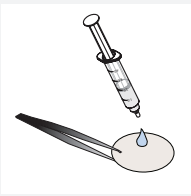


Fill the syringe with 1.6 ml of high purity water.

Note: Non-pure water (up to 2µg/cm²) can be automatically offset with the gauge.



After 2 minutes, remove the paper from the surface and place it on to the gold-plated electrodes.

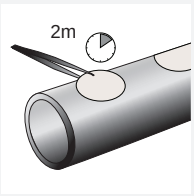


Eject the 1.6ml on to a clean unused sample paper, taking care to retain all the water on the paper.



Close the lid, ensuring that the magnetic catch is fully engaged.

The reading will automatically be displayed and stored into memory together with paper size, temperature, date and time.



Place wetted paper on to the area under test, pressing firmly into contours and irregularities to remove any entrapped air. Start the timer on the gauge.

Whilst waiting for the sample time to elapse, additional tests can be prepared.



Half size or quarter size papers can be used for testing on small surfaces.

Paper size is automatically detected by the Elcometer 130 and the reading calculated automatically.

Technical Specification C

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	0-10µg/cm² 10-25µg/cm² 25+µg/cm²	0.1µg/cm² 0.2µg/cm²	0.1µg/cm² 0.2µg/cm² 0.5µg/cm²	
Measurement Accuracy	±1% of reading ±0.1µg/cm²			
Operating Range	5°C - 50°C (41°F - 122°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	100mm (4.3") circle, or part of	
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 water, 20 x PVC storage bags, disposable gloves, sensor wipes, 3 x 2.5ml (0.08fl oz) syringes, 2 x plastic tweezers, 4 x AA batteries, shoulder strap, carry case, test certificate and operating instructions, USB cable (T), ElcoMaster™ software (T)			

Accessories

T13023980	Calibration Verification Tiles, Set of 3	T13024094	Box of 100 High Purity Test Papers
T13024091	2.5ml / 0.08fl oz Syringe (x3)	T13024092	Box of 20 Disposable Vinyl Gloves
T99922341	Pack of 10 Display Screen Protectors	T13024098	Plastic Tweezers (x2)
T13024093	Box of 20 Self Seal Polythene Bags	T13024087	Box of 72 Sensor Wipes
T99911344	Pure Water - 250ml (8.5fl oz) Bottle	T99921325	USB Cable

● Calibration certificate supplied as standard

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 cartridge type sensor 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

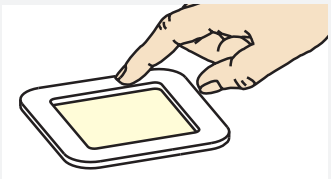
Technical Specification

Part Number	Description		
E138-1	Elcometer 138 Bresle Salt Kit		
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 (for Elcometer 138 see page 2-27 for full specification)		
Dimensions	300 x 220 x 75mm (11 x 8.6 x 3”)	Weight	2.1kg (4.62lb)
Packing List	Box of 25 Bresle patches, Elcometer 138 Conductivity Meter, 14ml (0.5fl 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 water, 3 x 5ml (0.1fl oz) syringes, 3 x blunt needles, 30ml (1fl oz) plastic beaker, 2 x CR2032 batteries, carry case and operating instructions		

Accessories

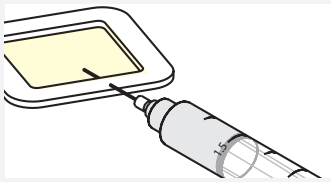
E135----B	Bresle Patches (Box of 25)	T13818519	Plastic Beaker 30ml (1fl oz)
T13818517	3 x 5ml (0.1fl oz) Syringes	T13823926	Calibration Solution 1.41 mS/cm 14ml (0.5fl oz) bottle
T13818518	3 x Needles	T99911344	Pure Water 250ml (8.5fl oz) Bottle

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



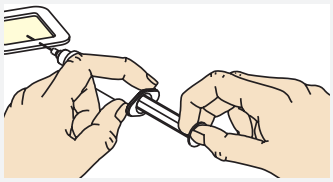
Remove protective backing and foam centre from the patch.

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.



Insert 3ml of deionised water from the syringe into the patch through its foam perimeter, at a 30° angle, so that it passes through the foam into the test compartment.

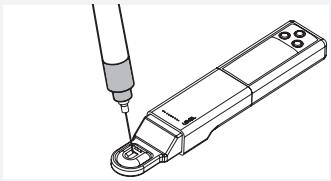
Inject 1.5ml of water into the test compartment.



Reposition the needle and remove the remaining air within the compartment.

Remove the needle and syringe and hold the syringe with the needle pointing upwards and expel the air.

Insert the syringe needle into the patch and inject the remaining water.



Withdraw and pull the solution back into the syringe and re-inject back into the patch.

Repeat at least four times and then 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 2-27.

Elcometer 135A

Bresle Samplers



The Elcometer 135A Bresle Sampler is a self-adhesive rubber film patch with a sealed compartment for sampling of soluble impurities from steel surfaces with a suitable solvent. The Elcometer 135A Bresle Samplers are also part of the Elcometer 138/2 Surface Contamination Kit, see page 2-28.

STANDARDS:
ISO 8502-6

Technical Specification

Part Number	Description
E135----A	Elcometer 135A Bresle Sampler
Tests per Kit	50
Test Area	1250mm², 12.5cm² (1.93sq inches)
Sample Volume	2.6ml ± 0.6ml
Dimensions	52 x 52mm (2.0 x 2.0”)

Elcometer 135B

Bresle Patches



Elcometer 135B 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.

Elcometer Bresle Patches are also available as part of the Elcometer 138 Bresle Salt Kit, see page 2-25.

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”)

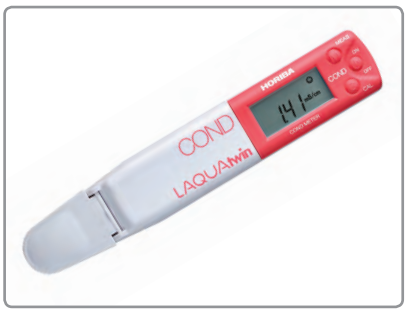
Conductivity Meter

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	0 µS/cm to 199 µS/cm: 0.20 mS/cm to 1.99 mS/cm: 2.0 mS/cm to 19.9 mS/cm: 20 mS/cm to 199 mS/cm:	1 µS/cm 0.01 mS/cm 0.1 mS/cm 1 mS/cm	
Accuracy	0 µS/cm to 199 µS/cm: 0.20 mS/cm to 1.99 mS/cm: 2.0 mS/cm to 19.9 mS/cm: 20 mS/cm to 199 mS/cm:	± 5 µS/cm ± 0.05 mS/cm ± 0.5 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 (0.5fl oz) bottle of standard 1.41mS/cm calibration solution, 14ml (0.5fl oz) bottle of moistening solution, syringe, 2 x CR2032 batteries and operating instructions		

Accessories

T13823926	Standard 1.41 mS/cm Calibration Solution - 14ml (0.5fl oz) Bottle
T99911344	250ml (8.5fl oz) Bottle of Pure Water
T13818517	15ml (0.1fl oz) Syringe - Pack of 3
T13823928	Replacement Conductivity Sensor

Elcometer 138/2

Surface Contamination Kit







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

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

Technical Specification

Part Number	Description
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 Bresle samplers, 3 x 5ml (0.2fl oz) syringes, 3 x needles, 30ml (1fl oz) plastic beaker, carry case and operating instructions

Accessories

E135----A	Bresle Sampler (Box of 50)
T13818517	3 x 5ml (0.1fl oz) Syringes
T13818518	3 x Needles
T13818519	Plastic Beaker, 30ml (1fl oz)
T99911344	Pure Water, 250ml (8.5fl oz) Bottle
T13820562	100 x pH Test Strips
T13820563	100 x Iron Test Strips
T13820564	40 x Chloride Test Strips

Chloride Test Strips

Elcometer 138/2

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

Iron Test Strips

Elcometer 138/2

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

pH Test Strips

Elcometer 138/2

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

Elcometer 134S

Chloride Ion Test Kit for Surfaces



STANDARDS:
ISO 8502-5, SSPC Guide 15

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.

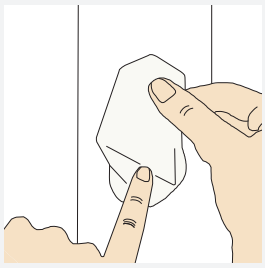
Technical Specification

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

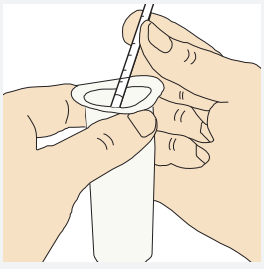
How to use a Chloride Ion Test Kit for Surfaces



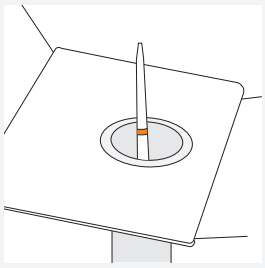
1. Remove cap from C H L O R * E X T R A C T solution bottle and pour entire contents into the test sleeve.



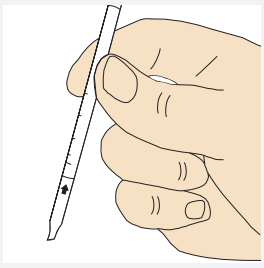
2. Firmly apply test sleeve to test surface, allowing extract solution to come into contact with test surface.



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 2-6

CSN Chloride, Sulphate & Nitrate Kit

Elcometer 134

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 are available for all consumables.







STANDARDS:
ISO 8502-5, ISO 8502-11, SSPC 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	5 x tests (containing: 5 x chloride tests, 5 x nitrate test strips, 5 x sulphate tests, 5 x syringes), 1 x colorimeter, carry case and operating instructions

Accessories

T134---C	1 set of 5 Nitrate Tests
T134-KIT	Refill Kit for Elcometer 134 CSN

Elcometer 146

SaltSmart™ Contamination Meter



STANDARDS:
NACE SP0508, IMO PSPC,
ISO 8502-9, SSPC,
US Navy 009-32 FY12

The Elcometer 146 SaltSmart™ Salt Contamination System determines the amount of soluble salts present in a test sample. Using both the Elcometer SaltSmart™ Test Strips and the Elcometer 146 SaltSmart™ Contamination Meter, this system offers a fast, easy-to-use alternative to the Bresle Test and has been proven to be equivalent to ISO 8502-9.

A de-ionised water bottle is attached to the end of the Elcometer 146 SaltSmart™ Test Strip which is then fixed to the substrate using non-residue tape. The test strip is positioned at a 10° angle to allow the water to flow on to the foam sensor which is in contact with the substrate.

After approximately 8 minutes the test strip is removed and the amount of soluble salts present is measured using the Elcometer 146 SaltSmart™ Contamination Meter, which displays and stores results in µS/cm, ug/cm² or mg/m².

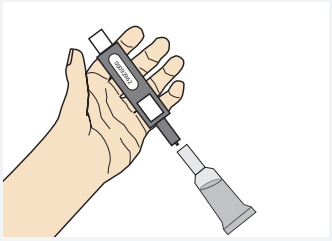
Technical Specification

Part Number	Description		
E146----1	Elcometer 146 SaltSmart™ Soluble Salt Contamination Meter		
Measuring Range	0-150µS/cm (0-155 mg/m^2)	Resolution	1 µS (1.03 mg/m^2)
Operating Temperature	0-50 °C (32-122°F)	Accuracy	±1%
Temperature Coefficent	2.0 % per °C (F)		
Battery Type	2 x AA batteries; suitable for approx 100+ tests		
Sample Time	8 minutes for strip development, 15 seconds for meter analysis		
Sampling Size	20.6 x 15mm (309 mm^2)		
Dimensions	160 x 80 x 30mm (6.30 x 3.15 x 1.18”)	Weight	1.2 kg (2.5 lb)
Packing List	Elcometer 146 SaltSmart™ Contamination Meter, Rubber Boot for SaltSmart™ Contamination Meter, USB Cable, SaltSmart™ Validation Strip , 2 x AA Batteries, Belt Pouch, Getting Started CD		

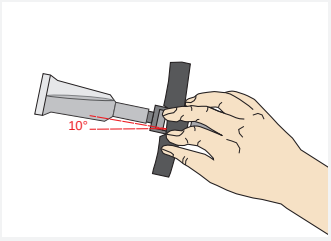
Accessories

T14623679	Elcometer 146 SaltSmart™ Contamination Test Strips (Pack of 10)
T14623680	Elcometer 146 SaltSmart™ Validation Strips (Pack of 1)
T14623681	Elcometer 146 Non-Residue Tape (Pack of 2)

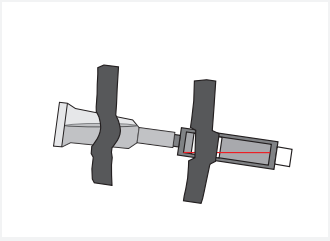
Measuring salt contamination using the SaltSmart™ Contamination Meter



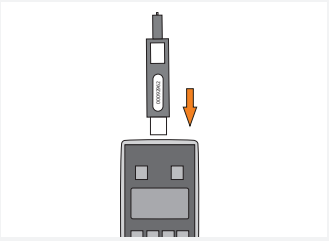
Taking care not to touch the white foam sensor, remove the protective packaging and place the de-ionized water bottle on to the SaltSmart™ test strip.



Place the test strip & bottle on to the substrate and hold in place with painters tape. On vertical surfaces, make sure that the red line on the test strip is horizontal - creating a 10° incline to allow water flow.



Whilst multiple test strips can be set up at the same time, after approximately 8 minutes remove each test strip in order from the surface.



Place the test strip into the SaltSmart™ meter, and read the value on the display.

Environmentally discard the test strip, bottle and tape.

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 qualitative 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, 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 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”), 1 x Pair of Tweezers, 1 x Re-sealable plastic bag for content disposal 1 x User Guide.		

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 qualitative identification of amine blush (carbamates) on the surface of coatings using a cotton swab. 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, 1 x User Guide.		

Accessories

T13923546	Test Tube Stand

Elcometer 142

ISO 8502-3 Dust Tape Test Kit



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

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. Supplied in a carry case for use in the field to assess surface cleanliness.

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 10x 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 & Corrosion Under Insulation

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.

Corrosion Under Insulation: When water or moisture has entered a pipe or vessel's outer cladding through damaged insulation, weather barrier cladding or deteriorated mastic at the outer cladding - combined with fluctuating temperatures, this significantly increases the likelihood of corrosion occurring under the insulation.

Fluid, by its very nature, will flow to its lowest point and collect where it is able. The Elcometer 1001 simply allows the fluid to collect in the detection and indication device raising the fluorescent float and activating the high intensity LED, immediately alerting operatives to the potential for Corrosion Under Insulation, and to the Health and Safety issues surrounding leaking pipes.

Elcometer 7000

Digital Moisture Meters



The Elcometer 7000 range offers accurate and easy to use moisture measurement. Available with pin probes or non-invasive for non-destructive testing, the gauges give average moisture content by comparing the change in impedance between damp and acceptably dry substrates.

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

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 (3/4")	Non-invasive up to 19mm (3/4") Pin up to 12.7mm (1/2")	
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		

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, generating 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 ideal for concrete.

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

CUI Prevention

Elcometer 1001

When water or moisture has entered a pipe or vessel's outer cladding through damaged insulation, weather barrier cladding or deteriorated mastic at the outer cladding - combined with fluctuating temperatures, this significantly increases the likelihood of corrosion occurring under the insulation.



Pipeline failure through corrosion under insulation causes supply shortfalls, economic loss and environmental pollution

Fluid, by its very nature, will flow to its lowest point and collect where it is able. The Elcometer 1001* simply allows the fluid to collect in the detection and indication device raising the fluorescent float and activating the high intensity LED, immediately alerting operatives to the potential for Corrosion Under Insulation, and to the Health and Safety issues surrounding leaking pipes.

Moisture ingress will travel (wicking effect) through the insulation, and enter the collection funnel of the Elcometer 1001.



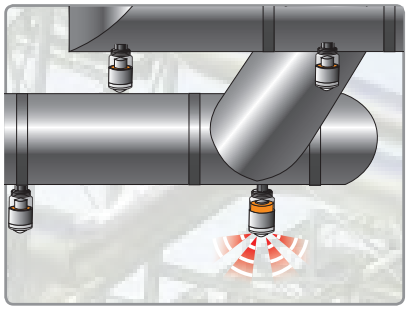
Fitted to the underside of pipelines the Elcometer 1001 collects fluid as it flows to the lowest point

With the potential to reduce inspection, repair and maintenance costs, each self-contained Elcometer 1001 device will constantly and independently monitor, indicate and alert for the presence of fluids, remaining active for 24 hours a day, 365 days per year for up to five years (LED Battery).

Detecting Leaks

Some process products and pure 'hydrocarbon' will not activate the high intensity LED, however they will raise the highly visible fluorescent float, pinpointing where the product release under the insulation has occurred.

The collection vial of the Elcometer 1001's device can be unscrewed and the contents taken away for detailed analysis. A replacement vial can be attached to the Elcometer 1001 whilst the escaped fluid is examined and remedial actions reviewed.



When fluid is detected a high intensity LED and highly visible fluorescent float provide a visual indication of the presence of liquid

* GB2389417, International patents pending

Elcometer 1001

Leak and Corrosion Under Insulation Gauge

Pipeline failure through corrosion under insulation causes supply shortfalls, economic loss and environmental pollution. Early detection of the presence of moisture significantly reduces the risk of corrosion developing underneath pipeline insulation.

new

- Suitable for new or existing installations on or off-shore
- 5 year service life from date of purchase
- High visibility fluorescent orange float provides fail safe detection of liquid/water
- High intensity flashing LED visual alarm



- Does not interfere with thermal properties of insulation
- Detachable sample vial can be sent away for detailed analysis of contents
- Works in extreme temperatures -40°C to +80°C on pipe work at +180°C
- Suitable for any insulation type* on any pipe material of any diameter
- Intrinsically safe
- External dust and water resistant rugged design equivalent to IP66

* excluding glued insulation

Leak and Corrosion Under Insulation Gauge **Elcometer 1001**

The Elcometer 1001 detects and identifies the location of any fluid leak on thermally insulated pipes, 24 hours a day, 365 days a year, preventing corrosion and reducing unplanned repair and maintenance costs.

User Friendly

- Ideal for use in the oil, gas, chemical, water and power generation industries, on or off-shore
- Easy to fit in new or existing installations
- Straightforward replacement - a new module can be screwed on to the original funnel assembly
- Maintenance free for 5 years with simple testing on site at any time

Accurate

- Identifies approximate location of fluid leak, preventing unnecessary removal of good insulation
- Detachable sample vial can be sent for further testing or chemical analysis of contents

Reliable

- Can be located where flammable gases and vapour groups IIA, AAB and AAC may be present
- 5 year warranty from date of purchase

Tough

- Heavy duty, impact resistant, dust and waterproof design equivalent to IP66
- Works in extreme ambient temperatures -40°C to +80°C (-40°F to +176°F) and on pipe work at +180°C (+356°F)

Efficient

- Fast installation by one operator with minimal tools required
- Battery life of 5 years
- Each module has unique serial number for traceability

Powerful

- Extends the life of pipe insulation
- Can reduce pipe replacement due to Corrosion under Insulation
- Fail safe high visibility fluorescent float as a visual indicator
- Powerful high intensity flashing LED alarm guaranteed to flash for a minimum of 7 days after actuation

new

Elcometer 1001 Leak and Corrosion Under Insulation Gauge

Location and Frequency of Corrosion Under Insulation Gauges

To ensure the Elcometer 1001 Corrosion Under Insulation Gauges can effectively detect leaks under insulation, it is recommended that on site assessment be carried out by suitably qualified risk-based inspection (RBI) Engineers.

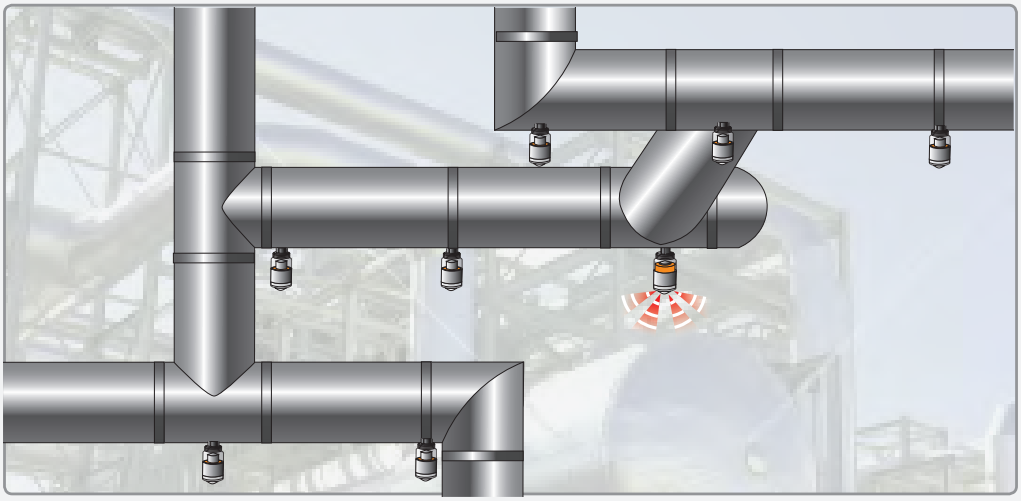
Low Risk Applications
For low risk applications where there is minimal threat to business interruption, human health or environmental damage from a leak caused by corrosion, the minimum requirement is to install devices every 5-10 metres and wherever any of the following are installed:

- Elbow
- T joint
- Horizontal pipe work low point
- Bottom of vertical pipe work
- Other insulated extrusions on pipe work
- Vessels
- Drain-holes
- Drain-plugs
- Drain-tubes

Medium Risk Applications
For medium risk applications where there is environmental risk and possible business interruption, it is recommended that the Elcometer 1001 is positioned every 2-5 metres and every junction/low point.

High Risk Applications
For high risk applications posing a threat to human health it is recommended that the Elcometer 1001 is positioned every 1 metre along all pipe work as well as all junctions/ low points.

By installing an Elcometer 1001 at regular intervals, as one device is activated and another adjacent unit is empty, the point of the leakage can be determined. Should an adjacent device also become activated, the direction of the flow can be determined.



In Use
Regular checks: Each Elcometer 1001 CUI device should be checked at regular intervals to see if either the LED is flashing or the float is visible. In either case, the cause is either moisture or fluid under the insulation.

Once triggered the unit will flash for 7 days before the battery is exhausted. In the case of an alarm condition the source of the leak should be ascertained and corrective action taken.

On re-instating the insulation, the Elcometer 1001 MUST be replaced.

Service Life: The Elcometer 1001 has a service life of 5 years after which it must be replaced, if the installation is sound, a new module can be screwed into the original funnel assembly.

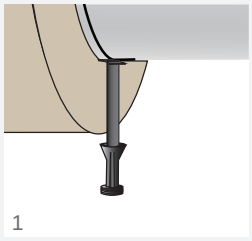
Leak and Corrosion Under Insulation Gauge

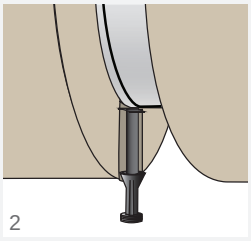
Elcometer 1001

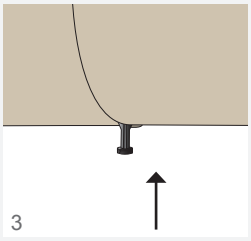
Installing Corrosion Under Insulation Gauge

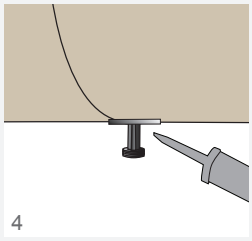
The Elcometer 1001 is designed to function correctly when fitted at the 6-o'clock position at every joint of the thermal insulation on an insulated pipe, on the bottom of bends and on vessels and tanks - only where visible for inspection.

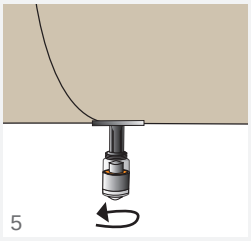
New Installations











1. Installing the Elcometer 1001 can be achieved by fitting each unit tight up to the last section of the thermal insulation prior to fitting the next section.

   Thread a fixing strap through the flexible fixing strap and loosely fix it around the pipe.

   Slide the funnel assembly up to the edge of the insulation. The funnel must hang vertically with the threaded end facing down.

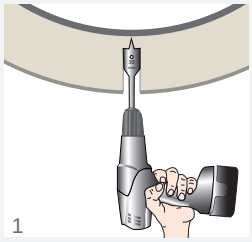
2. Cut the thermal insulation away around the funnel to ensure a snug fit. Tighten the fixing strap and slide up the next piece of insulation.

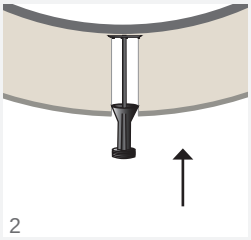
3. Adjust the height to ensure the threaded section of the 'o' ring seal is below and clear of the outer cladding.

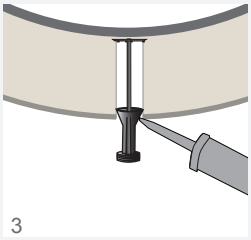
4. Make sure that the point at which the funnel exits the outer cladding is fully sealed with silicon adhesive sealant after all protective layers and treatments have been applied to the thermal insulation.

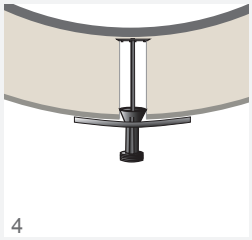
5. Holding the collection funnel in place using a spanner, each funnel has a spanner 'Seating' to assist the 'Tightening' process, ensure the 'O' ring seal is engaged when screwing the housing to the exposed collection funnel screw thread.

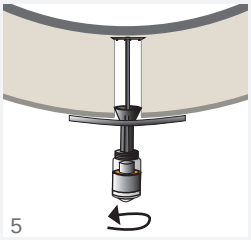
Existing Installations











1. Using a standard drill with a 30mm diameter drill bit, drill the outer cladding on the underside of the insulation at the 6 o'clock position and core the insulation media to expose the pipe surface, taking care not to damage the pipe surface.

   Leaving the protection cap in place, take the black collection funnel and adjustable shaft and extend the shaft to its maximum height.

2. Insert the collection funnel until resistance is felt. The shaft has now touched the pipe surface. Continue to push the collection funnel until the funnel moves no further (this adjusts the funnel to the correct height to the thickness of the insulation).

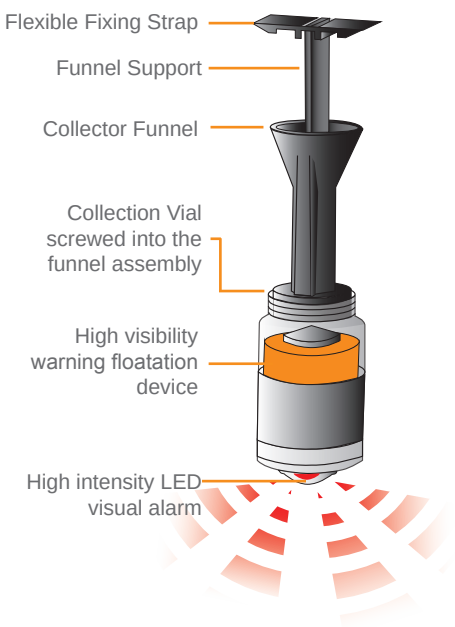
3. Using a standard (in-use) sealant or mastic, apply to the joint of the funnel onto the outer cladding, ensuring there are no gaps or holes, smooth over and allow to cure.

4. When the sealant/mastic has set, apply a strip of quality metal sealant tape for added waterproofing and additional support.

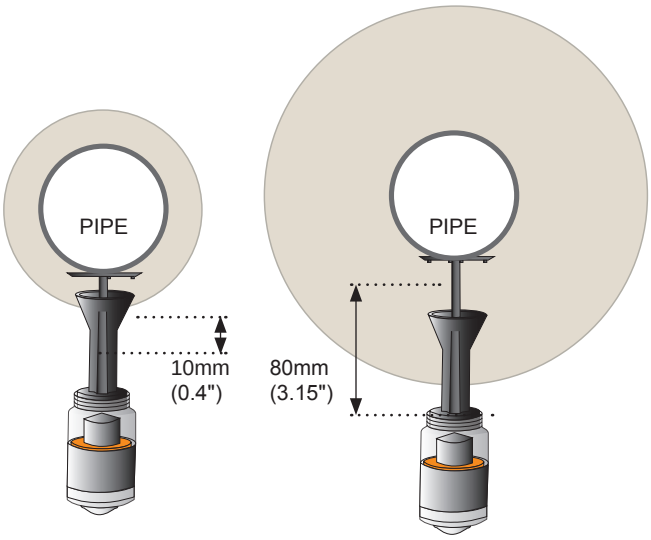
5. Remove the protective cap. Gently screw on the housing by hand, holding the collection funnel in place using a spanner, ensure the 'O' ring seal is engaged when screwing the housing to the exposed collection funnel screw thread.

Leak and Corrosion Under Insulation Gauge

Elcometer 1001



Minimum / Maximum Insulation Thickness



Technical Specification C

Part Number	Description
H1001-25	Elcometer 1001 Leak and Corrosion Under Installation Gauge (x25)
Application	Fluid detector for thermally insulated pipes
Power Supply	Lithium Thionyl Chloride Battery
Service Life	5 years
Max LED Alarm Operation Time	7 days from actuation
Operating Temperature	-40°C to +80°C (-40°F to +176°F)
Max Pipe Temperature	+180°C (+356°F)
Certification	ATEX Approval[#] - see footnote
IP Rating	IP66
Minimum Pipe Outside Diameter	17mm (0.7") combined with a minimum 15mm (0.6") thickness of insulation
Insulation Thickness Range	10mm - 80mm (0.4 - 3.1")
Protrusion from Pipe Surface	Maximum 157.0mm (6.2") Minimum 125.4mm (4.9")
Gauge Diameter	Approximately 35.8mm (1.4")
Weight	Approximately 60g (2.1oz) - depending on funnel specification
Warranty Period	5 consecutive years from the date of purchase. The Elcometer 1001 device is warranted to activate via visual float and LED, where there is the presence of sufficient ingression of water or moisture in the device. This warranty is only valid if the device has been installed and maintained in accordance with installation instructions.

[#] Essential Health and Safety Requirement 1.0.6 Instructions specific to hazardous area installations (reference European ATEX Directive 94/9/EC, Annex II, 1.0.6).
The following instructions apply to this equipment covered by certificate number Sira 05ATEX2277:
The equipment may be located where flammable gases and vapours of groups IIA, IIB and IIC may be present. The equipment is only certified for use in ambient temperatures in the range of -40°C to +80°C and should not be used outside this range. The equipment has not been assessed as a safety-related device (as referred to by Directive 94/9/EC Annex II, clause 1.5). Installation of this device shall be carried out by suitably trained personnel in accordance with the applicable code of practice (EN 60079-14 within Europe).
Repair of this equipment is not permitted. If faulty in any way it must be replaced in its entirety. If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

Climatic Testing

Temperature, Relative Humidity & Dewpoint





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.

RH	% Relative Humidity
Ts	Surface Temperature
Ta	Ambient Air Temperature
Td	Dewpoint Temperature
TΔ	Difference between Td and Ts
Tdb	Dry Bulb Temperature
Twb	Wet Bulb Temperature
Te	External Temperature
SH	Specific Humidity



Elcometer 319 Dewpoint Meter

This rugged gauge is designed to measure and record all relevant climatic parameters required to determine whether the conditions are suitable for painting.



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

A hand-held Dewpoint meter with both manual and automatic data logging in one gauge

Integrated magnets allow the gauge to be attached to the substrate during remote logging





View up to 5 user selectable statistics on screen

Stores 25,000 records in up to 999 batches



Review individual readings

Dustproof and waterproof gauge with fully sealed sensors (equivalent to IP66)

Elcometer 319

compatible with ElcoMaster™

available with Bluetooth® wireless technology

Suitable for use in Cloud Computing



Easy to use, intuitive menu structure

Measure and record climatic parameters:

- Relative humidity
- Air temperature
- Surface temperature
- Dewpoint temperature
- TΔ (the difference between surface temperature and dewpoint)
- Dry Bulb temperature
- Wet Bulb temperature
- External temperature correction (K-type)
- Specific Humidity

Visual and audible indication of user defined limits for any or all parameters

USB and Bluetooth® data output to ElcoMaster™ software

Android™

Made for iPod iPhone iPad



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

Ts Ta Td TΔ RH SH Tdb Twb Te

Elcometer 319 Dewpoint Meter

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 remote probe
- Using an external probe the “Te” mode transforms the gauge into a thermometer - ideal for measuring temperature of a paint prior to application
- Hold/freeze function allows manual readings to be reviewed before being added into the memory

Durable

- Safe use in climates ranging between -20°C (-4°F) and +80°C (+176°F)
- Waterproof and dust proof rating equivalent to IP66
- The rugged and ergonomic design extends to include durable sensors ideal for use in harsh environments

Versatile

- Rapid response time
- Data can be downloaded to a PC via USB or Bluetooth® and evaluated using ElcoMaster™ Software†
- Each gauge can be powered by either 2 AA batteries (for up to 400 hours# 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

† Top models only.

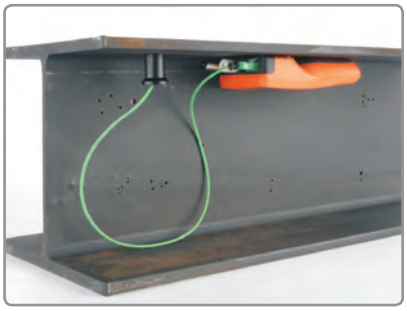
Based on 1 reading every 10 minutes in logging mode.



Te - Ideal for use as a simple thermometer



Waterproof and rugged to IP66



Remote monitoring of climatic parameters

Dewpoint Meter

Elcometer 319

Technical Specification C

Model	Standard Gauge	Top Gauge
Part Number	G319----S	G319----T
Reading Parameters - RH, Ta, Ts, Td, TΔ, Tdb, Twb[1], SH[1]	■	■
Statistics - number of readings, standard deviation, mean, coefficient of variation, minimum, maximum	■	■
Dustproof & Waterproof Gauge 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‡ devices*		■
ElcoMaster™ software & USB cable		■
Certificate	●	●

	Temperature Range	Accuracy	Resolution
Gauge#	-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)	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)*	0.1°C (0.1°F)
Relative Humidity (RH)	0 to 100%RH	±3%RH	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+, ElcoMaster™+ 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

● Certificate supplied as standard.

[1]Calculated Value [2]With Part Number T31920162

‡ Available from March 2015. Visit www.elcometer.com/sdk to find out how to integrate Elcometer’s MFi certified products to your App.

Do not expose the gauge to temperatures outside the gauge and LCD operating range

* Accuracy ±2°C (4°F) with K Type probes supplied by Elcometer. Probes supplied by other manufacturers may vary.

+ Top Model only

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 outside recommended limits can have a detrimental affect 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): This is the amount of water vapour taken up by air. Expressed as a percentage, RH is dependent on the air temperature.

Technical Specification C

Model	Elcometer 308 Hygrometer	Elcometer 309 Delta T Hygrometer
Part Number	G308----1	G309----1
	Ts RH	TΔ RH
Operating Range	-20ºC to +80ºC (-4 ºF to +176ºF)	-20ºC to +80ºC (-4 ºF to +176ºF)
Air Temperature (TΔ)		-20ºC to +80ºC (-4 ºF to +176ºF)
Surface Temperature (TS)	-20ºC to +80ºC (-4 ºF to +176ºF)	-20ºC to +80ºC (-4 ºF to +176ºF)
Relative Humidity (RH) & Accuracy	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)
Certificate	●	●
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.



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



STANDARDS:
ASTM E 337-B, BS 2842

Tdb Twb

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 or 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)	T1164479-	Elcometer 116C Spare Thermometer (°F)
T1164487-	Elcometer 116A Wicks (Pack of 5)	T11600212	Elcometer 116A Replacement Slide Rule

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.



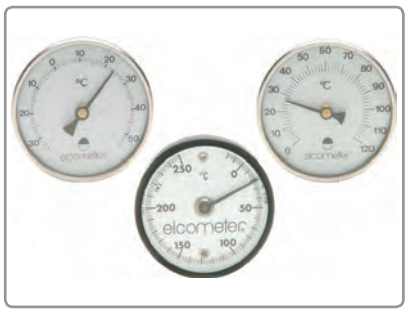
Td RH TΔ

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----1B	Elcometer 113 Economy Magnetic Thermometer	-35°C to 55°C
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 to enable 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	-40°C to 70°C (-40°F to 160°F)
Dimensions	300mm (12”) length with a 45mm (1¾”) dial
Weight	34g (1.2oz)
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 conveniently folds back into the side of the instrument, preventing damage when not in use.

- 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 Digital waterproof thermometer offers the latest microprocessor technology, superior durability and is designed for reliability and ease of use.

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 C

Part Number	Description	Certificate
G213----2	Elcometer 213/2 Digital Thermometer*	○
Operating Range†	-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	

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

Accessories

T9991728	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: -50°C to 850°C (-58°F to 1562°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 -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.

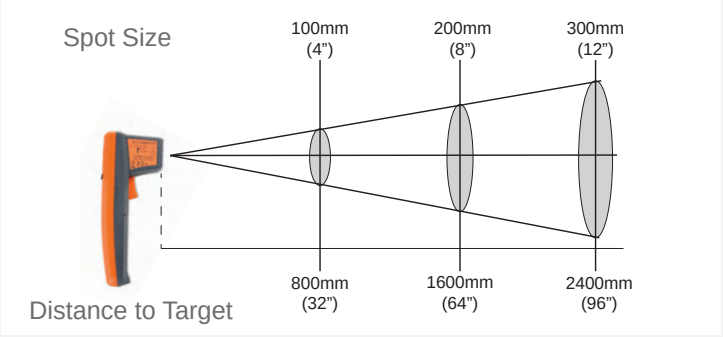
As can be seen in the diagram below, if the distance from the sensor optics to the target is 200mm (8”) for example, the diameter of the measured area is 25mm (1”).

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 320

Climate Monitoring System

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

supplied with ElcoMonitor™

The Elcometer 320 is a powerful system which accurately and remotely monitors climatic parameters.

Each red, yellow, green signal tower has an integrated alarm providing both visual and audible warnings

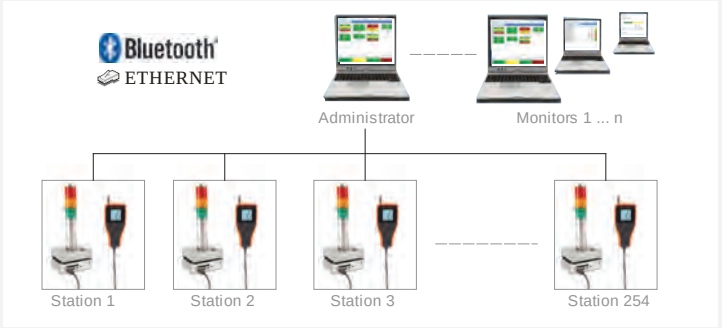
Remotely monitor and record climatic parameters:
- Relative humidity
- Ambient air temperature
- Surface temperature
- Specific humidity
- TΔ (the difference between surface temperature and dewpoint)

The Elcometer 320 can also be used as a stand alone environmental warning station - ideal for single zone monitoring

Up to 254 monitoring stations can be set up remotely either by Bluetooth® or over an Ethernet TCP/IP connection



Remote Climate Monitoring System



Climate Monitoring System

Elcometer 320

The Elcometer 319 is connected to a signal tower and alarm via an embedded PC which is connected to the control and monitoring computers via standard Ethernet TCP/IP or by Bluetooth® for remote monitoring.

Through the simple use of the internationally recognised red, yellow, green traffic light sequence, ElcoMonitor™ allows Quality Managers to see, at a glance, the environmental conditions of up to 254 locations from the comfort of their office chair.

ElcoMonitor™ software incorporates Set Up Wizards which guide the User through the initial set up of each Elcometer 320 Monitoring Station. Once a station has been assembled and switched on, ElcoMonitor™ searches for all the active monitoring stations.

Each station can be set up remotely using ElcoMonitor™ Software.

Station set ups include:

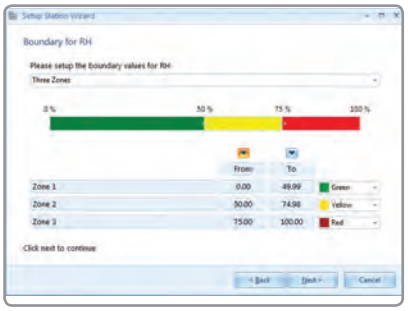
- Which two climate parameters to be used for each station
- User definable red, yellow and green warning limits
- Flashing red light additional warning parameter
- Data recording frequency
- Warning buzzer alarm duration

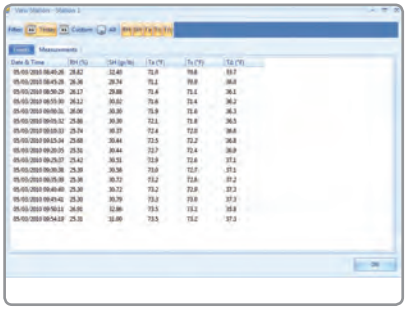
Username and passwords are used to ensure that only approved administrators can amend the set up of each station.

All measurement values (RH, SH, Ta, Ts, TΔ) from each station are transmitted back to ElcoMonitor™ allowing remote investigation of all the environmental conditions.

Individual reports for each monitoring station can be generated from within ElcoMonitor™ or archived in spreadsheet form for further analysis.







Technical Specification C

Elcometer ElcoMonitor™ Monitoring System:		Certificate
Part Number	G320-1	●
Measuring Parameters	RH, SH, Ta, Ts, TΔ	
Connectivity	Ethernet TCP/IP Network or Bluetooth® The embedded PC will automatically connect to a wired TCP/IP network with DHCP, which will allocate it an IP address	
Number of Stations	Maximum of 254 individual Elcometer 320 stations can be connected	
Embedded PC	eBox 3300-JSK with 2 x RS232 connections - or equivalent	
Central PC Requirements	Minimum Requirement of Windows XP with 1 GB RAM and 1GB free HD; 1024 x 768 Screen Resolution; Connection to the same Ethernet TCP/IP network as monitoring stations - preferably on the same subnet; Bluetooth® connections can be made via an integrated or USB Bluetooth®	
Packing List	Elcometer 319 Top Dewpoint Meter with calibration certificate, Light and audible alarm system with power supply, Elcometer 320 Climate Monitoring System Base Unit and power supply, Flash Card, Connection cables, ElcoMonitor™ Log and ElcoMonitor™ View Software, Bluetooth® USB dongle	

● Certificate supplied as standard.

Elcometer 410

Wind Speed 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 even 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 (3 second average) Average speed since power on (AVG) Maximum 3 second gust since power on (MAX) 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



Temperature profiling provides an effective method for measuring the actual environmental and product temperature during the cure process - essential for ensuring 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.

Elcometer 215 Oven Data Logger

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.



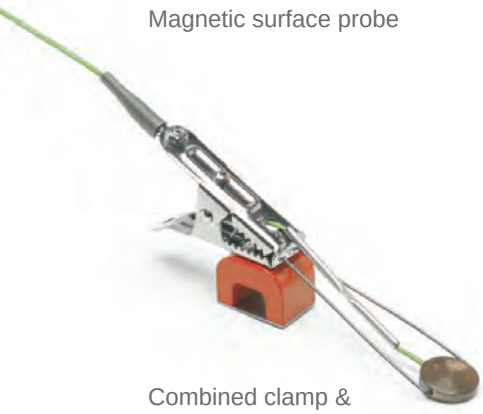
Clamp air probe



Clamp surface probe



Magnetic surface probe



Combined clamp & magnetic surface probe



Probe ID Tags

Memory stores up to 260,000 readings

Ideal for testing for powder or liquid coatings in batch or conveyor ovens

Variable measurement interval, date, time, °C / °F

High temperature resistant teflon coated probe cables are easy to clean after each run



Oven Data Logger

Elcometer 215



Quick display shows maximum temperature, Cure-Index figure and pass/fail for each probe

Measure up to 6 different temperatures at one time

Ideal in situations where powder coated thickness is inconsistent

Start and stop logging at a pre-set temperature

Large menu-driven display for easy operation

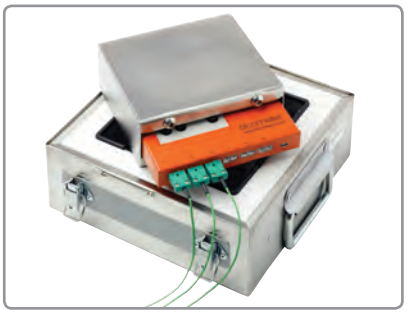


Print full colour report directly to any HP printer

USB data output to ElcoMaster™ software and combine with other key inspection measurements

Elcometer 215

Oven Data Logger



High Temperature Barrier Kit
Thermal barrier & heat sinks for longer time at temperature



Standard Thermal Barrier Kit
With thermal barrier - ideal for single runs

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:

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.

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

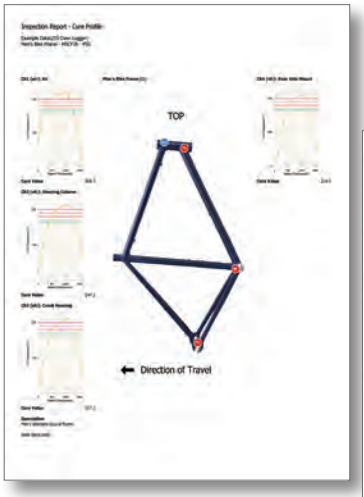
Product Probe Maps - Simply drag and drop up to 6 probe ID markers on to your product photo or drawing to record exact probe placement for each production run.

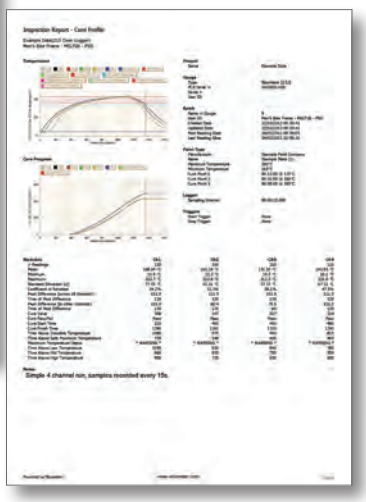
Customisable Templates - Create your own comprehensive inspection profile - simply choose a relevant gauge setup, paint parameter and product probe map from your library and assign them to your logger data, providing instant, meaningful and professional reports.

Elcometer Cure Value - Using the industry accepted cure value calculation ElcoMaster™ 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 Data Logger

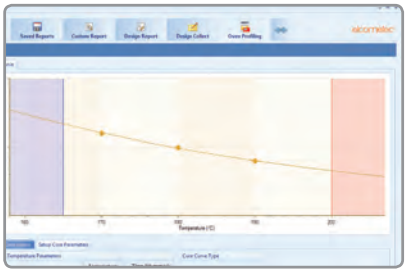
Elcometer 215

ElcoMaster™ Software Oven Profiling Key Features	
Oven Logger set up & programming	■
Paint/Powder parameter library	■
Product probe maps	■
Fully customisable inspection templates	■
Selectable probe/channel traces	■
Statistical analysis by probe/channel Max, Min, standard deviation, coefficient of variation	■
Temperature profile, cure progress, histogram & individual cure value graphs against product	■
Time at temperature, time of peak difference	■
Time above maximum absolute & minimum cross link temperatures	■
Fully customisable inspection reports	■
Combined reports - coating thickness, gloss, adhesion, profile, climate, surface cleanliness	■
Report generator wizard & PDF generator	■
Email or export data	■
Import photo's, data sheets, critical data, inspection notes, etc & include on inspection reports	■
Cloud computing - allows for cross site collaboration, including internal text messaging tool	■
Overlay temperature profiles, review and compare multiple oven profiles over time	■

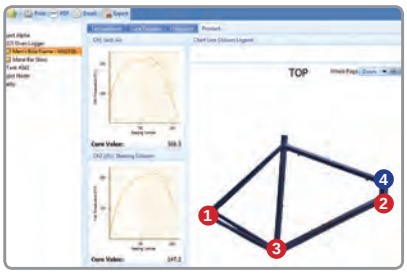
For more information on ElcoMaster™ Software see page 1-2



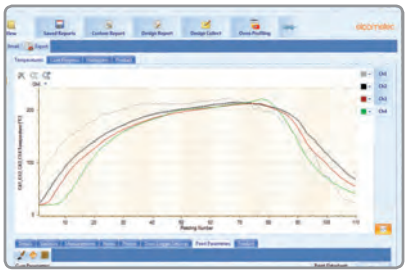
Create and store unique oven profile setups and transfer them to the gauge.



Set up a library of individual paint parameters.



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



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



Statistical analysis by probe/channel.

Elcometer 215 Oven Data Logger

Technical Specification C

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*	
	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	
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

○ Optional Calibration Certificate available.

*Includes Heat Sink



Powder Thickness

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.

The revolutionary Elcometer 550 accurately predicts the final powder thickness prior to curing. Through the use of non-contact ultrasound technology the density of the powder can be measured providing a predictive value of the final cured coating thickness.

Used on the powder coating the Elcometer 550 gauge therefore offers the opportunity for 'right first time' production and minimal wastage.

Elcometer 550

Non-Contact Powder Thickness Gauge

STANDARDS:
ASTM D7378-C

Using third generation proven airborne ultrasonic technology, the new Elcometer 550 accurately predicts cured coating thickness by non-contact measurement of coating powders.

Accurately predicts the cured coating thickness within ± 5% of the reading or ±5µm (±0.25mils) up to 110µm (4.4mils)

Can be used in accordance with ASTM D7378-C

Proven, third generation, airborne ultrasonic technology



Hand-held sensor allows easy positioning of the gun for fast measurement

Tough aluminium case, ideal for testing in an industrial environment

Ergonomic gun designed for comfort when taking multiple readings

Large illuminated colour display with positioning indicator to guide orientation of the sensor probe

Laser targeting system to ensure correct distance from surface

Non-Contact Powder Thickness Gauge

Elcometer 550

By carefully controlling the thickness of powder applied to a product, you can minimise your powder usage and ensure the quality of your coating. As contact measurement solutions damage the finish and do not predict the cured coating thickness, measuring the powder thickness pre-cure requires a non-contact solution.





Easy to Use
- Easy to read, large colour display
- Adjustable screen brightness for all test conditions
- Ergonomic probe - ideal for continuous testing
- Can be used straight out of the box with minimal set up time
- On-screen guidance graph and handle LEDs help you orientate the probe sensor for fast, accurate measurements

Reliable
- Fast, accurate and repeatable results
- Can be used in accordance with ASTM D7378-Procedure C
- Proven, third generation, airborne ultrasonic technology
- User-programmable set up to account for varying powder shrinkage rates

Enhanced Technology
- Measure thicknesses from 30 - 110µm (1.18 - 4.4mils)
- 1mm² (0.04 sq in) measurement area - ideal for flat, curved and small surfaces
- Test coatings on a wide range of substrates, including metal, wood, MDF, plastic and pre-coated surfaces
- Laser targeting to accurately position the gauge at the correct distance from the surface to be measured

STANDARDS:
ASTM D7378 Procedure C

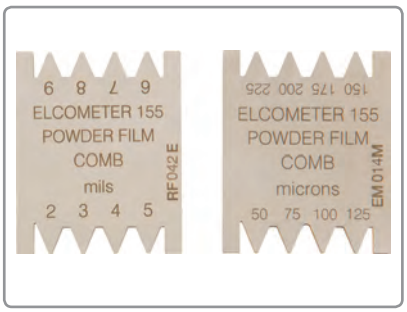
Technical Specification C

Part Number	Description	Certificate
A550----4	Elcometer 550 Non-Contact Powder Thickness Gauge	●
A550----4L	Elcometer 550 Non-Contact Powder Thickness Gauge with Laser Targeting System	●
Display	3½ inches (90mm) QVGA Colour LCD	
Power Supply	Rechargeable battery, up to 7 hours continuous use	
Measurement Range	30 - 110µm (1.18 - 4.4mils)	
Resolution	1µm (0.04mils)	
Measurement Accuracy	±5µm (±0.25mils) or ±5% of the coating thickness, whichever is greater	
Measurement Offset Distance	18mm (0.71”) from the coated substrate	
Measurement Area	1mm² (0.04sq in)	
Operating Temperature Range	10°C to 35°C (50°F to 95°F)	
Units	µm / mils switchable	
Dimensions	115 x 185 x 35mm (4.6 x 7.4 x 1.4”) Weight 900g (1.9lbs)	
Packing List	Elcometer 550 Gauge with rechargeable battery, universal charger unit and cable, sensor gun and lead, shoulder harness, reference block, USB-PC transfer cable, carry case, test certificate and operating instructions	

● Certificate supplied as standard.

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.

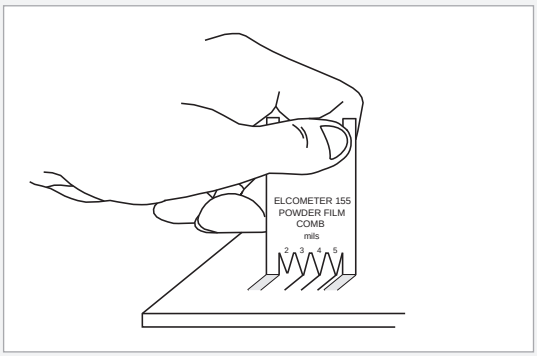
Note: The thickness of a coating prior to cure is not the same value after curing but there is a correlation. The powder comb is suitable as a guide only.

STANDARDS:
ASTM D7378-A

Technical Specification C

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.

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.

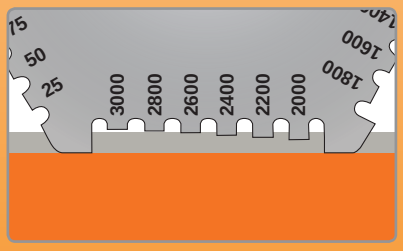
Too much wet film can cause the coating to crack as it cures; too little coating increases the risk that the substrate will not be sufficiently protected, leading to rust spots.

The three methods for measuring wet film thickness are:

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

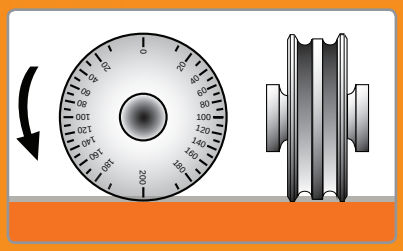
In each case, the thickness of the coating is measured and the dry film thickness can be estimated using the coating's solid : wet ratio.

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 biggest value 'coated' or 'wet' tooth and the smallest 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.

Elcometer 112 & 3236

Hexagonal Wet Film Combs (Stainless Steel)



These hexagonal precision formed stainless steel wet film combs are long lasting, reusable and supplied in a range of thicknesses measuring up to 3000µm (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 C

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 - 2000µm	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, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000µm	○
B112----1B	25 - 3000µm	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 1000, 1100, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000µm	○
K0003236M203	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	○
K0003236M204	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.

Wet Film Combs (Stainless Steel)

Elcometer 115

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 1270µm or 50mils and are manufactured to an accuracy of 5% or 2.5µm (0.01mil), whichever is the greater.

Each comb has 10 measurement steps (teeth).



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 C

Metric Combs				Imperial Combs			
Part Number	Range	Measurement Steps	Certificate	Part Number	Range	Measurement Steps	Certificate
B11529455M	20 – 325µm	20, 35, 50, 75, 100, 125, 175, 225, 375, 325µm	○	B11529451E	1 – 13mils	1, 1.5, 2, 3, 4, 5, 7, 9, 11, 13mils	○
B11529456M	50 – 450µm	50, 75, 100, 150, 200, 250, 300, 350, 400, 450µm	○	B11529452E	2 – 18mils	2, 3, 4, 6, 8, 10, 12, 14, 16, 18mils	○
B11529457M	50 – 750µm	50, 100, 150, 200, 250, 350, 450, 550, 650, 750µm	○	B11529453E	2 – 30mils	2, 4, 6, 8, 10†, 10†, 15, 20, 25, 30mils	○
B11529458M	125 – 1250µm	125, 250, 375, 500, 625, 750, 875, 1000, 1125, 1250µm	○	B11529454E	5 – 50mils	5, 10, 15, 20, 25, 30, 35, 40, 45, 50mils	○
B1152959WM	-	Set of 4 Combs	○	B1152959WE	-	Set of 4 Combs	○

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

Long Edge Wet Film Combs (Stainless Steel)

Elcometer 3238

These stainless steel combs are wire eroded to provide an accuracy of ± 2.5µm (0.01mil) and are supplied with either Metric or Imperial measurements.

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



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

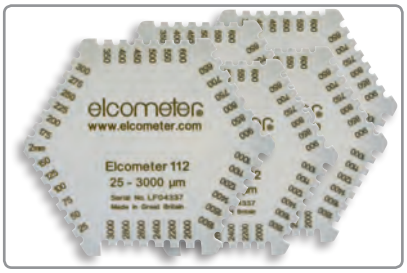
Technical Specification C

Metric Combs				Imperial Combs			
Part Number	Range	Measurement Steps	Certificate	Part Number	Range	Measurement Steps	Certificate
K0003238M201	5 – 120µm	5µm	○	K0US3238M201	0.5 – 6mils	0.5mil	○
K0003238M202	25 – 600µm	25µm	○	K0US3238M202	1.0 – 24mils	1.0mil	○
K0003238M203	50 – 1200µm	50µm	○	K0US3238M203	2.0 – 48mils	2.0mil	○
K0003238M204	-	Set of 3 Combs	○	K0US3238M204	-	Set of 3 Combs	○

○ Optional Calibration Certificate available.

Elcometer 112AL

Punched Wet Film Combs (Aluminium)



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 - 3000µm) 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.

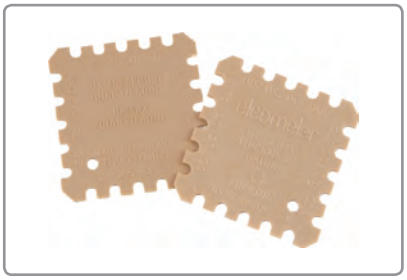
STANDARDS:
ASTM D 4414-A, AS/NZS 1580.107.3, BS 3900-C5-7B, ISO 2808-1A, ISO 2808-7B, JIS K 5600-1-7, NF T30-125, US Navy PPI 63101-000, US Navy NSI 009-32

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		

Elcometer 154

Plastic Wet Film Combs



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

Wet Film Wheels

Elcometer 3230

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 3000µm (0 to 1mil and 0 to 40mils) are available.

- Continuous scale produces ±5% measurement accuracy
- Suitable for flat and curved surfaces







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 C

Metric Film Wheels				Imperial Film Wheels			
Part Number	Range	Graduations	Certificate	Part Number	Range	Graduations	Certificate
K0003230M001	0 - 25µm	1.25µm	○	K0US3230M001	0 - 1mil	0.05mil	○
K0003230M016	0 - 40µm	2.0µm	○	-	-	-	○
K0003230M002	0 - 50µm	2.5µm	○	K0US3230M002	0 - 2mils	0.10mil	○
K0003230M003	0 - 100µm	5.0µm	○	K0US3230M003	0 - 4mils	0.20mil	○
K0003230M004	0 - 150µm	7.5µm	○	K0US3230M004	0 - 6mils	0.25mil	○
K0003230M005	0 - 200µm	10.0µm	○	-	-	-	○
K0003230M006	0 - 250µm	12.5µm	○	-	-	-	○
K0003230M007	0 - 300µm	15.0µm	○	K0US3230M005	0 - 12mils	0.50mil	○
K0003230M008	0 - 400µm	20.0µm	○	-	-	-	○
K0003230M009	0 - 500µm	25.0µm	○	K0US3230M006	0 - 20mils	1.0mil	○
K0003230M010	0 - 1000µm	50.0µm	○	K0US3230M007	0 - 40mils	2.0mils	○
K0003230M015	0 - 1500µm	75.0µm	○	-	-	-	○
K0003230M011	0 - 2000µm	100µm	○	-	-	-	○
K0003230M012	0 - 3000µm	150µm	○	-	-	-	○
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.

Elcometer 3230

Coil Coating Wet Film Wheels



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.

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.

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 C

Part Number	Metric			Imperial			
	Range	Graduations	Certificate	Part Number	Range	Graduations	Certificate
K0003230M017	0 - 50µm	2.5µm	○	K0US3230M017	0 - 2mils	0.1mils	○
K0003230M018	0 - 100µm	5.0µm	○	K0US3230M018	0 - 4mils	0.2mils	○
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						

Accessories

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

Elcometer 3233

Pfund Thickness Gauge



Available in aluminium or stainless steel this instrument consists of two concentric cylinders, one sliding inside the other. A spherical glass lens, which has engraved measurements, 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		

○ Optional Calibration Certificate available.



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, its appearance and ensures compliance with a host of International Standards.

In 1947, Elcometer launched one of the world's first non-destructive coating thickness gauges, the Elcometer 101.

For more than 6 decades, the design and production qualities of this rugged and reliable instrument have been the watchwords for all our products and these philosophies are still held today.

Elcometer has a comprehensive range of Dry Film Thickness gauges to meet all of your coating inspection requirements, including:

Electronic (Type II); the most widely used as it is generally the most accurate and can be used to measure the coating on almost any substrate, whether ferrous or non-ferrous

Mechanical (Type I); still widely used, particularly in areas where no electrical instruments are permitted or high temperatures prevail

Destructive; used primarily in multi-coat procedures and non-metallic substrates

Formal quality systems, such as those described in ISO 9000, require gauges to be properly controlled, logged and in calibration. Increasingly, users are specifying that the readings taken by gauges are traceable to National Standards.

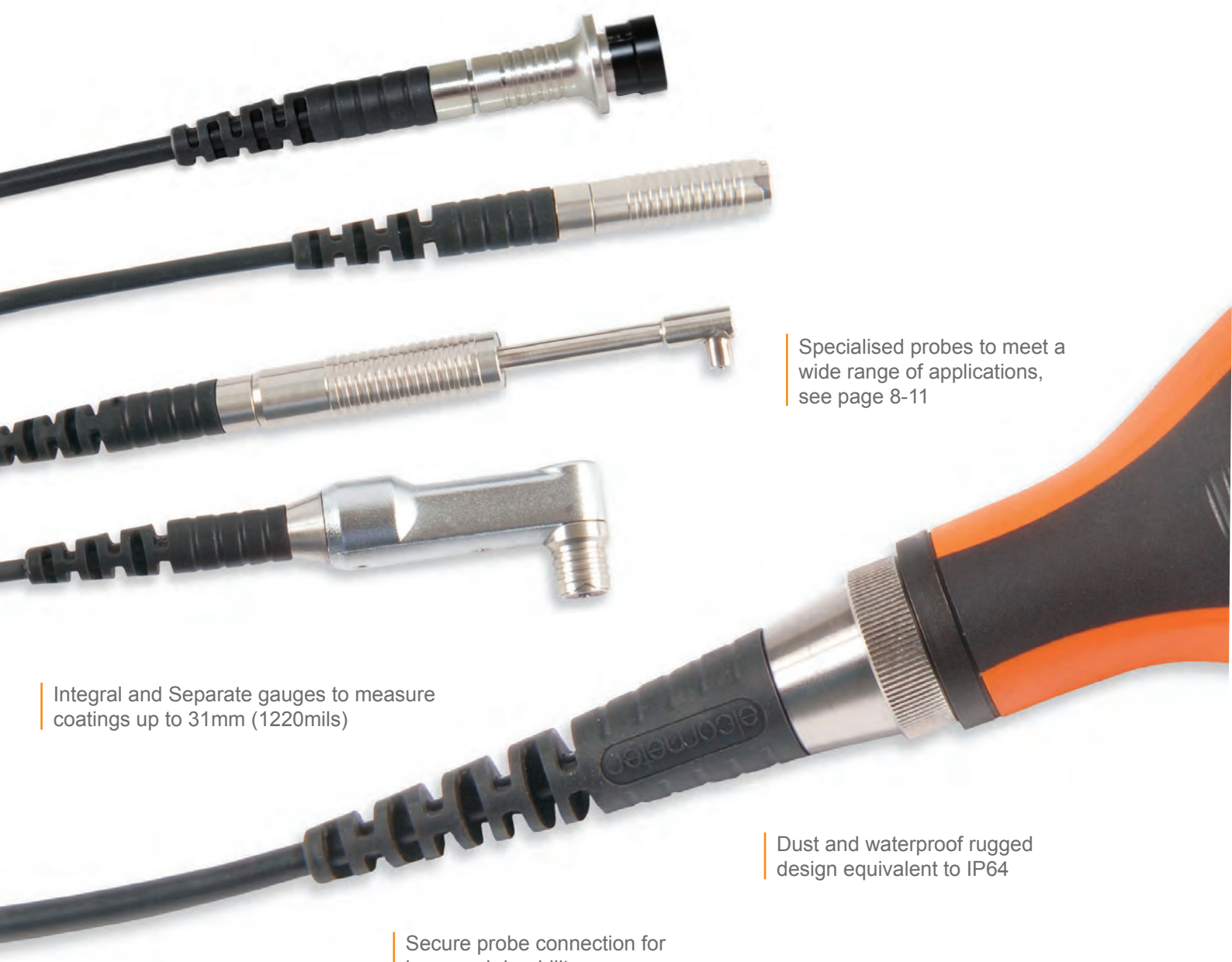
There are three types of coating thickness standards available from Elcometer:

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.

Elcometer 456 Coating Thickness Gauge

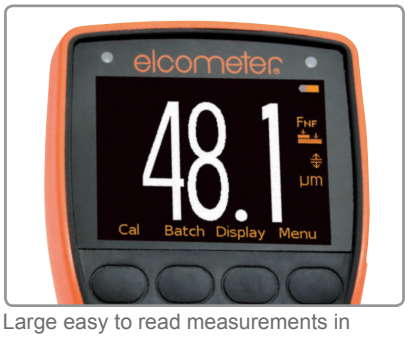


Specialised probes to meet a wide range of applications, see page 8-11

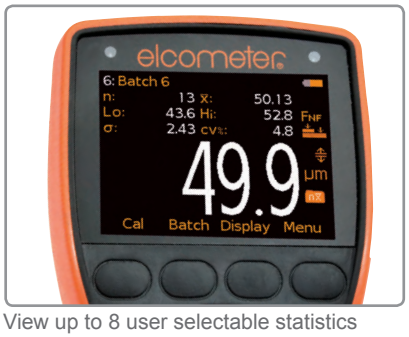
Integral and Separate gauges to measure coatings up to 31mm (1220mils)

Dust and waterproof rugged design equivalent to IP64

Secure probe connection for improved durability



Large easy to read measurements in Metric and Imperial units



View up to 8 user selectable statistics on-screen



On-screen trend graph displaying last 20 measurement values

Coating Thickness Gauge

Elcometer 456

Fast reading rate of 70+ per minute, 140+ per minute with Ultra/Scan Probe

Large easy to read colour display



Scratch and solvent resistant screen

Auto rotating display with tap awake feature

compatible with ElcoMaster™

available with Bluetooth® wireless technology

Suitable for use in Cloud Computing

Stores up to 150,000 readings in alpha numeric batches

Large buttons with positive feedback

USB and Bluetooth® data output to ElcoMaster™ software suite of products

Android™

Made for iPod iPhone iPad



Individual batch readings can be reviewed numerically or graphically

The Elcometer 456 sets new standards; providing reliable and accurate coating thickness measurements; helping you to become more efficient.

Elcometer 456

Coating Thickness Gauge



Bigfoot™ integral probe for accurate and repeatable measurements



Ergonomic design for comfort during continuous use



2.4" colour screen provides enhanced reading visibility at all angles

Easy

- 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

Accurate

- Measurement capability to ±1%
- Can be used in accordance with National & International Standards
- Temperature stable measurements
- Increased reading resolution for thin coatings
- Measures accurately on smooth, rough, thin and curved surfaces

Reliable

- Repeatable and reproducible
- 2 year gauge warranty
- Supplied with fully traceable test certificates
- Batch date and time stamp facility

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

compatible with ElcoMaster™

available with Bluetooth® wireless technology

Suitable for use in Cloud Computing

Coating Thickness Gauge

Elcometer 456

Rugged

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

Efficient

- Fast reading rate of 70+ per minute, 140+ per minute with Ultra/Scan Probe
- Multiple calibration memories
- Alpha numeric batch identification
- User selectable calibration methods
- Compatible with ElcoMaster™ and ElcoMaster™ Mobile App

Powerful

- Wide range of interchangeable probes
- USB and Bluetooth® data output to iPhone* or Android™ devices
- Stores up to 150,000 readings in 2,500 batches
- Measures up to 31mm (1220mils) of coating on metal substrates











Paperless Quality Assurance with the ElcoMaster™ suite of products

Android™

Made for iPod iPhone iPad

*Compatible with iPod, iPhone and iPad.

Elcometer 456

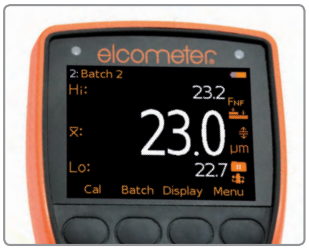
Coating Thickness Gauge



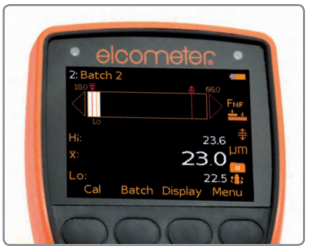
Scan Mode

When the Scan Mode* is selected users can slide the Ultra/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.

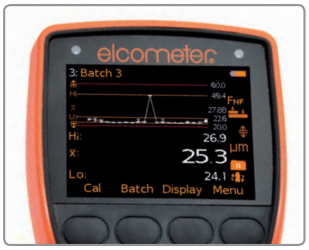
During each scan the Elcometer 456 displays the live thickness reading together with an analogue bar graph which graphically indicates the thickness relative to both the nominal thickness and any user-defined limits.



Scan Mode* stores the average, highest and lowest readings over a test area



During a scan the live reading together with an analogue bar graph is displayed



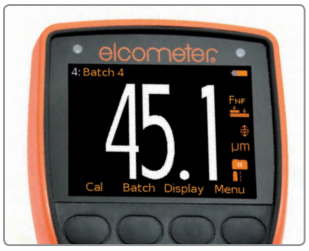
The Run Chart displays the average thickness as well as the highest and lowest readings for each scan



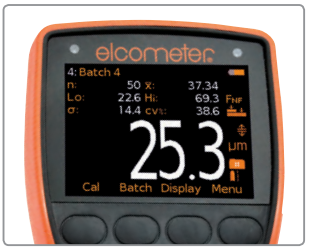
Auto Repeat Mode

When the Ultra/Scan Probe is slid over the coated surface in Auto Repeat Mode*, a reading is taken approximately every half a second. Each individual reading is stored into the memory.

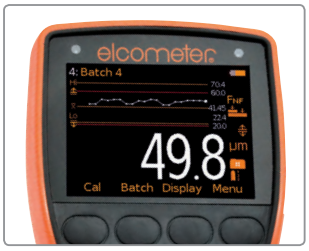
With a reading rate in excess of 140 readings per minute the Auto Repeat Mode can significantly speed up the inspection of large coated areas.



Auto Repeat Mode* measures and stores into memory over 140 individual readings per minute



The gauge updates and displays the statistical values as each individual reading is taken



The Run Chart displays each individual reading allowing the user to identify any significant trends

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

Coating Thickness Gauge

Elcometer 456

Ultra/Scan Probe

Featuring a highly durable 'snap on' replaceable probe cap, the Elcometer 456 Ultra/Scan Probe is a revolutionary design which allows users to take individual readings or rapidly scan large surface areas - without damaging the probe or the coating.

When used in conjunction with the Elcometer 456 Scan or Auto Repeat Modes* the Ultra/Scan Probe enables users to significantly reduce inspection times without affecting accuracy.

The Ultra/Scan Probe uses the Elcometer 456's patented offset feature+, ensuring that any cap wear during use# is incorporated within the calibration process. The gauge even informs the user when to replace the cap.



The Ultra/Scan Probe with replaceable end caps for increased durability

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.).



Counted Average and Fixed Batch Sizes can be used with all Elcometer 456 probes

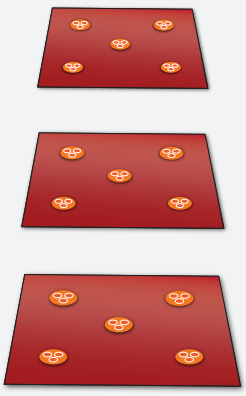
Working with Standards and Test Methods

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 Ultra/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.



* Scan and Auto Repeat Modes require an Elcometer 456 Model T gauge with Ultra/Scan Probe.
\+ Patent Number US6243661
\# When tested on smooth surfaces probe end caps have been scanned in excess of 50km (30 miles).

Elcometer 456 Coating Thickness Gauge

Product Features	■ Standard	□ Optional		
	Model E	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 back light*	■	■	■	■
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; *COV*		■	■	■
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	□	□	□	■
Integral models; *with automatic gauge switch on*	■	■	■	■
Probe type; *Ferrous (F), Non-Ferrous (N), Dual (FNF)*[3]	F, FNF	F, N, FNF	F, N, FNF	F, N, FNF
Measurement range	0-1500µm 0-60mils	0-13mm 0-500mils	0-1500µm 0-60mils	0-1500µm 0-60mils
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 8-11 for probe selection*		0-31mm 0-1220mils	0-31mm 0-1220mils	0-31mm 0-1220mils

■ Standard □ Optional

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

[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 Numbers UK: GB2306009B; USA: 5886522 ‡ Visit www.elcometer.com/sdk to find out how to integrate Elcometer's MFi certified products to your App.

Coating Thickness Gauge

Elcometer 456

Product Features

■ Standard □ Optional

	Model E	Model B	Model S	Model T
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			■	■
Automatic calibration; *for rapid calibration*			■	■
Calibration memory type; *gauge (g) or gauge & batch (gb)*	g	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			■	■
Batch types; *normal, counted average, IMO PSPC*			■	■
Batch review graph				■
Review, clear & delete batches			■	■
Copy batches and calibration settings				■
Alpha-numeric batch names; *user definable on the gauge*				■
Scan & auto repeat modes; *with Ultra/Scan probe connected*				■
Fixed batch size mode; *with batch linking*				■

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	approx 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)	Separate: 161g (5.68oz) Integral: 156g (5.50oz)
Operating temperature	-10 to 50°C (14 to 122°F)
Packing List	Elcometer 456 gauge, calibration foils (integrals only), 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 8-11

■ Standard □ Optional

[4] Zero Offset USA Patent Number US6243661

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

Elcometer 456



Integral & Separate model range

The Elcometer 456 is available in four different models. Each gauge provides the user with increasing functionality - from the entry level Elcometer 456 Model E, to the top of the range Elcometer 456 Model T.

Integral gauges are ideal for single handed operation as the wide footprint of the Bigfoot™ internal probe provides greater stability during measurement - allowing for consistent, repeatable and accurate results.

Separate models, with their wide range of probes, provide even greater measurement flexibility. See page 8-11 for more details.

Integral Model Options C

Scale 1

Range: 0-1500µm (0-60mils) Accuracy*: ±1-3% or ±2.5µm (±0.1mil)

Resolution: 0.1µm: 0-100µm; 1µm: 100-1500µm (0.01mil: 0-5mils; 0.1mil: 5-60mils)

	Model E	Model B	Model S	Model T	Certificate
Elcometer 456 Ferrous Integral	A456CFEI1	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	A456CFNFEI1	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)

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

	Model E	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	●

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 E	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	●

Separate Model Options C

	Model E	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	●

Probes are supplied separately, see page 8-11 for details



For a complete range of accessories see page 8-14

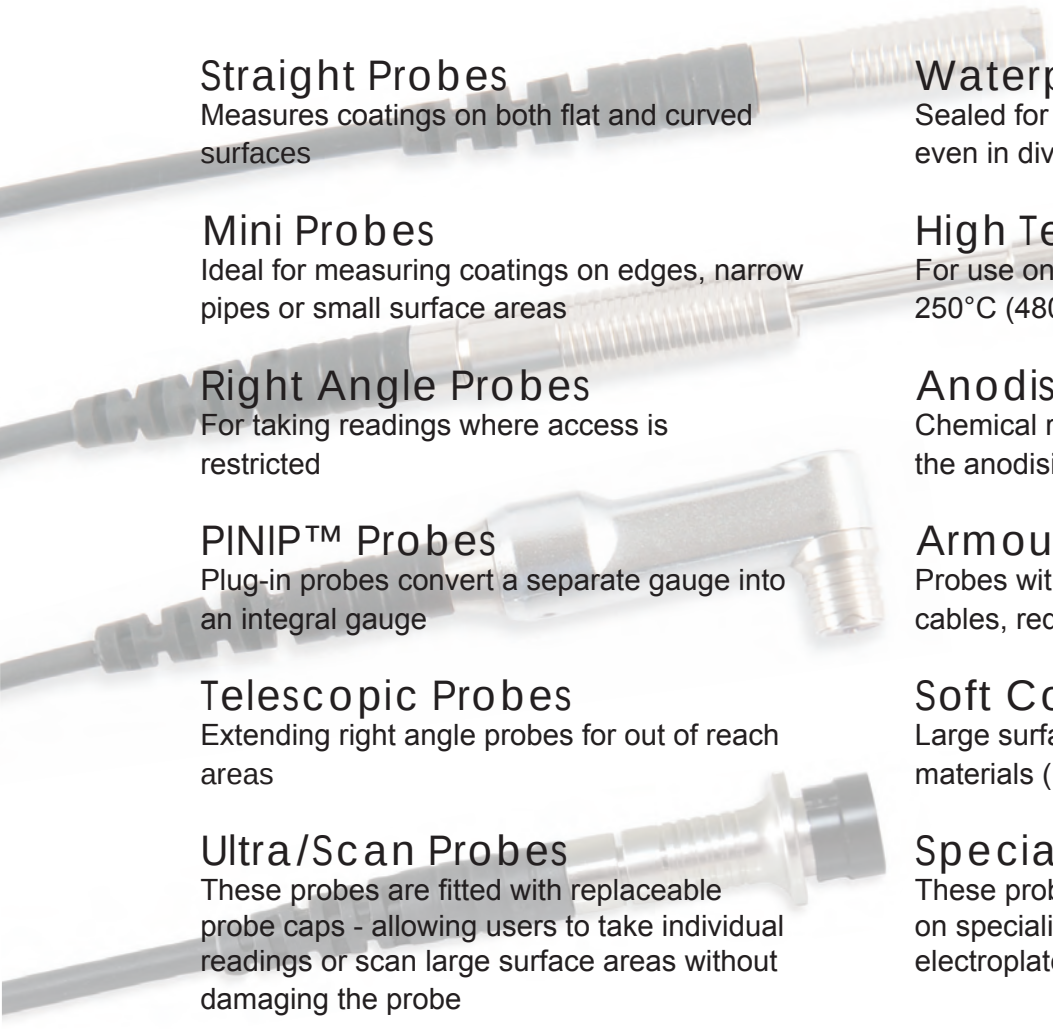
● Certificate supplied as standard.

* Whichever is the greater

Probe range

Elcometer 456

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



Straight Probes
Measures coatings on both flat and curved surfaces

Mini Probes
Ideal for measuring coatings on edges, narrow pipes or small surface areas

Right Angle Probes
For taking readings where access is restricted

PINIP™ Probes
Plug-in probes convert a separate gauge into an integral gauge

Telescopic Probes
Extending right angle probes for out of reach areas

Ultra/Scan Probes
These probes are fitted with replaceable probe caps - allowing users to take individual readings or scan large surface areas without damaging the probe

Waterproof Probes
Sealed for use underwater at depth, even in diving gloves

High Temperature Probes
For use on hot coated materials up to 250°C (480°F)

Anodiser Probes
Chemical resistant washable probes - ideal for the anodising environment

Armoured Probes
Probes with metal reinforced heavy duty cables, reducing the risk of cable damage

Soft Coating Probes
Large surface area probes for soft reach materials (HVCA approved)

Specialist Probes
These probes are designed for measuring on specialist substrates, such as graphite, or electroplated components

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

Elcometer probes have a maximum operating temperature of 80°C (176°F) with the exception of separate ferrous probes 150°C (300°F) and Hi-Temperature PINIP's 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.

All Elcometer probes are supplied with a Test Certificate and a set of calibration foils appropriate to the scale range of the probe - see page 8-24 for further information.

Elcometer 456 Probe range

Scale 1

Range: 0-1500µm (0-60mils) Accuracy*: ±1-3% or ±2.5µm (±0.1mil)
Resolution: 0.1µm: 0-100µm; 1µm: 100-1500µm (0.01mil: 0-5mils; 0.1mil: 5-60mils) Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom		Minimum Sample Diameter†	
Straight	T456CF1S	T456CN1S	T456CFNF1S	F, N	85mm (3.35")	F, N, FNF (F)	4mm (0.16")
				FNF	88mm (3.46")	FNF (N)	6mm (0.24")
Right Angle	T456CF1R	T456CN1R	T456CFNF1R	F, N	28mm (1.10")	F, N, FNF (F)	4mm (0.16")
				FNF	38mm (1.50")	FNF (N)	6mm (0.24")
Mini 90° (M5) 45mm (1.77")	T456CFM5R90A	T456CNM5R90A	-	F, N	16mm (0.63")	F, N	4mm (0.16")
Mini 90° (M5) 150mm (5.9")	-	T456CNM5R90C	-	N	16mm (0.63")	N	4mm (0.16")
Mini 90° (M5) 400mm (15.7")	-	T456CNM5R90E	-	N	16mm (0.63")	N	4mm (0.16")
Straight Sealed	T456CF1E			F	85mm (3.35")	F	4mm (0.16")
Mini 90° (M5) Sealed 45mm (1.77")	T456CFME5R90A			F	16mm (0.63")	F	4mm (0.16")
Mini 90° (M5) Sealed 45mm (1.77") 2m Cable	T456CFME5R90A-2			F	16mm (0.63")	F	4mm (0.16")
Anodiser	-	T456CN1AS	-	N	100mm (3.94")	N	4mm (0.16")
PINIP™	T456CF1P	T456CN1P	T456CFNF1P	F	170mm (6.69")	F, N, FNF (F)	4mm (0.16")
				N, FNF	180mm (7.09")	FNF (N)	6mm (0.24")

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) Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom		Minimum Sample Diameter†	
Straight	T456CF2S	T456CN2S	-	F	89mm (3.50")	F	8mm (0.32")
				N	88mm (3.46")	N	14mm (0.55")
Right Angle	T456CF2R	-	-	F	32mm (1.26")	F	8mm (0.32")
Armoured	T456CF2ARM	-	-	F	138mm (5.43")	F	8mm (0.32")
Telescopic 56 -122cm (22 - 48")	T456CF2T	-	-	F	36mm (1.42")	F	8mm (0.32")
Soft Coating	T456CF2B	-	-	F	89mm (3.50")	F	8mm (0.32")
Waterproof 1m (3') cable	T456CF2SW	-	-	F	138mm (5.43")	F	8mm (0.32")
Waterproof 5m (15') cable	T456CF2SW-5	-	-	F	138mm (5.43")	F	8mm (0.32")
Waterproof 15m (45') cable	T456CF2SW-15	-	-	F	138mm (5.43")	F	8mm (0.32")
Waterproof 30m (98') cable	T456CF2SW-30	-	-	F	138mm (5.43")	F	8mm (0.32")
Waterproof 50m (164') cable	T456CF2SW-50	-	-	F	138mm (5.43")	F	8mm (0.32")
PINIP™	T456CF2P	T456CN2P	-	F	174mm (6.85")	F	8mm (0.32")
				N	185mm (7.28")	N	14mm (0.55")
Hi-Temperature 250°C (480°F)	T456CF2PHT	-	-	F	174mm (6.85")	F	8mm (0.32")

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) Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom		Minimum Sample Diameter†	
Straight	T456CF3S	-	-	F	102mm (4.02")	F	14mm (0.55")
PINIP™	T456CF3P	-	-	F	184mm (7.24")	F	14mm (0.55")

† FNF (F): FNF probe in F mode FNF (N): FNF probe in N mode

* Whichever is the greater

● Certificate supplied as standard.

Probe range

Elcometer 456

Scale 6

Range: F: 0-25mm (0-980mils) N: 0-30mm (1200mils) — Accuracy*: ±1-3% or ±100µm (±4.0mil)
Resolution: 10µm: 0-2mm; 100µm: 2-30mm (1mil: 0-100mils; 10mils: 100-1200mils) — Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom	Minimum Sample Diameter†
 Straight	T456CF6S	T456CN6S	-	F 150mm (5.90”) N 160mm (6.30”)	F 51 x 51mm² (2 x 2 sq. inch) N 58mm (2.29”)
 Armoured	T456CF6ARM	T456CN6ARM	-	F 190mm (7.48”) N 200mm (7.87”)	F 51 x 51mm² (2 x 2 sq. inch) N 58mm (2.29”)

Scale 7

Range: F: 0-31mm (0-1220mils) — Accuracy*: ±1-3% or ±100µm (±4.0mil)
Resolution: 10µm: 0-2mm; 100µm: 2-31mm (1mil: 0-100mils; 10mils: 100-1220mils) — Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom	Minimum Sample Diameter†
 Armoured	T456CF7ARM	-	-	F 200mm (7.87”)	F 55 x 55mm² (2.17 x 2.17 sq. inch)

Scale 0.5

Range: 0-500µm (0-20mils) — Accuracy*: ±1-3% or ±2.5µm (±0.1mil)
Resolution: 0.1µm: 0-100µm; 1µm: 100-500µm (0.01mil: 0-5mils; 0.1mil: 5-20mils) — Certificate: ●

Probe Design (M3)	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom	Minimum Sample Diameter†
 Mini 45mm (1.77”)	T456CFM3---A	T456CNM3---A	-	F 6mm (0.24”) N 6mm (0.24”)	F 3mm (0.12”) N 4mm (0.16”)
 Mini 90° 45mm (1.77”)	T456CFM3R90A	T456CNM3R90A	-	F 16mm (0.63”) N 16mm (0.63”)	F 3mm (0.12”) N 4mm (0.16”)
Mini 45° 45mm (1.77”)	T456CFM3R45A	-	-	F 18mm (0.71”)	F 3mm (0.12”)
 Mini 150mm (5.90”)	T456CFM3---C	T456CNM3---C	-	F 6mm (0.24”) N 6mm (0.24”)	F 3mm (0.12”) N 4mm (0.16”)
Mini 90° 150mm (5.90”)	T456CFM3R90C	T456CNM3R90C	-	F 16mm (0.63”) N 16mm (0.63”)	F 3mm (0.12”) N 4mm (0.16”)
Mini 90° 300mm (11.8”)	T465CFM3R90D	-	-	F 16mm (0.63”)	F 3mm (0.12”)
Mini 45° 300mm (11.8”)	T456CFM3R45D	-	-	F 18mm (0.71”)	F 3mm (0.12”)
Mini 90° 400mm (15.7”)	-	T456CNM3R90E	-	N 16mm (0.63”)	N 4mm (0.16”)

Scale 0.5 Graphite

Range: 0-500µm (0-20mils) — Accuracy*: ±1-3% or ±2.5µm (±0.1mil)
Resolution: 0.1µm: 0-100µm; 1µm: 100-500µm (0.01mil: 0-5mils; 0.1mil: 5-20mils) — Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom	Minimum Sample Diameter†
 Mini 90° Graphite 45mm (1.77”)	-	T456CNMG3R90A	-	N 16mm (0.63”)	N 4mm (0.16”)
 Mini 90° Graphite 150mm (5.90”)	-	T456CNMG3R90C	-	N 16mm (0.63”)	N 4mm (0.16”)
 Mini 90° Graphite 400mm (15.7”)	-	T456CNMG3R90E	-	N 16mm (0.63”)	N 4mm (0.16”)

Ultra/Scan Probe

Range: 0-1500µm (0-60mils)+ — Accuracy*^: ±1-3% or ±2.5µm (±0.1mil)
Resolution: 1µm: 0-1500µm (0-60mils) — Certificate: ●

Probe Design	Ferrous F	Non-Ferrous N	Dual Probe FNF	Minimum Headroom	Minimum Sample Diameter†
 Ultra/Scan Probe	T456CF1U	-	T456CFNF1U	F, FNF 85mm (3.50”)	F, FNF 15mm (0.59”)
	T456C23956	Replacement Ultra/Scan Probe End Caps (3 per pack)#			

† FNF (F): FNF probe in F mode FNF (N): FNF probe in N mode
^ When calibrated using a sample of the uncoated substrate
# When tested using smooth surfaces probe end caps have been scanned in excess of 50 km (30 miles)
+ Excluding probe end cap
● Certificate supplied as standard.

* Whichever is the greater
Elcometer 456 probes are covered by a 1 year warranty

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 Adaptor



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



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

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



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.

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

Accessories	
T99922341	Self Adhesive Screen Protectors (x10)
T99921325	USB Cable
T45622371	Benchtop Inspection Stand - for Separate Gauges

Accessories

Calibration Foils/ Coated Standards/ Zero Test Plates
Elcometer offers a range of individual precision foils, foil sets, coated thickness standards and zero test plates to ensure the greatest possible accuracy.

See page 8-24 for more details.



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)

ELCOMETER 456
DIGITAL INSPECTION KITS

Fast and accurate measurement of surface profile, climatic conditions and coating thickness in one kit

Ideal for 'paperless' quality assurance systems the kits come complete with ElcoMaster™ Data Management Software for professional reporting and analysis.

See page 13-2 for more information.

compatible with ElcoMaster™

available with Bluetooth® wireless technology



Surface Profile



The Elcometer 224 digital surface profile gauge, available as either integral or separate probe versions, is faster than ever before.

See page 2-8

Climate Monitoring



The Elcometer 319 dewpoint meter records all the critical climate parameters for the coating's professional: surface, air & dewpoint temperatures, %RH & ΔT.

See page 4-2

Coating Thickness



Up to 40% faster than other coating thickness gauges, the new Elcometer 456 provides you with accurate and repeatable readings. Integral & separate probes available.

See page 8-2

ElcoMaster™



ElcoMaster™ is the simple yet powerful software solution; combining all your inspection results in one professional report, instantly.

See page 1-2

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.

Available as a standard and top model, the unit's large memory stores up to 10,000 readings in batches and data can be output to a PC, datalogger or printer as required.

With a comprehensive range of Probe Modules available, just select the most appropriate for the application. All modules are supplied with calibration foils.

- ±1% or 1µm, whichever is the greater, accuracy
- Rugged aluminium case designed for the toughest environments
- ElcoMaster™ software supplied, see page 1-4
- Full statistical analysis - mean standard deviation, number of readings, highest and lowest value
- RS232 output
- Date and time stamp
- For a full list of probes and accessories, see page 8-18



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 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

Product Features

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, 3 x AA batteries, ElcoMaster™ software, PC cable and operating instructions	

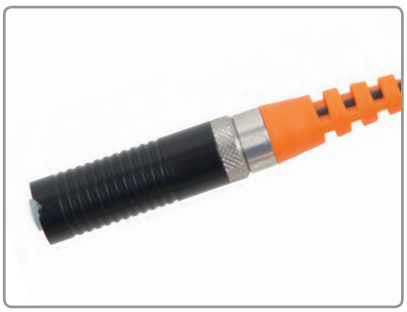
For a full range of calibration standards and foils sets see page 8-24



○ Optional Calibration Certificate available.

Elcometer 355

Coating Thickness Gauge



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 1100mm (43”).

Probe Range C

Scale 1	Range: 0-1500µm (0-60mils)		Accuracy*: ±1% or ±1µm (±0.04mil)		
	Resolution:	0.1µm: 0-200µm; 0.5µm: 200-500µm; 1µm: 500-1500µm (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”)	●
	F1 Telescopic	T35511959	30mm (1.18”)	6mm (0.24”)	●
	N1 Standard	T35511982	85mm (3.35”)	8mm (0.31”)	●
Scale 2	Range: 0-5mm (0-200mils)		Accuracy*: ±1% or ±5µm (±0.2mil)		
	Resolution:	2µm: 0-500µm; 5µm: 500-5000µm (0.1mil: 0-20mils; 0.2mil: 20-200mils)			
Probe Design		Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
	F2 Standard	T35511954	89mm (3.50”)	10mm (0.39”)	●
	F2 Telescopic	T35511960	36mm (1.42”)	10mm (0.39”)	●
	N2 Standard	T35511984	88mm (3.46”)	18mm (0.71”)	●
Scale 3	Range: 0-13mm (0-500mils)		Accuracy*: ±2% or ±30µm (±1mil)		
	Resolution:	5µm: 0-1mm; 10µm: 1-13mm (0.2mil: 0-40mils; 0.2mil: 40-500mils)			
Probe Design		Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
	F3 Standard	T35511956	102mm (4.02”)	18mm (0.71”)	●
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”)	●
Scale 5	Range: 0-800µm (0-32mils)		Accuracy*: ±1% or ±2µm (±0.08mil)		
	Resolution:	1µm: 0-800µm (0.1mil: 0-32mils)			
Probe Design		Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
	F5 (Rebar)	T35511962	85mm (3.35”)	4mm (0.16”)	●
Scale 6	Range: 0-25mm (0-1000mils)		Accuracy*: ±2% or ±100µm (±4mils)		
	Resolution:	10µm: 0-5mm, 50µm: 5-25mm (0.5mil: 0-200mils, 2mil: 200-1000mils)			
Probe Design		Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
	F6 Standard	T35511964	150mm (5.9”)	51mm (2.0”)	●

* Whichever is greater

● Test certificate supplied as standard.

Coating Thickness Gauge

Elcometer 355

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.

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
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
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

Probe Placement Jig
For the most reliable and repeatable coating thickness measurements, making the gauge score highly in repeatability and reproducibility studies. 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.





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

Elcometer 415

Paint and Powder Gauge







STANDARDS:

AS2331.1.4, AS/NZS 1580.108.1, ASTM B 499, ASTM D 1186-B, 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 2360, ISO 2808-12, ISO 2808-6A, ISO 2808-6B, ISO 2808-7C, ISO 2808-7D, JIS K 5600-1-7, NF T30-124

The Elcometer 415 Paint and Powder Coating Thickness Gauge provides a simple, accurate and reliable way to measure coatings on all smooth ferrous and non-ferrous metal surfaces. The gauge auto-switches to read on either ferrous or non-ferrous substrates. This is ideal for measuring paint or powder on both steel and aluminium surfaces such as car body panels or in a powder shop.

The gauge features a large, easy-to-read screen and is capable of taking more than 60 readings per minute. The central Bigfoot™ internal probe, with the integrated V-groove, allows repeatable readings on both flat and curved surfaces. On screen instructions, in over 20 languages, make the gauge usable straight from the box.

Features:

- Large angled display for viewing from all angles
- Metric or Imperial measurements - displays readings in mils or microns
- Fast and accurate with more than 60 readings per minute
- Factory calibrated for use straight from the box - calibration foils supplied
- Simple “Zero Cal” feature with fixed calibration setting if access to the uncoated substrate is not available
- Ergonomic design for maximum comfort
- Bigfoot™ probe for repeatable results
- On screen instructions in over 20 languages

Technical Specification

Part Number	Description
A415FNFI1	Elcometer 415 Paint and Powder Coating Thickness Gauge
A415FNFI1AUTO	Elcometer 415 Automotive Gauge (complete with F & N calibration plates)
Range	0 to 1000µm (0 to 40mils)
Resolution	1µm (0.1mil)
Accuracy	±3% or ±3µm (±0.12mil)
Measurement Speed	Greater than 60 readings per minute
Operating Temperature (ambient)	0°C to 50°C (32°F to 120°F)
Maximum Operating Temperature (probe)	80°C (176°F)
Storage Temperature	-10°C to 55°C (14°F to 130ºF)
Case	High impact ABS plastic
Batteries	2 x AAA batteries
Weight	130g (4.1oz)
Dimensions	110 x 75 x 35mm (4.3 x 3 x 1.38”)
Packing List	Elcometer 415 gauge, calibration foils, soft carry case, 2 x AAA batteries & operating instructions. The Elcometer 415 AUTO has 2 calibration zero plates.

Automotive Refinishing Gauge

Elcometer 311







The Elcometer 311 has been specifically designed to meet the requirements of today's automotive refinishing market and is available in two models.

The Ferrous instrument is ideal for measuring coatings on steel body panels. The FNF instrument enables the user to measure on both steel and aluminium panels using one gauge with automatic switching.

Pre-calibrated on steel and aluminium car body panels, the Elcometer 311 is very easy to use. Checkpieces are supplied with each instrument to verify accuracy.

- Designed specifically to meet the requirements of the automotive industry
- Ferrous (F) and Ferrous/Non Ferrous (FNF) gauges available
- Pre-calibrated on automotive steel and aluminium
- Bigfoot™ integral probe for stable, repeatable readings
- Scale range of 0-500µm (0-20mils)
- Auto On/Off
- Ferrous (F) checkpiece included to verify performance - the FNF gauge is also supplied with a non-ferrous (N) checkpiece
- Available in Metric or Imperial versions

Technical Specification

Part Number Metric	Imperial	Description
A311FM	A311FE	Elcometer 311 Automotive Refinishing Gauge (Ferrous)
A311FNFM	A311FNFE	Elcometer 311 Automotive Refinishing Gauge (FNF)
Scale Range		0 - 500µm (0 - 20mils)
Resolution		10µm (0.5mil)
Accuracy		±5% or ±20µm (±5% or ±1.0mil)
Probe Type		Integral with auto On/Off
Operating Temperature		0° to 50°C (32°F to 120°F)
Speed of Readings		30 per minute
Weight		115g (4.05oz)
Battery Type		2 x AAA batteries Battery life: 20 hours
Dimensions		120 x 56 x 24mm (4.75 x 2.2 x 0.95")
Packing List		Elcometer 311F or Elcometer 311FNF Automotive Refinishing Gauge, 2 x AAA batteries, steel checkpiece, aluminium checkpiece (FNF model) with foil, carry case and operating instructions

Accessories

T99916925	Steel (F) Checkpiece	T99916901	Aluminium (N) Checkpiece
T99016898	Calibration Foil (Metric) 125µm	T99016897	Calibration Foil (Imperial) 5mils

Elcometer 157

Coating Thickness Gauge



This simple, pull-off gauge is a top-pocket, lightweight, foreman's type gauge for spot check indications of coating thicknesses.

- Insensitive to hot and cold coatings or surfaces - ideal for hot sprayed metal coatings for immediate results
- Easy to use and lightweight
- 3 scales on the instrument body: mils, microns and linear
- Pre-calibrated with no adjustment required

Technical Specification

Part Number	Description
A157----A	Elcometer 157 Coating Thickness Gauge
Ranges	Three scales printed on the body: 0 - 600µm, 0 - 25mils, linear (0 - 10 equally spaced divisions)
Accuracy	±15% of the reading
Packing List	Elcometer 157, protective case, graph card and operating instructions

Elcometer 101

Coating Thickness Gauge



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.

- Insensitive to hot and cold surfaces - ideal for hot sprayed metal coatings
- Incorporates reading hold feature
- Accuracy of ±10%
- Ideal for hazardous areas

STANDARDS:
AS 2331.1.3, ASTM B 499, ASTM G 12, BS 5411-11, ISO 2178, JIS K 5600-1-7, SSPC PA2

Technical Specification C

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.

Mechanical Coating Thickness Gauge

Elcometer 211

The Elcometer 211, commonly referred to as the “Banana Gauge”, is a Type I dry film thickness gauge which is not only ideal for use in environments where the use of electronic instruments is difficult, e.g. inflammable atmospheres in oil and gas production, but can also be used for underwater coating inspection.

This is one of the most popular mechanical gauges in the world.

- Factory calibrated - with user calibration adjustment
- Foils supplied to check calibration on site
- Ideal for cold surfaces and underwater use
- Small and portable with an accuracy ±5%
- The “V” grooved base, ideal for pipeline inspection
- Available in either Metric or Imperial versions, the Elcometer 211 measures coatings up to 6mm (250mils).







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

Technical Specification C

Part Number	Description	Range	Certificate
A211F--1M	Elcometer 211 Coating Thickness Gauge	0 - 1000µm	○
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 8-24



○ Optional Calibration Certificate available.

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 C

Part Number	Colour	Dimensions		Values*		Certificate+
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)	○
T99022570-4A	Dark Blue	50 x 25mm	(1.97 x 0.98")	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)	○
T99022570-9A	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)	○
T99022570-12A	Black	50 x 25mm	(1.97 x 0.98")	500µm	(20mils)	○
T99022570-14A	Grey-Blue	50 x 25mm	(1.97 x 0.98")	1000µm	(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")	1500µm	(60mils)	○
T99022570-18A	Clear	50 x 25mm	(1.97 x 0.98")	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)	○
T45618978-2**	Grey	n/a		1500µm	(60mils)	○
T45618978-3**	Grey	n/a		5000µm	(197mils)	○

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.



Alternative 75 x 50mm foils upon request

*Actual foil values may vary, but are accurately labelled

**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.

+A Certificate can be supplied with any combination of up to 8 Foils

○ 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 - with or without Zero Plate
- 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 C

Description	Foil Values (µm)	Foil Values (mils)	Un-Certified	Certified
Scale 1 Foil Set; 0-1500µm (0-60mils)	25, 50, 125, 250, 500, 1000	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, 1000, 2000, 3000	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, 1000, 2000, 4000, 8000	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)	1000, 2000, 5000, 9500, 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[1]; 0-5mm (0-200mils)	25, 50, 125, 250, 500, 1000, 2000, 2000	1.0, 2.0, 5.0, 10, 20, 40, 80, 80	T99022255-8	T99022255-8C

[1]The Scale 2B foil sets are designed for soft coating probes and have a larger foil surface area

Elcometer 995



Coated Thickness Standards

The Elcometer 995 Coated Thickness Standards are hard wearing, durable and are mounted in a protective folder. They provide the user with an ideal method to accurately measure the performance of the coating thickness gauge.

Features:

- ±2% accuracy, supplied with Calibration Certificate as standard
- Available with either Ferrous (F) or Non-Ferrous (N) substrates
- Each standard is individually serial numbered for traceability
- Can be re-certified by Elcometer to meet ISO requirements
- Standards available in a range of thicknesses
- Special thicknesses can be supplied to meet specific needs
- Coated with a hard wearing film for extended life span

Technical Specification C

Part Number	Description	Values (µm)	Values (mils)	Certificate
T995111262	4 Piece Thickness Standards - Ferrous	Zero, 40, 75, 125, 175	Zero, 1.6, 3.0, 5.0, 7.0	●
T995111271	4 Piece Thickness Standards - Non Ferrous	Zero, 40, 75, 125, 175	Zero, 1.6, 3.0, 5.0, 7.0	●
T995111263	4 Piece Thickness Standards - Ferrous	Zero, 50, 80, 125, 200	Zero, 2.0, 3.0, 5.0, 8.0	●
T995111261	4 Piece Thickness Standards - Ferrous	Zero, 50, 150, 250, 500	Zero, 2.0, 6.0, 10, 20	●

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 8-24).

Technical Specification

Description	Size	Size	Ferrous	Non-Ferrous
Zero Test Plate ±1%	50.8 x 25.4mm	2.0 x 1.0”	T9994910-	T9994911-
Zero Test Plate ±2%	76.2 x 50.8mm	3.0 x 2.0”	T9999529-	T9999530-
Zero Test Plate - large ±2%	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

● Calibration Certificate supplied as standard.

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 cross hatch adhesion tester.

- Compact and convenient, ideal for use in confined areas
- Made of anodised aluminium for durability
- Bright LED light source for clear vision
- Top Model can hold one cross hatch cutter & three standard cutters which are locked tight, a simple rotation of the cutter holder changes the cutting tool.



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

Technical Specification C

	Description		
	Elcometer 121/4 Standard P.I.G.	Elcometer 121/4 Top P.I.G.	Certificate
Part Number	A121---S	A121---T	○
Range	2 - 2000µm (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 C

Part Number	Description	Angle	Measurement Range	Graticule	Certificate
T99915761-1	Tungsten Carbide Cutter No 1	45°	20 - 2000µm (1 - 80mils)	20µm (1mil)	○
T99915761-4	Tungsten Carbide Cutter No 4	26.6°	10 - 1000µm (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 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 C

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, x50 microscope, 3 cutters, marker pen, hexagonal wrench, carry case and operating instructions	

Accessories C

Part Number	Description	Cutting Angle	Measurement Range	Graticule Scale Factor	Certificate
T99915761-1	Tungsten Carbide Cutter No 1	45°	20 - 2000µm (1 - 80mils)	20µm (1mil)	○
T99915761-4	Tungsten Carbide Cutter No 4	26.6°	10 - 1000µm (0.5 - 35mils)	10µm (0.5mil)	○
T99915761-6	Tungsten Carbide Cutter No 6	5.7°	2 - 200µm (0.1 - 8mils)	2µm (0.1mil)	○

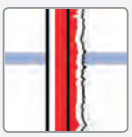
Using the Paint Inspection Gauge



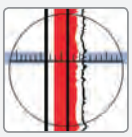
1. Take the coated product.



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.

Material 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.

Definitions:

Scan Mode: Measuring up to 16 readings per second, the gauge captures the minimum recorded thickness

Alarm Mode: Once a minimum acceptable thickness has been set, a red LED illuminates and a buzzer sounds if a measurement falls below the preset value

Differential Mode: Set an acceptable thickness (nominal) value in the gauge and the unit will display the positive or negative (±) difference from the nominal value entered

PE Mode

Pulse Echo (PE): The standard method for measuring material thicknesses from 0.63mm to 500mm (0.025 to 20")

IE Mode

Interface Echo (IE): More accurate than the PE mode, IE displays the total thickness from the top surface to the material density boundary - i.e. ignores the couplant thickness.

EE Mode

Echo-to-Echo (ThruPaint™) Mode (EE): Measuring materials as thin as 0.15mm (0.006") the Echo-to-Echo mode ignores the thickness of any coating applied to the surface under inspection

Plas Mode

PLAS Mode: A mode specifically used for measuring very thin plastics. A special graphite delay line accessory is required for this mode

Elcometer 207

Precision Ultrasonic Thickness Gauge



The Elcometer 207 series of Precision Ultrasonic Thickness Gauges is designed to provide accurate measurements on thin materials. All Elcometer 207 and 207DL gauges have the special PLAS mode. This is specifically designed to provide accurate readings when measuring thin plastics.

Using the latest transducer designs, the Elcometer 207 gauges can accurately measure material thickness from 0.15 - 25.4mm (0.006-1”) without the need to change the measurement mode.

STANDARDS:
ASTM E 797, EN 15317

IE Mode | **EE** Mode | **Plas** Mode

compatible with ElcoMaster™

Technical Specification C

Part Number	C207----1	C207DL----1
Model	Elcometer 207	Elcometer 207DL
PLAS Mode*	■	■
Scan & Differential Modes	■	■
Alarm Mode	■	■
Data Output (immediate)	■	■
Data Logging (memory)		1000 readings
ElcoMaster™ Software		■
Certificate	●	●
Maximum Measurement Range	0.15 - 25.4mm (0.006 - 1”)	
Velocity Range	1250 - 10000m/s (0.0492 - 0.3937 in/µs)	
Accuracy & Resolution	Accuracy[1]: ±0.02mm (0.0008”); Resolution: 0.002mm (0.0001”)	
Units	Millimetres and Inches	
Operating Temperature	-30°C to 50°C (-20°F to 120°F)	
Transducer	Each unit is supplied with 15MHz, 6mm (¼”) microdot right angle transducer	
Display	114mm (4½) Digit Liquid Crystal Display with backlight	
Battery Type (Life)	2 x AA 1.5V batteries (200 hours)	
Weight	295g (10oz) Dimensions 63 x 120 x 31mm (2.5 x 4.5 x1.24”)	
Packing List	Elcometer 207 or 207DL gauge, ultrasonic couplant, 2 x batteries, carry case, microdot transducer, calibration certificate and operating instructions. Elcometer 207DL: CD with ElcoMaster™ software and data transfer cable	

Accessories

T92016526	Precision Ultrasonic Transducer: Frequency 15.MHz, Crystal Diameter: 6.35mm (0.25”), Wearface Diameter: 7.42mm (0.3125”), Measurement Range in Steel: 0.15 - 25.4mm (0.006 - 1.0”)
T92016871	Graphite Delay Line (for PLAS mode)
T92015701	Ultrasonic Couplant, 120ml (4fl oz) Bottle

* To use the PLAS mode, a special Graphite delay line is required which must be ordered separately - see Accessories

● Calibration Certificate supplied as standard.

[1] Dependent on material and conditions

Steel Thickness Gauge

Elcometer 204

Pre-calibrated for ease of use, the Elcometer 204 Steel Ultrasonic Thickness Gauge provides a fast, accurate measurement of the thickness of steel.

Each gauge is supplied with an integrated steel “zero” plate to ensure the greatest accuracy. Supplied with a transducer & ultrasonic couplant, simply switch on the gauge and take readings. The inbuilt backlight allows measurements in low light conditions.

- Supplied with everything required for use
- Low cost and easy to use
- Measure material thickness when there is access to only one side



STANDARDS:
ASTM E 797, EN 15317

PE
Mode

Technical Specification C

Part Number	Description		Certificate
C204----1	Elcometer 204 Steel Ultrasonic Thickness Gauge		●
Maximum Measurement Range	0.63mm to 199.99mm or 0.025” to 19.999” (switchable)		
Accuracy	±2% of reading or ±0.5mm (0.02”), depending on material and conditions		
Resolution	0.01mm (0.001”)		
Weight	295g (10oz) including batteries	Dimensions	63 x 120 x 31mm (2.5 x 4.5 x 1.24”)
Units	Millimetres and Inches		
Operating Temperature	-30°C to 50°C (-20°F to 120°F) depending on climatic conditions		
Case	Extruded aluminium body, nickle plated aluminium end caps		
Battery Life	200 hours continuous use (alkaline dry batteries)		
Battery Type	2 x AA batteries		
Packing List	Elcometer 204 Steel Ultrasonic Gauge, transducer, calibration certificate, ultrasonic couplant, 2 x batteries, carry case and operating instructions		

Accessories

T92015646	Transducer: Potted Right Angle 5.0MHz, 6.4mm (¼”) Transducer
T92015701	Ultrasonic Couplant - 120ml (4fl oz) Bottle
T92015617	Instrument Carry Case
T9205243-	Test Wedge: 2 - 25mm (0.07 - 0.98”) in 6 Steps
T9205270-	Test Wedge: 30 - 100mm (1.18 - 3.93”) in 8 Steps

● Calibration Certificate supplied as standard.

Elcometer 205 & 206DL

Ultrasonic Thickness Gauge



STANDARDS:
ASTM E 797, EN 15317

The Elcometer 206 & 206DL are hand-held ultrasonic thickness gauges that allow you to make reliable measurements or scan a length of material for defects, or for the thinnest point.

Each gauge comes with 3 calibration options: single point, 2 point and speed of sound selection - allowing accurate measurements on a wide range of materials. Compatible with a wide range of measurement transducers, these ultrasonic thickness gauges are available with or without memory and all come with a backlight for measuring in darkened environments. Transducers are supplied separately, see pages 9-7.

PE
Mode

compatible with ElcoMaster™

Technical Specification

C

Model	Elcometer 205	Elcometer 206DL
Part Number	C205----1	C206DL----1
Scan Mode	■	■
Differential Mode		■
Alarm Mode		■
Data Output (Immediate)		■
Data Logging		1000 readings
ElcoMaster™ Software		■
Certificate	●	●
Maximum Measurement Range	0.63 - 500mm (0.025 - 20”) dependent on transducer and material	
Velocity Range	1250 - 10000m/s (0.0492 - 0.3930 in/µs)	
Accuracy & Resolution	Accuracy[1]: ±0.1mm (0.004”); Resolution: 0.01mm (0.001”)	
Units	Millimetres and Inches	
Operating Temperature	-30°C to 50°C (-20°F to 120°F)	
Keypad Type	Sealed Membrane	
Display	114mm (4½”) Digit Liquid Crystal Display with backlight	
Transducer	Select from transducer options on page 9-7	
Battery Type (Life)	2 x AA batteries (200 hours)	
Weight	295g (10oz) Dimensions 63 x 120 x 31mm (2.5 x 4.75 x 1.25”)	
Packing List	Elcometer 205 or 206DL gauge, bottle of couplant, 2 x batteries, carry case, calibration certificate and operating instructions. Elcometer 206DL: CD with ElcoMaster™ software and data transfer cable	

Accessories

T92015701	Ultrasonic Couplant 120ml (4fl oz) Bottle
T9205243-	Test Wedge: 2 - 25mm (0.07 - 0.98”) in 6 Steps
T9205270-	Test Wedge: 30 - 100mm (1.18 - 3.93”) in 8 Steps

● Calibration Certificate supplied as standard.

[1] Dependent on material and conditions

Ultrasonic ThruPaint™ Thickness Gauge

Elcometer 208 & 208DL

Rugged & repeatable hand-held gauges designed to non destructively measure the thickness of metal substrates whilst ignoring the thickness of up to 2mm (80mils) of an applied coating (Echo to Echo mode).

Supplied with or without data logging, each gauge can be used with a wide range of measurement transducers and has a wide range of functions including Scan mode and Alarm mode. Transducers are supplied separately, see page 9-7.



STANDARDS:
ASTM E 797, EN 15317

compatible with ElcoMaster™

PE Mode

EE Mode

Technical Specification C

Part Number	C208----1	C208DL----1
Model	Elcometer 208	Elcometer 208DL
Scan Mode	■	■
Alarm Mode	■	■
Data Output (immediate)	■	■
Data Logging (memory)		1000 readings
ElcoMaster™ Software		■
Certificate	●	●
Maximum Measurement Range	0.63 - 500mm (0.025 - 20”); 2.54 - 25.4mm (0.1 to 1.0”) in Echo-to-Echo Mode	
Velocity Range	1250 - 10000m/s (0.0492 - 0.3937 in/µs)	
Accuracy & Resolution	Accuracy[1]: ±0.1mm (0.004”); Resolution: 0.01mm (0.001”)	
Units	Millimetres and Inches	
Operating Temperature	-20°C to 50°C (-4°F to 120°F)	
Keypad Type	Sealed Membrane	
Display	114mm (4½”) Digit Liquid Crystal Display with backlight	
Battery Type (Life)	2 x AA batteries (200 hours)	
Weight	295g (10oz) Dimensions 63 x 120 x 31mm (2.5 x 4.75 x 1.25”)	
Packing List	Elcometer 208 or 208DL gauge, bottle of couplant, 2x batteries, carry case, calibration certificate and operating instructions. Elcometer 208DL: CD with ElcoMaster™ software and data transfer cable	

Accessories

T92016967	5MHz High Damped Transducer - Steel Applications
T92016968	7.5MHz High Damped Transducer - Aluminium, Stainless Steel & Titanium Applications
T92015701	Ultrasonic Couplant, 120ml (4fl oz) Bottle
T9205243-	Test Wedge: 2 - 25mm (0.07 - 0.98”) in 6 Steps
T9205270-	Test Wedge: 30 - 100mm (1.18 - 3.93”) in 8 Steps

● Calibration Certificate supplied as standard.

[1] Dependent on material and conditions

Elcometer





Potted Transducers



Microdot Transducer



Dual Element

Ultrasonic Transducer Options

Elcometer has a wide range of transducers available for use with the Elcometer 205, 206 & 208 range of Ultrasonic Thickness Gauges.

When selecting a transducer, it is important to choose one which will meet the application, taking the following into consideration:

- The type of material to be tested
- The design of the transducer probe
- The measurement range
- Whether the shape of the substrate is flat or curved or hard to reach
- A range of frequencies and sizes are available to meet specific needs
- Straight and right angle transducers available as potted or microdot

Definitions:

- **Microdot Transducer:**
  The cable can be unplugged from the transducer and easily replaced on site should it become damaged
- **Potted Transducer:**
  Unlike the microdot transducers, the cables are hard wired into the transducer head
- **Exxon Specification:**
  The gauge and transducer combination must hit specified standards without missing the first cycle
- **High Temperature Transducers:** temperature up to 340°C (650°F)

Speed of Sound Through Materials

Material	km/sec	in/msec	Material	km/sec	in/msec
Air	0.33	0.013	Neoprene	1.60	0.063
Aluminium (2024-T4)	6.38	0.251	Nickel	5.64	0.222
Beryllium	12.88	0.507	Nylon	2.69	0.106
Boron Carbide	10.92	0.430	Platinum	3.69	0.156
Brass	4.39	0.173	Plexiglass	2.69	0.106
Cadmium	2.77	0.109	Polystyrene	2.34	0.092
Copper	4.65	0.183	Polyurethane	1.78	0.070
Glass (Plate)	5.77	0.227	PVC	2.39	0.094
Glycerine	1.93	0.076	Quartz	5.74	0.226
Gold	3.25	0.128	Silver	3.61	0.142
Inconel	5.82	0.229	Steel (4340)	5.84	0.230
Iron	5.89	0.232	Steel (303 Stainless)	5.66	0.223
Iron, Cast	4.55	0.179	Teflon	1.52	0.060
Lead	2.16	0.085	Tin	3.33	0.131
Magnesium	5.84	0.230	Titanium	6.10	0.240
Mercury	1.45	0.057	Tungsten	5.18	0.204
Molybdenum	6.25	0.246	Uranium	3.38	0.133
Monel	5.36	0.211	Water	1.47	0.058
Motor Oil (SAE 30)	1.75	0.069	Zinc	4.32	0.170

Ultrasonic Transducer Options

Elcometer

Elcometer Ultrasonic Thickness Gauges can be calibrated by the user for the appropriate material in two ways:

- Set the calibration to the thickness of the known standard of the same material
- Set the frequency calibration to the appropriate value using the velocity chart on page 9-6.



Technical Specification

Part Number	Material								Probe Type						Measurement Range in steel	Frequency (MHz) (Colour Code)	Crystal Diameter	Wearface Diameter
	Cast Iron	Plastic	Glass Fibre	Thin Glass	Steel	Glass	Thin Plastic	Aluminium	Potted	Straight Probe	Right Angle	Microdot	Extra Res	Exxon Spec				
T92015620	▪	▪	▪						▪	▪					3.8 - 51mm 0.15 - 2”	1.0 brown/ yellow	12.7mm 0.50”	15.9mm 0.625”
T92015621	▪	▪	▪						▪		▪				3.8 - 51mm 0.15 - 2”	1.0 brown/ yellow	12.7mm 0.50”	15.9mm 0.625”
T92015627	▪	▪		▪					▪		▪				1.5 - 102mm 0.06 - 4”	2.25 red	6.4mm 0.25”	9.5mm 0.375”
T92015634	▪	▪		▪					▪		▪				1.5 - 127mm 0.06 - 5”	2.25 red	12.7mm 0.50”	15.9mm 0.625”
T92015641					▪	▪	▪		▪	▪					1.5 - 51mm 0.06 - 2”	5.0 green	4.8mm 0.19”	6.4mm 0.250”
T92015642					▪	▪	▪		▪		▪				1.5 - 51mm 0.06 - 2”	5.0 green	4.8mm 0.19”	6.4mm 0.250”
T92015645					▪	▪	▪		▪	▪					1.0 - 152mm 0.04 - 6”	5.0 green	6.4mm 0.25”	9.5mm 0.375”
T92015646					▪	▪	▪		▪		▪				1.0 - 152mm 0.04 - 6”	5.0 green	6.4mm 0.25”	9.5mm 0.375”
T92015648					▪	▪	▪				▪	▪			1.0 - 152mm 0.04 - 6”	5.0 green	6.4mm 0.25”	9.5mm 0.375”
T92015657					▪	▪	▪		▪	▪					1.3 - 508mm 0.05 - 20”	5.0 green	12.7mm 0.50”	15.9mm 0.625”
T92015658					▪	▪	▪		▪		▪				1.3 - 508mm 0.05 - 20”	5.0 green	12.7mm 0.50”	15.9mm 0.625”
T92015663					▪	▪	▪	▪	▪	▪				▪	1.0 - 152mm 0.04 - 6”	7.5 grey	6.40mm 0.25”	9.5mm 0.375”
T92015664					▪	▪	▪	▪	▪	▪	▪			▪	1.0 - 152mm 0.04 - 6”	7.5 grey	6.40mm 0.25”	9.5mm 0.375”
T92015667					▪	▪	▪	▪	▪	▪			▪		0.6 - 152mm 0.025 - 6”	7.5 blue	6.40mm 0.25”	9.5mm 0.375”
T92015668					▪	▪	▪	▪	▪		▪		▪		0.6 - 152mm 0.025 - 6”	7.5 blue	6.40mm 0.25”	9.5mm 0.375”
T92015670					▪	▪	▪	▪			▪	▪	▪		0.6 - 152mm 0.025 - 6”	7.5 blue	6.40mm 0.25”	9.5mm 0.375”
T92016526	▪			▪	▪	▪	▪	▪				▪			0.15 - 25.4mm 0.006 - 1.0”	15.0 green	6.35mm 0.25”	7.42mm 0.3125”

Additional transducers are available - for more information visit www.elcometer.com



elcometer®

ELCOMETER 280

PULSED HOLIDAY DETECTOR



Making pulsed DC holiday detection safer, easier and more reliable

Rugged, shockproof and water resistant, the Elcometer range of DC, Pulsed DC, and Low Voltage Holiday Detectors are designed to meet the most exacting specifications. Ergonomic features and interchangeable probes make Elcometer's range the most versatile in the industry.

Pinhole Detection



The Elcometer 270 sets the standard for wet sponge detectors - high quality, low voltage detectors with a range of accessories to meet your requirements.

See page 11-2

DC Holiday Detection



The Elcometer 266 High Voltage DC holiday detector's menu allows access to every major International Standard and automatically sets the required parameters.

See page 11-8

Pulsed DC Holiday Detection



The new Elcometer 280 Pulsed DC holiday detector with three grounding options makes pipeline inspection faster and safer than ever before.

See page 11-4

Adaptors & Accessories



Elcometer offers a wide range of versatile accessories designed to meet every application along with adaptors to work with your current brushes and probes.

See page 11-12

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.

Elcometer 510 Automatic Pull-Off Adhesion Gauge

The Elcometer 510 Automatic Pull-Off Adhesion Gauge accurately measures the strength of the bond between the coating and the substrate.

compatible with ElcoMaster™

available with Bluetooth wireless technology

Suitable for use in Cloud Computing

new

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



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



User definable limits with unique pressure hold and release function

Android™

Made for iPod iPhone iPad

Automatic Pull-Off Adhesion Gauge

Elcometer 510

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 1348, EN 1542, EN 24624, ISO 16276-1, ISO 4624, JIS K 5600 5-7, NF T30-606, NF T30-062

Hand-held, waterproof rugged design equivalent to IP64



new

10, 14.2, 20 and 50mm diameter dolly options



Intuitive & easy to use menu structure in multiple languages

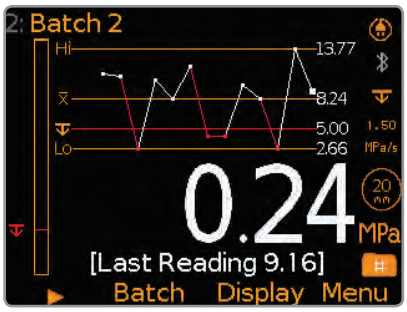
Store up to 60,000 readings with individual pull graphs in up to 2,500 alpha numerical batches, complete with attribute failure information

Elcometer 510 Automatic Pull-Off Adhesion Gauge

Key Features Explained



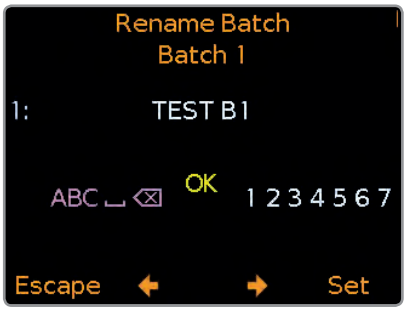
Automatic adhesion tester with selectable pull rates for 10, 14.2, 20 & 50mm diameter dollies.



View trend graphs or live statistics alongside the reading value.



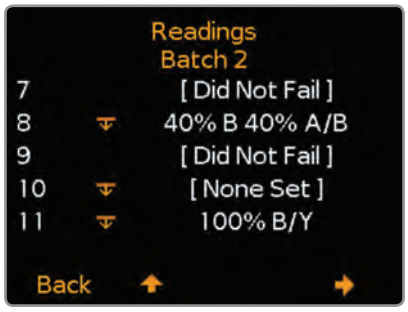
Individual user definable pull rate graphs can be saved with each reading.



Stores individual readings and pull rate graphs in up to 2,500 alpha numeric batches, together with date, time and attribute information.



Either pull to maximum or pull to preset limit. Unique time hold feature allows users to set a delay before pressure returns to zero.



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 accessory items (skirt, dolly, cutter) can be added to existing Elcometer 510 adhesion kits.

Automatic Pull-Off Adhesion Gauge

Elcometer 510



Powered by either standard rechargeable batteries or AC mains*. Each battery charge performs up to 200 pulls. Battery recharge time <300 minutes.



Transfer data to your PC via USB or Bluetooth® for further analysis with ElcoMaster™ software or view live pull rate graphs in ElcoMaster™ during the test.



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.



A range of interchangeable thin & standard 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.



The optional magnetic anchor clamp ensures the actuator doesn't fall during tests on vertical surfaces or testing at height.



Supplied in a robust plastic carry case for easy transportation to and around the job site.



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.



* Model T only.

‡ iPod, iPhone and iPad compatible

Elcometer 510 Automatic Pull-Off Adhesion Gauge

Assessing The Results - Failure Attributes

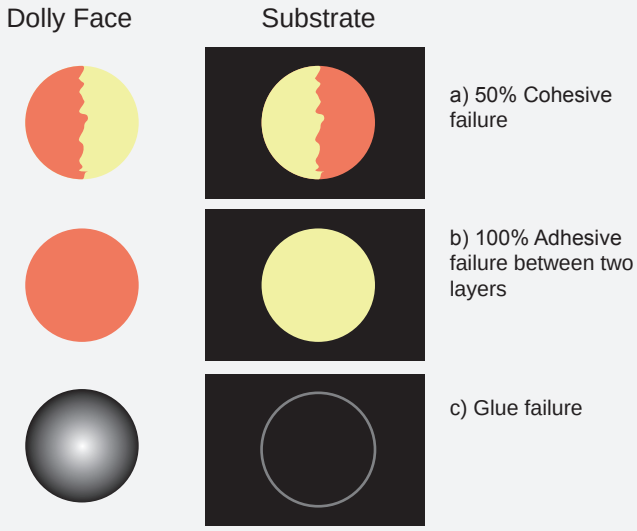
Many National and International Standards, including ISO 4624 & ASTM D4541, require the user to record not only the pull-off force but also the nature of the failure. This is done by examining the bottom of the dolly and assessing the failure. In 'Advanced' mode on the Elcometer 510 it is possible to select the 'Attributes' feature (Menu/Setup/Gauge Mode/Advanced) allowing the nature of the fracture to be recorded against each reading and stored within the batch.

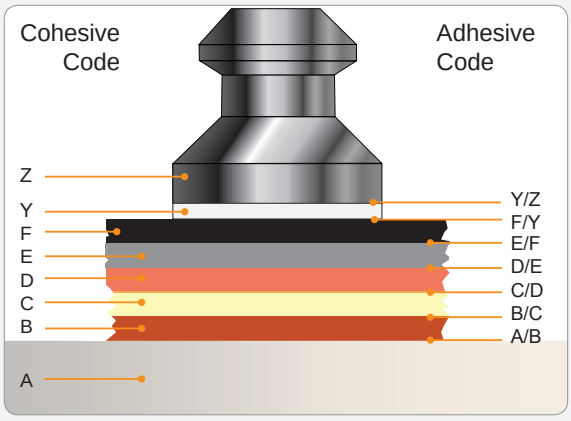
Examining The Dolly

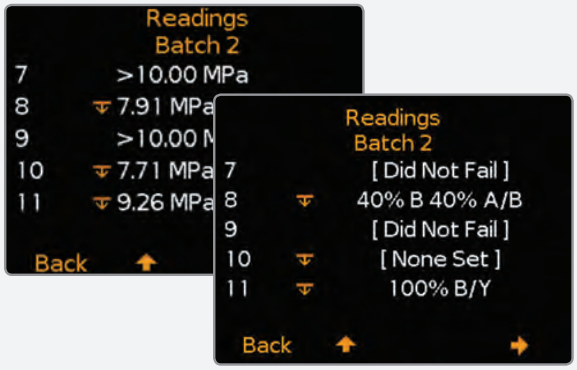
a) Cohesive Failure: The coating fails within the body of a coating layer leaving the same coating on the surface and on the dolly face.

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[d]		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[e] **N% A M% A/B**, where;

##.## MPa[e] = Pull Force in MPa or other measurement units (psi, Newtons or Nmm^{-2})
N% = Cohesive failure percentage[f]
A = Cohesive failure layer
M% = Adhesion failure percentage[f]
A/B = Intercoat adhesive failure layers

[d] 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.

[e] Or equivalent units. [f] To the nearest 10%, in line with International Standards.

Automatic Pull-Off Adhesion Gauge

Elcometer 510

Create instant reports with ElcoMaster™

What you do with the collected data is just as important as taking the readings themselves.

ElcoMaster™ 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™ 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™ 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



Elcometer 510 Automatic Pull-Off Adhesion Gauge

Product Features	■ Standard	□ Optional	C

	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[+]	■	■
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, $\bar{x}$, σ, hi, lo, COV, N>hi limit*[‡])	■	■
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*
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™ CD	■	■
Power Cable with Multi International Plug Adaptor *(UK, EU, US, AUS)*		■
Plastic Transit Case	■	■
Date & Time		■
In Field Adhesion Calibration Verification Mode	■	■

[+]The Elcometer 510 is extendable within 60 days from date of purchase, free of charge, to 2 years via www.elcometer.com

[‡] Model T only.

* When 'Rate Graph' is enabled, the number of readings which can be stored depends on the graph resolution selected

Automatic Pull-Off Adhesion Gauge

Elcometer 510

Technical Specification C

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 (1 psi)	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 to 100 MPa (1200 to 14400 psi)	4 to 50 MPa (600 to 7200 psi)	2 to 25 MPa (300 to 3600 psi)	0.3 to 4 MPa (50 to 580 psi)
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	8 x 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 (2 x 15ml tubes), abrasive pad, shoulder harness, carry case, 16 x AA MiMH rechargeable batteries & charger (UK, EU, US, AUS), mains power supply (UK, EU, US, AUS) (Model T), ElcoMaster™ 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 (2 x 15ml tubes), abrasive pad, shoulder harness, carry case, 16 x AA MiMH rechargeable batteries & charger (UK, EU, US, AUS), mains power supply (UK, EU, US, AUS) (Model T), ElcoMaster™ CD & USB cable, calibration certificate and operating instructions.			

Accessories

Dolly Diameter	Pack of 10[†]	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	-	-	-	-	-

Part Number	Description
T99923797	Magnetic Anchor Clamp - holds actuator securely during tests on vertical surfaces
T99912906	Araldite Standard Two Part Epoxy Adhesive, 2 x 15ml Tubes
T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99923103	Dolly Cleaning Heating Tongs - US 110V (No Plug)

● Calibration Certificate supplied as standard.

[1] Including Actuator with Standard Skirt fitted.
[†] 50mm (2”) dollies are supplied in packs of 4.

Elcometer 510 Automatic Pull-Off Adhesion Gauge

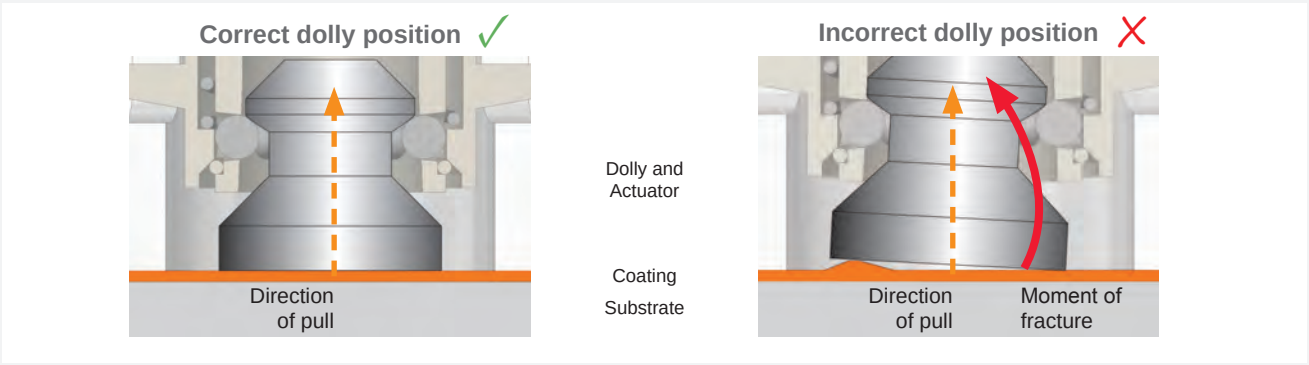
Pull-Off Adhesion Tests - Preventing Adhesive and Cohesive Failures

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 maybe 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.

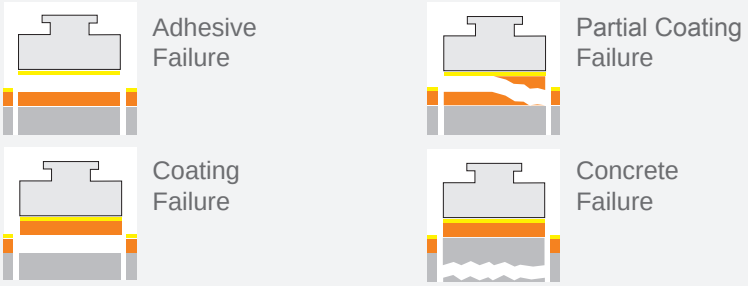
When the coating has failed within the layer leaving the same coating on both the dolly and the test panel it is known as a *'cohesive failure'*.

'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 is 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





Adhesion Verification Unit (AVU)

Elcometer 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 C

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	2 x 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), 2 x 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.

Elcometer 506

Pull-Off Adhesion Tester

STANDARDS:
ASTM D4541, ASTM D7234, AS/NZS 1580.408.5, BS 1881-207, DIN 1048-2, EN 12636, EN 13144, EN 1348, EN 1542, EN 24624, ISO 16276-1, ISO 4624, NF T30-606, NF T30-062

The Elcometer 506 Pull-Off Adhesion Testers allow the user to accurately measure the strength of the bond between the coating and the substrate.



Digital and analogue gauges available for both harsh and hazardous environments

Hand-held, ergonomic and fully portable - ideal for on-site adhesion testing



Low height actuator allows access in restricted areas. Safety harness clip prevents accidental damage of surrounding areas during test on vertical surfaces

Quick connect coupling for 14.2, 20 and 50 mm diameter dollies



Actuator skirts for a range of substrate thicknesses and bond strengths, on flat or curved surfaces



Pull-Off Adhesion Tester

Elcometer 506

Measurement range up to 50 MPa (7250 psi) with an accuracy of ±1% of full scale

Rotating crank handle applies an even uniform load up to 50 MPa (7250 psi)



Powerful

- Suitable for use on metal, wood, concrete and other substrates
- Rugged & lightweight - ideal for frequent testing
- Smooth load application up to 50 MPa (7250 psi)

Flexible

- Easy to use hand-held design
- Ideal for laboratory and field use
- 14.2, 20 and 50 mm (0.56, 0.76 & 1.96”) diameter reusable dollies
- Measures on small, curved and flat surfaces

Accurate

- Measurement range up to 50 MPa (7250 psi) with an accuracy of ±1% of full scale

Durable

- Sealed, heavy duty and impact resistant
- Dust and waterproof equivalent to IP65
- Suitable for use in harsh environments

Elcometer 506 Pull-Off Adhesion Tester

Technical Specification C

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	○

	14.2mm (0.56”) Dolly	**20mm (0.76”) Dolly**	**50mm (1.96”) Dolly**
Accuracy	±1% of full scale		
Pressure Rating	26 MPa (3800 psi)		
Operating Range	4 to 50 MPa (600 to 7200 psi)	2 to 25 MPa (300 to 3600 psi)	0.3 to 4 MPa (50 to 580 psi)
Scale Resolution	Analogue: 0.1 MPa (10 psi) Digital: 0.01 MPa (1 psi)	Analogue: 0.1 MPa (10 psi) Digital: 0.01 MPa (1 psi)	Analogue: 0.05 MPa (5 psi) Digital:0.01 MPa (1 psi)
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	2 x 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 (2 x 15ml tubes), abrasive pad, carry case, 2 x 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 (2 x 15ml tubes), abrasive pad, carry case, 2 x LR6 (AA) batteries (Digital Gauge only), test certificate and operating instructions.		

Accessories

Dolly Diameter	Pack of 10†	Pack of 100	Standard Skirt	Thin Substrate Skirt	Dolly Cutter Handle	Dolly Cutter
14.2mm (0.56”)	T9990014AL-10	T9990014AL-100	T999101420S	T9990014T	T9991420H	T9990014CT
20mm (0.76”)	T9990020AL-10	T9990020AL-100	T999101420S	T9990020T	T9991420H	T9990020CT
50mm (1.96”)	T9990050AL-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, 2 x 15ml Tubes
T99923924	Elcometer AVU Adhesion Verification Unit - see page 10-11 for further information
T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99923103	Dolly Cleaning Heating Tongs - US 110V (No Plug)

All gauges come with a 1 year warranty as standard, the Elcometer 506 is extendable within 60 days from date of purchase, free of charge, to 2 years via www.elcometer.com

● Test Certificate supplied as standard.

○ Calibration Certificate supplied as standard.

† 50mm (2”) dollies are supplied in packs of 4.

When using the analogue gauge with 14.2mm (0.56”) dollies, multiply the 20mm dolly scale reading by 2.

Pull Off Adhesion Tester

Elcometer 106

This easy to operate and fully portable Type II adhesion gauge provides a numerical value for adhesion. 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



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.





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

Technical Specification

C

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 (0.49 sq inch)		
Gross weight of Kit	Scale 1, 2 and 5: 2.1kg (4.7lb)	Scale 3: 3.4kg (7.5lb)	Scale 4: 3.6kg (8.0lb)		
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 10-11 for further information
T99912906	Araldite Epoxy Adhesive
T99914009	20mm (0.76”) Dolly Cutter

○ Optional Calibration Certificate available.

Elcometer 106/6

Adhesion Tester for Coatings on Concrete







STANDARDS:
ASTM D 7234, BS 1881-207,
DIN 1048-2, EN 1542, EN 12636

The Elcometer 106/6 Adhesion Tester has been specifically designed to measure 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

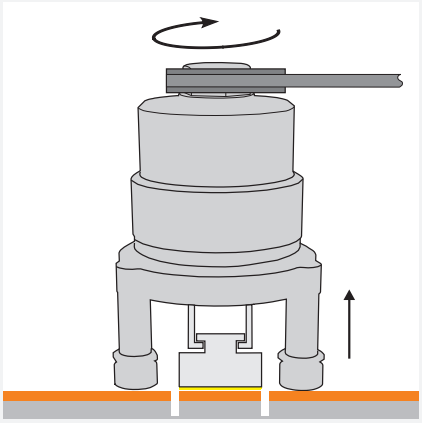
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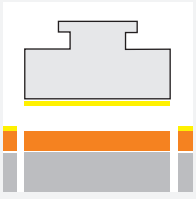
Part Number	Description	Certificate
F106----6	Elcometer 106 Coatings on Concrete Adhesion Tester - Scale 6	○
Range	0 - 3.5MPa (N/mm²) 0 - 500psi	
Dimensions	105 x 210mm (4 x 8")	
Packing List	Elcometer 106/6 Coatings on Concrete Adhesion Tester, 5 x 50mm (2”) dollies, support ring, Araldite adhesive, ratchet spanner, carry case and operating instructions	

Accessories

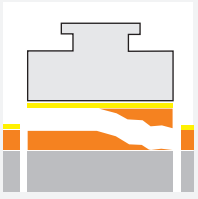
T10618570	50mm (2”) Diameter Dollies (Pack of 5)	T99912906	Araldite Epoxy Adhesive
KT001910P122	50mm (2”) Diameter Dolly Cutting Tool		

Coating Adhesion Testing on Concrete

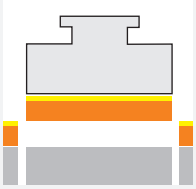




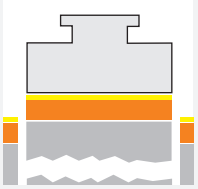
Adhesive Failure



Partial Coating Failure



Coating Failure



Concrete Failure

○ Optional Calibration Certificate available.

Hydraulic Adhesion Tester

Elcometer 108

The Elcometer 108 Hydraulic Adhesion Tester is an extremely versatile Type III adhesion gauge which can be used for many adhesion requirements. Tests can be made on flat or curved (concave and convex) surfaces.

The Elcometer 108 is the ideal gauge for coatings on Tanks, Pipelines, etc.

- Hand-Powered and portable
- Ideal for site work
- Reusable stainless steel dollies

Elcometer Digital Adhesion Gauge features:

- Maximum hold - displays the highest value reached
- Backlit display for dark areas
- Rubber protective casing
- Switchable Metric/Imperial

The Elcometer 108 can be used with convex and concave dollies, making this the gauge for adhesion of coatings on all pipelines including those with small diameter, tanks and other curved surfaces. There is a wide range of curved dollies available, each designed for a specific range of curvature.







STANDARDS:
ASTM D 4541, ISO 16276-1, NF T30-606

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 - 3600psi)	
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, heating tongs, 2 x LR6 (AA batteries) (Digital gauge only) and operating instructions	

Accessories

T99911135	Cyanoacrylate Adhesive
T1089646-	Standard Flat Dolly 19.4mm (0.76”)
T99923147	Dolly Cleaning Heating Tongs - EUR 220V / UK 240V
T99923103	Dolly Cleaning Heating Tongs - US 110V (No Plug)

Concave & Convex dollies are available upon request

○ Calibration Certificate available.

Elcometer 107

Cross Hatch Cutter



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

The Elcometer 107 Cross Hatch Cutter provides an instant assessment of the quality of the bond to the substrate. Due to its rugged construction this gauge is ideal for thin, thick or tough coatings on all surfaces. An ideal field or laboratory test.

- Robust design
- Large, non slip grip
- Ideal for thin, thick or hard coatings
- A quick change, four sided cutter allows adhesion testing on a wide range of coating thicknesses (1mm, 1.5mm, 2mm and 3mm)

The Elcometer 107 Cross Hatch Cutter is available as a Basic or Full Kit.

Technical Specification C

Part Number	Description	Coating Thickness		Certificate
F10713222-1	Elcometer 107 Basic Kit (6 x 1mm)	0 - 60µm	0 - 2.0mils	○
F10713348-6	Elcometer 107 Full Kit with ISO Tape (6 x 1mm)	0 - 60µm	-	○
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)	-	-	○
F10713222-4	Elcometer 107 Basic Kit (6 x 2mm)	0 - 125µm	0 - 5.0mils	○
F10713348-9	Elcometer 107 Full Kit with ISO Tape (6 x 2mm)	0 - 120µm	-	○
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	-	○
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), eye glass, brush and adhesive tape (either ASTM or ISO tape), all in a plastic ABS carry case			

Accessories C

		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	•			

○ Optional Calibration Certificate available.

Cross Hatch Adhesion Tester

Elcometer 1542

The Elcometer 1542 Cross Hatch Adhesion Tester is a simple but effective method for determining the adhesion of coatings. The instrument is ideal for coatings on flat surfaces and is available with one of three different spacings;

- 1mm spacing - for coating thickness < 60µm (2.4mils)
- 2mm spacing - for coating thickness < 125µm (5.0mils)
- 3mm spacing - for coating thickness < 250µm (9.8mils)

Each gauge can be supplied separately or combined in a kit with a standardised brush and x10 magnifier.

- Efficient cross hatch cutter with 8 cutting faces
- Anodised aluminium handle with a wheel for stable operation, ideal for test panels
- Supplied with an adjustment tool for accurate positioning of the cutter face



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 C

Part Number	Description	Coating Thickness		Certificate
K0001542M001	Elcometer 1542 Cross Hatch Adhesion Tester (6 x 1mm)[1]	0 - 60µm	0 - 2.4mils	○
K0001542M002	Elcometer 1542 Cross Hatch Adhesion Tester (6 x 2mm)[2]	50 - 125µm	2.0 - 5.0mils	○
K0001542M003	Elcometer 1542 Cross Hatch Adhesion Tester (6 x 3mm)[3]	121 - 250µm	4.8 - 9.8mils	○
K0001542M201	Elcometer 1542 Cross Hatch Adhesion Kit (6 x 1mm)[1]	0 - 60µm	0 - 2.4mils	○
K0001542M202	Elcometer 1542 Cross Hatch Adhesion Kit (6 x 2mm)[2]	50 - 125µm	2.0 - 5.0mils	○
K0001542M203	Elcometer 1542 Cross Hatch Adhesion Kit (6 x 3mm)[3]	121 - 250µm	4.8 - 9.8mils	○
K0001542M204	Elcometer 1542 Cross Cut Kit including 3 Cross Hatch Cutters[2]			○
Weight	200g (0.44lb)			
Dimensions	150 x 25 x 35mm (6 x 1 x 1.25”)			
Packing List	Cross Hatch Cutter, adjustment tool for setting cutting blades, hexagonal wrench, brush, magnifying glass, carry case and operating instructions			

Accessories C

		Methods			
Part Number	Description	ISO	ASTM	AS	Certificate
KT001542P001	6 x 1mm Cross Hatch Wheel	•	•		○
KT001542P002	6 x 2mm Cross Hatch Wheel	•	•	•	○
KT001542P003	6 x 3mm Cross Hatch Wheel	•			○
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	•			
T10713357	Cross Cut DIN Brush				
KT001546N002	Magnifier (x10)				
KT001542F006	Cutter Angle Adjustment Tool				

[1] ASTM, ISO Test Methods
[2] AS, ASTM, ISO Test Methods
[3] ISO Test Methods

○ 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 (2 mils) thickness.

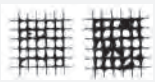
Made from steel, it has 11 tapered teeth with 1mm spacing. Two sets of lines are cut at right angles to obtain a pattern of 100 squares.

Results are determined by the table below.

Technical Specification C

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

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: 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.

Elcometer 270

Pinhole Detector

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 range utilises the wet sponge technique and sets the standard for wet sponge detectors - high quality, low voltage detectors 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

Pinhole Detector

Elcometer 270

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



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 C

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	3 x AA batteries (rechargeable batteries can also be used, 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, 3 x AA (LR1600) batteries and operating instructions		

• Calibration Certificate supplied as standard.

Elcometer 280

Pulsed DC Holiday Detector

STANDARDS:
AS 3894.1, ANSI/AWWA C203, ANSI/AWWA C214, ASTM D4787, ASTM D5162, ISO 29601, JIS G 3491, JIS G 3492, NACE RP0274, NACE SP0188, NACE SP0490, NACE TM0186, NACE TM0384

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.

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



Rugged, shock proof and water resistant design to ensure long life, even in harsh environments

Balanced, ergonomic design, complete with shoulder strap allows long periods of continuous use

Pulsed DC Holiday Detector

Elcometer 280

A wide range of interchangeable probe accessories available - compatible with all Elcometer holiday detectors

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

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.

Using the wide range of probe accessories users can detect porosity/holidays in coatings up to 25mm (1") thick.

Rugged, shockproof and water resistant, each unit is designed for use even in the harshest of environments.

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 up to 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
ideal for 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

Technical Specification C

Description	Model S	Model T	Certifcate
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 mains cables (UK, EUR and US), 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 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 light weight, rugged, wheeled transit case - ideal for transportation

Accessories

Light weight, 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 11-12



○ Optional Calibration Certificate available.

Elcometer 266

Holiday Detector

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

The Elcometer 266 revolutionises High Voltage DC testing of coatings porosity detection making it safer, easier and more reliable than ever before.

Voltage calculator automatically sets the correct voltage from your coating thickness value

A wide range of probe brushes and rolling springs available

Adjustable Voltage:
0.5kV - 1kV in 50V steps
1kV to 30kV in 100V steps



To change maximum voltage range, select a different handle; 5kV, 15kV or 30kV DC

Visual and audible alarms, Bright LEDs on the handle, as well as a loud buzzer, clearly indicate when a holiday is detected

Internal Voltmeter/Jeep tester ensures that the test voltage equals the selected voltage

Dual safety switch on handle to avoid accidental switch on

Key Features

Elcometer 266



Interchangeable DC probe handles

Part Number	Description
T26620033-1	DC5 (0 - 5kV)
T26620033-2	DC15 (0 - 15kV)
T26620033-3	DC30 (0 - 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. For the complete range of adaptors see page 11-12

Technical Specification C

Description	Part Number*	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 3 mains cables (UK, EUR and US), band brush, shoulder strap, tough plastic carry case and operating instructions	

Probe Handles C

	DC5 (0 - 5kV)	DC15 (0 - 15kV)	DC30 (0 - 30kV)	Certificate
Elcometer 266 Probe Handle (Voltage)*	T26620033-1	T26620033-2	T26620033-3	○
Elcometer 266 Probe Handle Certified*	T26620033-1C	T26620033-2C	T26620033-3C	
Second Hand Grip	T26620081			

For a full range of rolling springs, rubber or wire brush probes and other accessories see page 11-12



*The Elcometer 266 does not include the probe handle; please select the required handle from the list above

○ Optional Calibration Certificate available.

Elcometer 236

Holiday Detector

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

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



Adjustable sensitivity allows use on partially conductive surfaces

Integrated neon bulb in the handle, together with buzzer indicate when a holiday has been located

A wide range of probe brushes and springs available

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 re-chargeable 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 11-12



○ Optional Calibration Certificate available.

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		■	■
T99919999A	Battery charger & mains lead (UK 240V)		■	■
T99919999B	Battery charger & mains lead (EU 220V)		■	■
T99919999C	Battery charger & mains lead (US 110V)		■	■
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	Width		Compatible with Elcometer 236	Elcometer 266	Elcometer 280
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 11-15	□	■	■
T99922746	Stainless steel rolling spring holder Order the relevant stainless steel spring(s) from the list on page 11-15	□	■	■

□ Older Elcometer 236 models may require adaptor piece T99922768

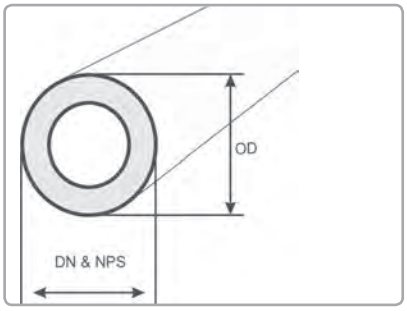
High Voltage Holiday Detector Accessories

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

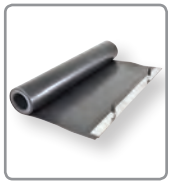
Part Number		Nominal Pipe Size		Pipe Outside Diameter (OD)			
		DN	NPS	millimeters (mm)		inches (”)	
Phosphor Bronze	Stainless Steel	(mm)	(inches)	min OD	max OD	min OD	max OD
T99920438-160A T99920438-160B	T99922744-160A T99922744-160B	406	16.0	400 435	435 450	15.7 17.1	17.1 17.7
T99920438-180A	T99922744-180A	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

UV Pinhole Flashlight

Elcometer 260

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 single 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.

A UV reflective additive is applied to the base coat. The UV flashlight shines the purple light on the coating, the base coat fluoresces where it is not covered by any subsequent coating - identifying any pinholes in the top coat.







STANDARDS:
ASTM E2501

Technical Specification

Part Number	D260----2
Beam Wavelength	405nm ±5nm
Flashlight Casing	Hard anodised aluminium
Battery Life	6 hours (continuous use)
Battery Type	2 x CR123A batteries
Lens Type	Dual element diffuser
Weight	173g (6.1oz)
Dimensions	150 x 35mm (6 x 1.4”)
Packing List	Elcometer 260 UV Pinhole Flashlight, UV protective glasses, nylon belt holster, 2 x CR123A batteries, operating instructions

Accessories

T26020140	UV Protective Glasses
T26020141	2 x Replacement 123A batteries

elcometer®

ElcoMaster™

DATA MANAGEMENT SOFTWARE

Combines all your inspection records in one report, instantly!

From surface profile to climate monitoring, dry film thickness to data management; Elcometer combines high quality products with simple data management, producing professional inspection reports at the click of a button.



Suitable for use in Cloud Computing

Surface Profile



The Elcometer 224 digital surface profile gauge, available as either integral or separate probe versions, is faster than ever before.

See page 2-8

Climate Monitoring



The Elcometer 319 dewpoint meter records all the critical climate parameters for the coating's professional: surface, air and dewpoint temperatures, %RH & ΔT.

See page 4-2

Coating Thickness



Up to 40% faster than other coating thickness gauges, the new Elcometer 456 provides you with accurate and repeatable readings. Integral and separate probes available.

See page 8-2

Adhesion



Fast, accurate and portable automatic adhesion testing on thin, thick, flat or convex substrates. The Elcometer 510 quickly and easily records, stores and transfers all your adhesion data.

See page 10-2

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.

Elcometer 131



Inspection Mirrors

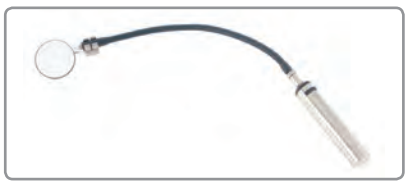
Ideal for inspecting difficult to access areas - inside pipes, behind corners, underneath inspection tanks, and other inaccessible or awkward areas.

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 and operating instructions



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 and operating instructions



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 and operating instructions



Part Number	Description
H131---2A	Elcometer 131/2A Illuminated Inspection Mirror (Battery Type 2 x LR14 C)
Dimensions	Mirror diameter: 63mm (2.5”)
Weight	650g (1.43lb)
Packing List	Elcometer 131 Inspection Mirror and operating instructions

Illuminated (x10) Magnifier

Elcometer 137

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	3 x LR14 (C)
Dimensions	33 x 215mm (1.3 x 8.5")
Weight	236g (0.52lb)
Packing List	Elcometer 137 Illuminated Magnifier and operating instructions

Pocket (x30) Microscope

Elcometer 7210

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	1 x AAA battery
Dimensions	140 x 50 x 22mm (5.5 x 2 x 0.9")
Weight	68g (0.14lb)
Packing List	Elcometer 7210 Pocket Microscope and operating instructions

Elcometer 900

Illuminated (x50) Microscope



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	1 x AAA battery		
Dimensions	120 x 43 x 115 mm (4.7 x 1.7 x 4.5”)	Weight	145g (0.31lb)
Packing List	Elcometer 900 Illuminated Microscope and operating instructions		

Elcometer 132

Safety Torch / Flash Light



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 and to have sufficient light.

The Elcometer 132 Safety Torch/Flash Light is explosion proof and meets the ATEX directive as category 2 equipment.

It is approved to the latest EN Standards for electrical apparatus for potential explosive atmospheres. This allows for use in Group II applications zones 1 and 2, IIA and IIB gases, where T4 temperature class permits.

Technical Specification

Part Number	Description
H132---1A	Elcometer 132 Safety Torch/Flash Light
Battery Type	2 x LR20 (D)
Dimensions	200 x 60 mm (7.8 x 2.4”)
Weight	150g (5.3oz) without batteries
Packing List	Elcometer 132 Safety Torch/Flash Light and operating instructions

Paint Safe Marker Pens

Elcometer 144



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.

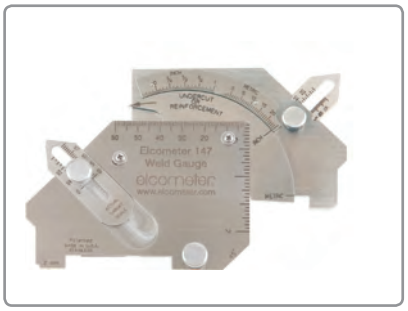
The pen which is available in black, is ideal for testing application in the most sensitive areas.

Technical Specification

Part Number	Description
H144----1	Elcometer 144 Paint Safe Marker Pens (pack of 5)

Weld Gauge

Elcometer 147



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 2-2



Fitz







Elcometer Fitz's Atlas 2 of Coatings Defects

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.

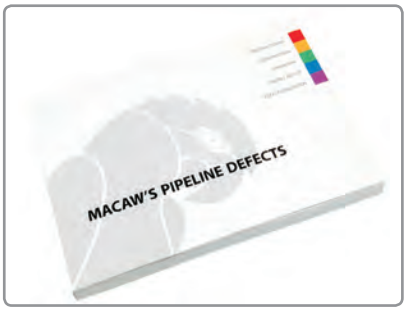
Sections:

- 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)

Macaw



Elcometer Macaw's Pipeline Defects

The aim of this publication is to illustrate the range of defects that may be encountered in high pressure steel pipelines and pipeline coatings.

The manual gives advice on the probable cause and significance of the defects and comments on appropriate remedial actions.

The defects included in this book encompass all aspects of high pressure steel pipeline manufacture, construction and operation, together with sections on coating and cathodic protection defects and examples of how defects interact to generate new or modified risks to pipeline integrity.

Technical Specification

Part Number	Description
H99918572	Elcometer Macaw's Pipeline Defects
Dimensions	210 x 148 x 15mm (8 x 6 x 0.5")
Weight	0.4kg (1.1lb)

Inspection Kits



Elcometer offers one of the widest ranges 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:

- Blasting Inspection
- Protective Coating Inspection
- Hazardous Area Inspection
- Automotive Inspection
- Qualicoat & Powder Inspection
- Surface Contamination
- Soluble Salt & Ion Specific Inspection
- Pinhole & Holiday Detection
- Heating, Ventilation & AC Duct Inspection

Custom kits can also be developed for your particular requirements, please contact your distributor for further information.

Elcometer



Digital Inspection Kits

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™ Data Management 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

compatible with ElcoMaster™

available with Bluetooth wireless technology

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

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Model	Description	Basic	Top	Page
Elcometer 224	Integral Digital Surface Profile Gauge	Model B	Model T	2-8
Elcometer 319	Digital Dewpoint Meter	Standard	Top	4-2
Elcometer 319	External Magnetic Surface Probe		■	4-5
Elcometer 456	Ferrous/FNF Separate Coating Thickness Gauge	Model B	Model T	8-2
Elcometer 456	Ferrous/FNF Standard Separate Probe: Scale 1	■	■	8-12
Elcometer 456	Ferrous/FNF PINIP Probe: Scale 1	□	□	8-12
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.

Blasting Inspection Kits

Elcometer



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

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Model	Description	Kit 1	Kit 2	Page
Elcometer 128	Pictorial Standards[1]	■	■	2-2
Elcometer 102	Needle Pressure Gauge	■	■	2-7
Elcometer 103	Blast Nozzle Gauge	■	■	2-7
Elcometer 125	Surface Comparator, Grit	■		2-16
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Elcometer 224	Standard Separate Probe		■	2-13
Elcometer 142	Dust Tape Test Kit		■	2-34
Elcometer 134	Chlor*Test Surface Testing Kit	■	■	2-30
Elcometer 134	Chlor*Test Abrasive Testing Kit	■	■	2-6
Elcometer 134	Chlor*Test Water Testing Kit	■	■	2-6
Elcometer 138	Bresle Salt Kit		■	2-25
Elcometer 138/2	Surface Contamination Kit		■	2-28
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

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”)

Elcometer







Protective Inspection Kits 1, 2 & 3

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 also adhesive testing.

Available as metric or imperial kits and housed in a sturdy, lightweight carry case, 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. The Elcometer 456 coating thickness gauge connects via Bluetooth® to ElcoMaster™ Data Management Software for paperless quality assurance.

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™ 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™ data management 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

compatible with ElcoMaster™

available with Bluetooth® wireless technology

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

Protective Inspection Kits 1, 2 & 3

Elcometer

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Elcometer 224	Digital Surface Profile Gauge		Model B Integral	Model T Separate	Model B Integral	Model T Separate	2-8
Elcometer 224	Standard Separate Probe			■		■	2-13
Elcometer 212	Digital Thermometer °C (°F) with Surface Probe	■					4-9
Elcometer 116	Whirling Hygrometer °C (Metric), Sling Hygrometer °F (Imperial)	■					4-7
Elcometer 114	Dewpoint Calculator	■					4-7
Elcometer 319	Digital Dewpoint Meter		Standard	Top	Standard	Top	4-2
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Elcometer 456	Standard Separate Probe, 0 - 1500µm (0 - 60mils)		Ferrous	Ferrous	Dual FNF	Dual FNF	8-12
Elcometer 107	Cross Hatch Full Kit[1]	■	■	■	■	■	10-18
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
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 Kit 2 Kit 3	456 x 384 x 110mm (17.95 x 15.12 x 4.33”) 456 x 384 x 127mm (17.95 x 15.12 x 5.00”) 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.

Elcometer

Protective Coating Inspection Kit 4



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

compatible with ElcoMaster™

available with Bluetooth wireless technology

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

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Elcometer 144	Paint Safe Marker Pens (Pack of 3)	■	12-5
Elcometer 147	Weld Gauge	■	12-5
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Elcometer 138	Bresle Salt Kit[2]	■	2-25
Elcometer 319	Digital Dewpoint Meter with Magnetic Surface Probe	Top	4-2
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Elcometer 112	Hexagonal Wet Film Comb: 25 - 3000µm (1 - 120mils)	■	7-2
Elcometer 456	Separate Digital Coating Thickness Gauge with F2 Standard Probe	Ferrous Model T	8-2
ElcoMaster™	Data Management Software & USB Cable	■	1-2

Technical Specification

Part Number Metric	Imperial	Description
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 Bresle Samplers not Bresle Patches

Protective Inspection Kit 5

Elcometer

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

compatible with ElcoMaster™

available with Bluetooth® wireless technology

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

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Elcometer 204	Steel Ultrasonic Thickness Gauge	■	9-3
Elcometer 128	Pictorial Standards[1]	■	2-2
Elcometer 131/1C	Telescopic Inspection Mirror	■	12-2
Elcometer 137	Illuminated Magnifier	■	12-3
Elcometer 144	Paint Safe Marker Pens (Pack of 3)	■	12-5
Elcometer 147	Weld Gauge	■	12-5
Elcometer 142	Dust Tape Test Kit	■	2-34
Elcometer 138	Bresle Salt Kit[2]	■	2-25
Elcometer 138/2	Surface Contamination Kit	■	2-28
Elcometer 122	Testex Tape, Coarse & Extra Coarse	■	2-15
Elcometer 124	Thickness Gauge	■	2-15
Elcometer 224	Digital Surface Profile Separate Gauge & Standard Separate Probe	Model T	2-8
Elcometer 319	Digital Dewpoint Meter, with Magnetic Surface Probe	Top	4-2
Elcometer 112	Hexagonal Wet Film Comb: 25 - 3000µm (1 - 120mils)	■	7-2
Elcometer 456	Separate Digital Coating Thickness Gauge with F2 Standard Probe	Ferrous Model T	8-2
Elcometer 121	Paint Inspection Gauge with Cross Hatch Cutters 6 x 1, 2 & 3mm and ISO (ASTM) Adhesive Tape	Top	8-27
ElcoMaster™	Data Management Software & USB Cable	■	1-2

Technical Specification

Part Number Metric	Imperial	Description
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 Bresle Samplers not Bresle Patches

Elcometer

Protective Coating Inspection Kit 6



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

compatible with ElcoMaster™

available with Bluetooth® wireless technology

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 RP 0188, NACE RP0287, NACE SP 0188, 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

Contents

Model	Description	Kit 6	Page
Elcometer 204	Steel Ultrasonic Thickness Gauge	■	9-3
Elcometer 128	Pictorial Standards[1]	■	2-2
Elcometer 131/1C	Telescopic Inspection Mirror	■	12-2
Elcometer 137	Illuminated Magnifier	■	12-3
Elcometer 144	Paint Safe Marker Pens (Pack of 3)	■	12-5
Elcometer 147	Weld Gauge	■	12-5
Elcometer 142	Dust Tape Test Kit	■	2-34
Elcometer 138	Bresle Salt Kit[2]	■	2-25
Elcometer 138/2	Surface Contamination Kit	■	2-28
Elcometer 122	Testex Tape, Coarse & Extra Coarse	■	2-15
Elcometer 124	Thickness Gauge	■	2-15
Elcometer 224	Digital Surface Profile Separate Gauge & Standard Separate Probe	Model T	2-8
Elcometer 319	Digital Dewpoint Meter, with Magnetic Surface Probe	Top	4-2
Elcometer 112	Hexagonal Wet Film Comb: 25 - 3000µm (1 - 120mils)	■	7-2
Elcometer 456	Separate Digital Coating Thickness Gauge with F2 Standard Probe	Ferrous Model T	8-2
Elcometer 121	Paint Inspection Gauge (Top) with Cross Hatch Cutters 6 x 1, 2 & 3mm & ISO (ASTM) Adhesive Tape	Top	8-27
Elcometer 270	Pinhole Detector (9 , 67.5 & 90V)	■	11-2

Technical Specification

Part Number Metric	Imperial	Description
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 Bresle Samplers not Bresle Patches

Protective Inspection Kit for Hazardous Areas

Elcometer



The Elcometer Hazardous Area Inspection Kit is a protective coating inspection kit suitable for use in hazardous areas where electronic equipment is prohibited.

The kit provides all the tools required for the on-site inspection of a coating, including surface profile, dewpoint, relative humidity, both wet and dry film thickness and also adhesive testing.

Measurement parameters include:

- Surface inspection
- Surface profile
- Surface contamination
- Climatic conditions
- Coating thickness
- Adhesion

STANDARDS:

AS 1580.408.4, AS 2331.1.3, AS 3894.3-A, AS 3894.5, AS 3894.9, AS/NZS 1580.107.3, AS/NZS 1580.108.1, ASTM B 499, ASTM D 2200, ASTM D 3359-B, ASTM D 4414-A, ASTM D 4417-A, ASTM D 4417-C, ASTM G 12, BS 3900-C5-6A, BS 3900-C5-7B, BS 3900-E6, BS 5411-11, BS 7079-C5, DIN 50981, ECCA T6, EN 13523-6, IMO MSC.215(82), IMO MSC.244(83), ISO 16276-2, ISO 2178, ISO 2409, ISO 2808-1A, ISO 2808-6A, ISO 2808-7A, ISO 2808-7B, ISO 8501-1, ISO 8503-1, ISO 8502-5, ISO 8503-2, ISO 8503-5, JIS K 5600-1-7, JIS K 5600-5-6, NACE RP0287, NF T30-038, NF T 30-124, NF T30-125, SS 55900, SSPC Guide 15, SSPC-PA2, 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	Page
Elcometer 128	Pictorial Standards[1]	2-2
Elcometer 125	Surface Comparator, Grit	2-16
Elcometer 125	Surface Comparator, Shot	2-16
Elcometer 122	Testex Tape, Coarse	2-15
Elcometer 122	Testex Tape, Extra Coarse	2-15
Elcometer 124	Testex Dial Thickness Gauge	2-15
Elcometer 131/1C	Telescopic Inspection Mirror	12-2
Elcometer 134	Chlor*Test Surface Testing Kit	2-30
Elcometer 113	Magnetic Thermometer °C (°F)	4-8
Elcometer 116	Whirling Hygrometer °C (Metric), Sling Hygrometer °F (Imperial)	4-7
Elcometer 114	Dewpoint Calculator	4-7
Elcometer 112	Hexagonal Wet Film Comb: 25 -3000µm (1 - 120mils)	7-2
Elcometer 211	Thickness Gauge	8-23
Elcometer 107	Cross Hatch Full Kit - ISO (ASTM) Tape, Brush & Eye Glass	10-18

Technical Specification

Part Number Metric	Imperial	Description
YKIT-HAZARD-1M	YKIT-HAZARD-1E	Elcometer Hazardous Area Inspection Kit
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

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. An illuminated magnifier is supplied to enable close inspection of bodywork.

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
Elcometer 137	Illuminated Magnifier (x10)	■	■	12-3
Elcometer 415	Paint and Powder Gauge	■	■	8-20
Elcometer 214L	Infrared Digital Laser Thermometer		■	4-11

Individual Instruments can be used in accordance with many other tests.
Please see individual Product Information Pages for details.

Technical Specification

Part Number	Description
YKITAUTOMOTIVE-1	Elcometer Automotive Inspection Kit 1
YKITAUTOMOTIVE-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.

For a smooth surface, the digital Elcometer 415 may be used, but, for more demanding, uneven, surfaces, the Elcometer 1542 is 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 or 6 x 1mm with ISO or ASTM Adhesive Tape	10-19

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 the powder coating applied to aluminium architectural applications. The aim of Qualicoat is to establish the minimum standard that plant installations, coating materials and finished products which have been powder coated must meet.

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
- Hardness
- Oven temperature
- Coating thickness
- Adhesion

compatible with ElcoMaster™

available with Bluetooth wireless technology

Contents

Model	Description	Basic	Top	Page
Elcometer 480	Statistical Glossmeter: 60°	Model B	Model T	14-4
Elcometer 1506	Mandrel Bend Tester with 5mm and 8mm (0.20 and 0.31") Mandrels	■		21-3
Elcometer 1615	Base Unit and Tube Assembly	■		21-6
Elcometer 1615	Kit B: ISO 6272/2 and BS 6496	■		21-8
Elcometer 1620	Manual Cupping Tester with Digital Gauge	■		21-5
Elcometer 3095	Buchholz Hardness Tester	■		20-9
Elcometer 215	Oven Data Logger and Kit[+]	Standard	Top	5-2
Elcometer 415	FNF Integral Digital Coating Thickness Gauge for smooth surfaces	■		8-20
Elcometer 456	FNF Separate Digital Coating Thickness Gauge		Model T	8-2
Elcometer 456	Standard FNF 1 Probe, 0 - 1500µm		■	8-12
Elcometer 1542	Cross Cut Set 6 x 1, 2, 3mm with ISO and ASTM Adhesive Tape	■		10-19

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

The Elcometer 138/2 Surface Contamination Kit provides the means for testing invisible surface contaminants and includes tests for:

- pH
- chloride ions
- iron
- soluble salts



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

Contents

Model	Description
E135----A	Bresle Sampler (Box of 50)
T13818517	3 x 5ml (0.1fl oz) Syringes
T13818518	3 x Needles
T13818519	Plastic Beaker, 30ml (1fl oz)
T99911344	Pure Water, 250ml (8.5fl oz)
T13820562	100 x pH Test Strips
T13820563	100 x Iron Test Strips
T13820564	40 x Chloride Test Strips

Technical Specification

Part Number	Description
E138----2	Elcometer 138/2 Surface Contamination Kit
Measurement Range	pH: 0pH to 14pH Iron: 3 - 10 - 25 - 50 - 100 - 250 - 500mg/l Fe^2 Chloride: 30µg/cm^2 (30ppm) Cl to 600µg/cm^2 (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 Bresle samplers, 3 x 5ml (0.2fl oz) syringes, 3 x needles, 30ml (1fl oz) plastic beaker, carry case and operating instructions

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

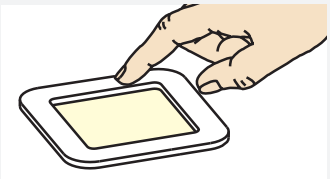
Technical Specification

Part Number	Description
E138-1	Elcometer 138 Bresle Salt Kit
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 (for Elcometer 138 see page 2-27 for full specification)
Dimensions	300 x 220 x 75mm (11 x 8.6 x 3”) Weight 2.1kg (4.62lb)
Packing List	Box of 25 Bresle patches, Elcometer 138 Conductivity Meter, 14ml (0.5fl 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 water, 3 x 5ml (0.1fl oz) syringes, 3 x blunt needles, 30ml (1fl oz) plastic beaker, 2 x CR2032 batteries, carry case and operating instructions

Accessories

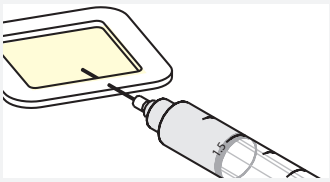
E135----B	Bresle Patches (Box of 25)	T13818519	Plastic Beaker 30ml (1fl oz)
T13818517	3 x 5ml (0.1fl oz) Syringes	T13823926	Calibration Solution 1.41 mS/cm 14ml (0.5fl oz) bottle
T13818518	3 x Needles	T99911344	Pure Water 250ml (8.5fl oz) Bottle

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



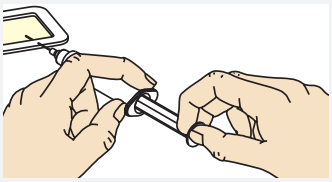
Remove protective backing and foam centre from the patch.

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.



Insert 3ml of deionised water from the syringe into the patch through its foam perimeter, at a 30° angle, so that it passes through the foam into the test compartment.

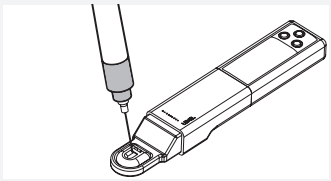
Inject 1.5ml of water into the test compartment.



Reposition the needle and remove the remaining air within the compartment.

Remove the needle and syringe and hold the syringe with the needle pointing upwards and expel the air.

Insert the syringe needle into the patch and inject the remaining water.



Withdraw and pull the solution back into the syringe and re-inject back into the patch.

Repeat at least four times and then 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 2-27.

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:

- 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)







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	5 x tests (containing: 5 x chloride tests, 5 x nitrate test strips, 5 x sulphate tests, 5 x syringes) 1 x colorimeter, carry case and operating instructions

Accessories

Part Number	Description
T134---C	1 set of 5 Nitrate Tests
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 Detectors 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:

Model	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 11-2.

Technical Specification

Model	Description
T27018191	Elcometer 270 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, AA batteries, spare flat sponge, spare roller sponge

The kit does not include the main instrument; see page 11-2 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 11-4







STANDARDS:
AS 3894.1, ANSI/AWWA C203, ANSI/AWWA C214, ASTM D4787, ASTM D5162, 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 page 11-4



Band brush probes

See page 11-12



External ‘C-type’ wire brushes

See page 11-14



Right angled wire brush probes

See page 11-13



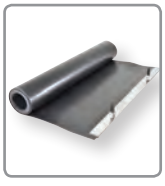
Right angled rubber probes

See page 11-14



Internal circular wire pipe brush probes

See page 11-13



Grounding mats

See page 11-16

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.

compatible with ElcoMaster™

Android™

available with Bluetooth® wireless technology

Made for iPod iPhone iPad

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, 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

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.

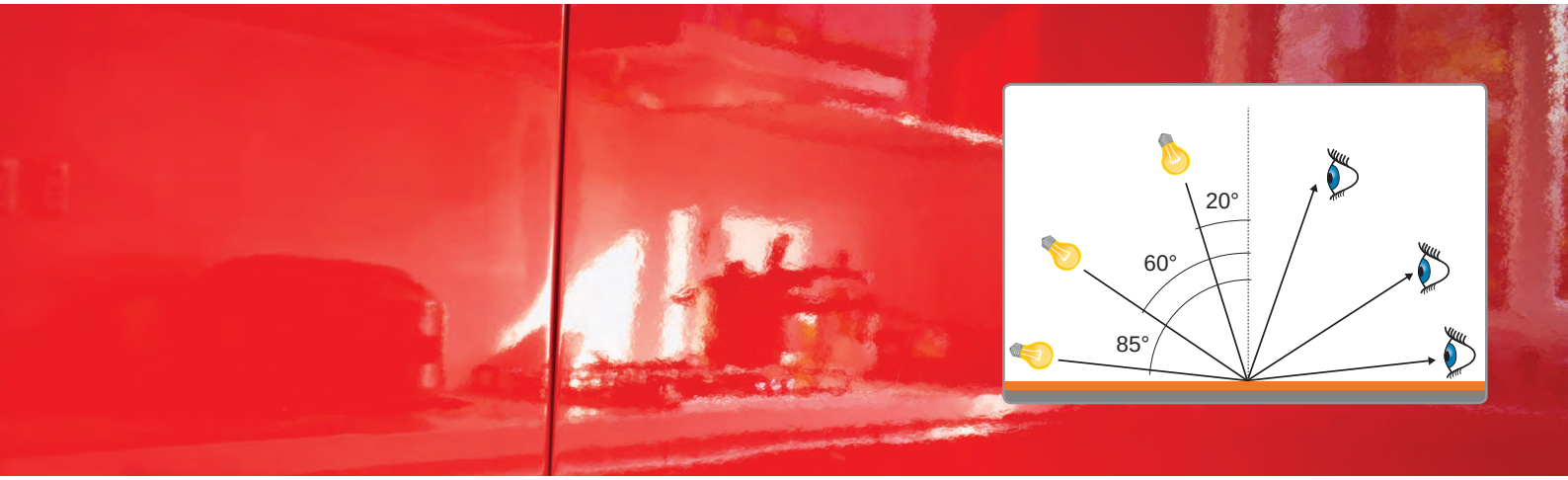
Distinctiveness of Image (DOI): Measures the effect of surface textures such as orange peel on a reflected image. Reflections seen in a totally smooth high gloss surface are completely sharp and distinct. As surface textures increase the image becomes fuzzy and distorted.

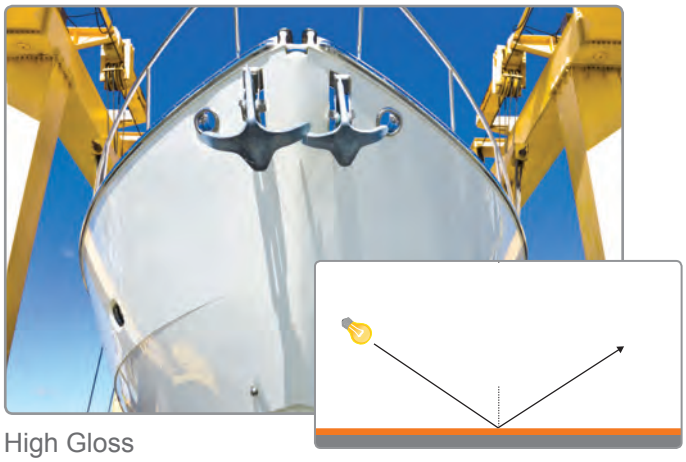
Colour: A material's ability to absorb certain wavelengths of light and reflect others is defined as its colour. For example a black material reflects no light across the complete colour spectrum. A pure white material reflects all of the light, whilst all other colours reflect light at different points of the spectrum. Colour is quantified by the material's Red, Green and Blue (RGB) values.



Gloss & Haze Measurement

Visual appearance can determine a person's perception of a product. Perception is subjective. A key measurement parameter used to define and quantify a product's overall visual quality is gloss.



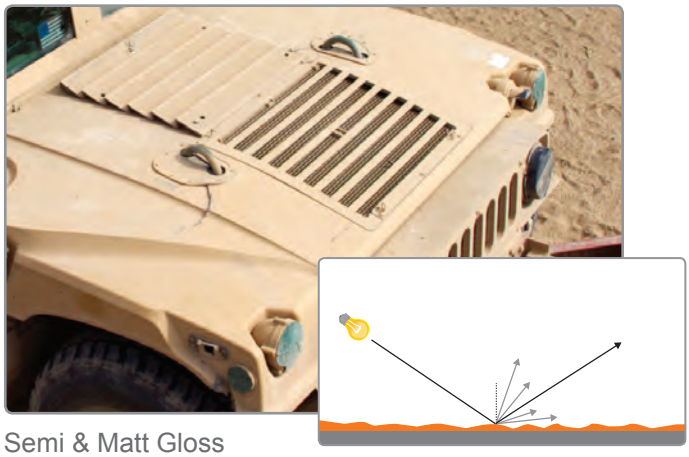


High Gloss

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 & 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.

Choosing the correct angle for gloss measurement

Gloss measurement is based on the amount of light reflected on the surface relative to a polished glass reference standard, measured in Gloss Units (GU). The amount of light that is reflected on the surface is dependent on the angle of incidence and the properties of the surface.

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.

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.

All three angles should be recorded (20, 60 & 85°) when measuring gloss on anodised metals to ensure 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°

% 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).



Elcometer 480 Glossmeters

new

The Elcometer 480 range are easy to use glossmeters which combine high accuracy, repeatability and reproducibility with functionality making them the most advanced glossmeters on the market today.

- Small, robust & ergonomic
- 3 - 10 readings per second
- Repeatable, reproducible & accurate
- Multiple angles; 20°, 60°, 85°
- 40,000 reading memory in up to 2,500 batches
- Date and time stamped readings
- USB & Bluetooth® data output
- PC, iPhone or Android™ compatible
- Automatic gauge & tile diagnostics
- Auto calibration tile recognition via RFID*
- 40 user definable limit standards
- Standard, auto repeat and scan modes
- Differential mode with pass/fail
- Display readings, statistics, graphs & batch review



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, ISO 17025, JIS K 5600-4-7, JIS Z 8741, TAPPI T 653 (20°)

* Radio Frequency Identification; patent applied for

Elcometer 480

new



Small, robust and ergonomic, the Elcometer 480 range of glossmeters have been designed to exceed the demands of industry today.

Combining easy to use, multi-lingual menu structures with exceptional repeatability, reproducibility & accuracy, the Elcometer 480 provides users with best in class hand held gloss measurement.

Using state of the art design and manufacturing techniques provides world leading features and functionality - reliably measuring & recording Gloss, % Reflectance & Haze on any material, including paint, plastic, ceramic or metal.

The Elcometer 480's rapid LED technology accurately measures up to 3 angles at the same time at a rate of 10 readings per second.

Measurements can be instantly transferred to PC, iPhone, Android™ or other mobile devices via USB or Bluetooth®.

Using the ElcoMaster™ software, professional reports for gloss and other appearance measurements can be quickly generated. Alternatively gloss readings can be combined with other key measurement parameters such as coating thickness, adhesion and oven temperature profile - within the same software package.

PC Android™ Made for iPod iPhone iPad compatible with ElcoMaster™

Elcometer 480

Glossmeters



The Model Range

The Elcometer 480 is available as either a simple entry level 60° glossmeter or state of the art Single, Dual or Triple angle variants.

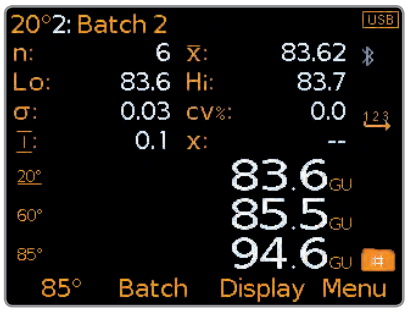
- Single: 60°
- Dual: 20° & 60°
- Triple: 20°, 60° & 85°



Memory and Batching

Store 40,000 date and timed stamped readings in up to 2,500 user definable alpha-numeric batches.

Readings can be transferred to PC, iPhone, Android™ or other mobile devices via USB or Bluetooth® for instant reporting using ElcoMaster™ software.



Display Modes

Fully customisable, scratch and solvent resistant colour LCD allows the user to display:

- Gloss, % Reflectance or Haze readings
- Statistics
- Readings and Differential with pass/fail
- Trend Graph
- Analogue Scan Bar



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.

Glossmeters

Elcometer 480

Accuracy & Repeatability



Advanced electronics and a superior optical design combines highly accurate, repeatable and reproducible measurements with industry leading inter-instrument agreement - across its entire 0 - 2,000GU range.

Range	0-10GU	10-100GU	100-2000GU
Repeatability	±0.1GU	±0.2GU	±0.2%
Reproducibility	±0.2GU	±0.5GU	±0.5%

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 Standard' 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 Standard 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™, ideal for multiple production and assembly lines.





Elcometer 480

Create instant reports with ElcoMaster™

What you do with the collected data is just as important as taking the readings themselves.



ElcoMaster™ 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.

Data transferred to ElcoMaster™ includes;

- 20° 60° & 85° Gloss Units (GU)
- Haze Unit (HU)
- % Reflectance (%)
- Date & time for each reading
- Limit Standard values
- Batch information & statistics
- Calibration information including date/time, serial number & tile values

Whether you are in the field or on the factory floor, using the ElcoMaster™ Mobile App users can;

- Store live readings directly on to a mobile device and save them into batches
- View graphs in real-time whilst carrying out the inspection
- Add notes to individual batch reading
- Add photographs of the test surface to each individual batch reading at the click of a button
- Plot individual readings on to a location Map photograph or diagram via the mobile device's internal GPS[1]
- Inspection data can be transferred from mobile to PC for further analysis and reporting
- Generate instant .pdf[2] report for submission

[1] Available on Android™ only

[2] Available on iOS devices only

Elcometer 480



Using the Limit Standard Library within ElcoMaster™, Limit Standards from one gauge can be transferred to other gauges optimising the inspection process.

Connect
Connect gauge via Bluetooth® to see live readings directly on the phone and save them into batches.

Review
Review average, maximum and minimum readings instantly.

Manage & Print
Store all data; gloss, dry film thickness, surface profile, climate and manual reports in easy to manage folders.

Photos & Notes
Add photos, notes and comments.

Image Collection
Use measurement location points on images to indicate the position for the next reading.

Combine
Combine different inspection parameters (such as gloss, dry film thickness, oven temperature profile and adhesion) together with images, notes and other project specific information into reports.

Collaborate
Share inspection data securely via the Cloud and collaborate on projects using the instant messaging feature in ElcoMaster™.

Send
Email inspection data from a mobile device to a PC for further analysis and reporting or transfer data via the Cloud.



PC

ANDROID APP ON Google play

Download on the App Store

compatible with ElcoMaster™

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† & %
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#*		■
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†*	■	■
Selected statistics	■	■
Live trend graph; *last 20 readings*		■
Scan bar		■
Readings & differential (with pass/fail)		■
Delete last reading	■	■
2 year extended warranty^	■	■

^The Elcometer 480 is extendable within 60 days from date of purchase, free of charge, to 2 years via www.elcometer.com
* Dependant on model
† Haze on Dual and Triple models only
# Radio Frequency Identification; patent applied for

Glossmeters

Elcometer 480

Technical Specification C

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 2 x 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 certificate, 2 x 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-H	High Gloss Calibration Tile*	Nominal Value: 97GU 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 and repeatability



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

STANDARDS:
AS/NZS 1580.602.2, ASTM C 584, ASTM D 1455, ASTM D 2457, ASTM D 4039, ASTM D 523, ASTM D 5767, ASTM E430-11, DIN 67530, ECCA T2, EN 12373-11, EN 13523-2, ISO 2813, ISO 7668, JIS K 5600-4-7, JIS Z 8741, TAPPI T 653

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.

Press button once to measure all parameters; gloss, haze, DOI, Rspec, RIQ and Goniophotometric profiles



USB or Bluetooth® data output

On screen statistics with trend & measurement graphs

Stores up to 999 readings with full goniophotometric profiles in user definable batches

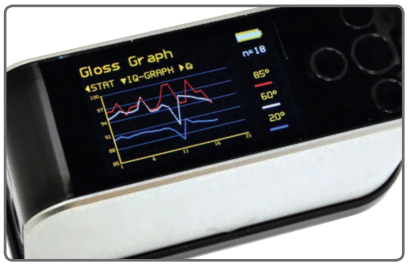
Integrated calibration tile for fully automatic error-free calibration



Easy to read large colour screen with adjustable brightness



Fast and simultaneous measurement of all parameters



On screen graph highlights trends in the measured batch

Gloss & DOI Meter Definitions

Elcometer 408

Distinctness of Image (DOI)
Distinctness of Image measures the sharpness of a reflected image in a coating surface. Similar coatings may have identical gloss values but visually the quality may be very 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.

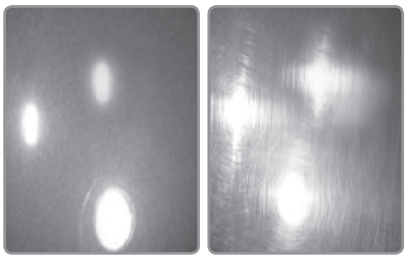
A surface that has a perfect undistorted image returns a value of 100. As the value decreases the image becomes more distorted.



Distinctiveness of Image (DOI)

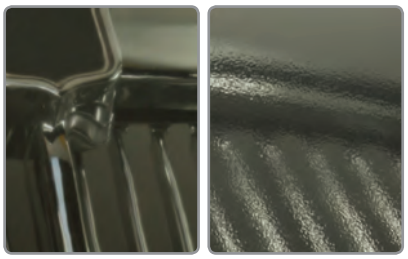
Haze (HU) & Log Haze (HU_{Log})
High quality gloss surfaces have a clear, deep, brilliant finish. Haze causes a drop in reflected contrast and causes halos to appear around light sources, these unwanted effects dramatically reduce visual quality.

Undetectable by traditional gloss meters the Elcometer 408 measures Haze Units in accordance with ASTM D4039 at the same time as simultaneously measuring gloss and DOI.



Haze (HU) & Haze Log (HU_{Log})

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.



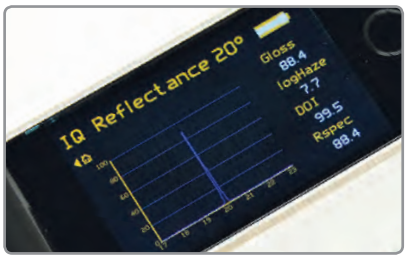
Peak Reflectance (Rspec)

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.



Reflected Image Quality (RIQ)

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 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.



Goniophotometric Profile

Elcometer 408 Triple Angle Gloss & DOI Meter

Accurate

- Fast and simultaneous measurement of gloss, haze, DOI, Rspec, RIQ and Goniophotometric profiles
- Each instrument is supplied with a Calibration Certificate

Simple

- Bright, easy to read LCD screen displays the gloss value, statistics & graphs
- Display measurements are user definable
- Each set of readings is time & date stamped

Flexible

- Triple (20/60/85°) angle for maximum accuracy and resolution in all gloss applications
- Bluetooth® or USB download to ElcoMaster™ data management software for instant analysis

Durable

- Robust aluminium construction ensures optical stability
- 17hrs+ continuous operation or 20,000+ readings
- Compact & portable instrument with integrated tile holder

Efficient

- Easy menu-driven user interface in multiple languages
- Clear, illuminated display showing up to five parameters on screen
- On board trend analysis with gloss and image quality (IQ) values

Powerful

- On board memory for 999 readings with full goniophotometric profiles
- Internal battery is fully rechargeable in 2.5 hours



Paperless Quality Assurance with ElcoMaster™

compatible with ElcoMaster™

available with Bluetooth® wireless technology

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 back light*	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
ElcoMaster™ software & 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) & Goniophotometric Profile

Technical Specification C

Part Number	Description				Certificate
J408--268	Elcometer 408 Triple Angle Gloss & DOI Meter (20, 60 & 85 Degree)				●
Power Supply	Rechargeable Battery Pack				
Recharge Time	USB 4.5 hours				
	Gloss	Haze	DOI	RIQ	Goniophotometric
Measurement Range	20°: 0-2,000GU; 60°: 0-1,000GU; 85°: 0-150GU	0-2,000GU	0-100 DOI	0-100 RIQ	-
Resolution	0.1GU	0.1HU	0.1		0.1GU
Repeatability	0.2GU	0.2HU	0.2		0.2GU
Reproduceability	0.5GU	0.5HU	0.5		0.5GU
Peak Specular Reflectance at 20°	± 0.09375°				
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, ElcoMaster™ software and 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

* Elcometer 408 Triple Angle Gloss & DOI Meter only

● 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, portable instrument
- Diffuse/8° sphere optical geometry
- Fixed 8mm aperture
- Large, easy-to-read high res graphical colour LCD display
- Opacity and colour strength measurement
- Simultaneous measurement of both specular component 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 1000 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 to show a failed. Results are shown at a glance showing detailed colour comparison data for analyst.
- **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 on-board 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 res colour LCD screen. A rechargeable battery pack allows extended operation of the instrument.

Portable Sphere Spectrophotometer

Elcometer 6085

Technical Specification C

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†	Ci60 - 0.10 ΔE*ab on white ceramic (standard deviation) Ci62 - 0.5 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	

Accessories

Part Number	Description
KT006085P001	Battery Pack
KT006085P002	External Battery Charger

● Certificate supplied as standard.

†Based on 20 measurements on a white tile

Elcometer 6300



Colour Assessment Cabinets

Colour assessment cabinets are suitable for any industry where there is a need to maintain colour consistency and quality. These include paint, textiles, automotive, ceramics, cosmetics, dyeing, food, footwear, inks, knitwear, packaging, printing, etc.

The Elcometer 6300 range of colour assessment cabinets, also known as light cabinets or colour matching booths, ensures accurate visual colour assessment and colour comparison. Constructed from steel, Elcometer's lightweight colour assessment cabinets are supplied with different light sources used to simulate different conditions.

Light sources available:

- Artificial Daylight (D65)
- Point of Sale Illuminant (TL84 supplied with UK 240V/EUR 220V models, CWF supplied with US 110V models)
- Home Illuminant (Illuminant A)
- Ultraviolet Illuminant (UV)
- Alternative Point of Sale Illuminant (TL83 emits a reddish, yellow energy)

The Elcometer 6300 Colour Assessment Cabinets also enable easy detection of metamerism. Metamerism is commonly discussed in the terms of illuminants, where two samples appear the same (spectrally matched) under one illuminant, but not another. For example, two car door panels appear the same colour in daylight, but, under a streetlight at night, appear completely different colours.

There is a choice of 3, 4 or 5 light sources with the Elcometer 6300 range. Cabinets are either available with manual light source selection or digital light source selection. The digital cabinets are able to programme the sequence of lights and the duration of each illumination. The lamp timer function, which is standard on all digital cabinets and as an option on manual cabinets, measures the number of hours the D65 daylight bulb has been in operation.

Colour Assessment Cabinet Overview

Model	Light Sources						
	D65	TL84/CWF	Illuminant A	UV	TL83	Weight	Control
Elcometer 6300 MM-1E	▪	▪	▪			14kg (30lb)	Manual
Elcometer 6300 MM-2E	▪	▪	▪			10kg (22lb)	Manual
Elcometer 6300 MM-4E	▪	▪	▪	▪	▪	17kg (38lb)	Digital
Elcometer 6300 MM-1E UV/65	▪	▪	▪	▪		14kg (30lb)	Manual
Elcometer 6300 MM-2E UV/65	▪	▪	▪	▪		10kg (22lb)	Manual

Colour Assessment Cabinets

Elcometer 6300

The Elcometer 6300 range is available with a choice of 3, 4 or 5 light source cabinets, in a range of sizes and functionality to suit your particular requirements. Lamp Kits are available for each Colour Assessment Cabinet.

STANDARDS:
AS/NZS 1580.601.1, ASTM D1729, ASTM D 4086, BS-950-1, ISO 3668, JIS K 5600-4-3, SAE J361, TAPPI T 515

Colour Assessment Cabinet Dimensions

Part Number			Model	Dimensions	Light Source
UK 240V	EUR 220V	US 110V			
K0UK6300M002	K0006300M002	K0US6300M002	Elcometer 6300 MM-1E	483 x 660 x 432mm (19 x 26 x 17”)	3
K0UK6300M001	K0006300M001	K0US6300M001	Elcometer 6300 MM-2E	457 x 520 x 330mm (18 x 20 x 13”)	3
K0UK6300M003	K0006300M003	K0US6300M003	Elcometer 6300 MM-4E	483 x 685 x 483mm (19 x 27 x 19”)	5
K0UK6300M202	K0006300M202	K0US6300M202	Elcometer 6300 MM-1E UV/65	483 x 660 x 432mm (19 x 26 x 17”)	4
K0UK6300M201	K0006300M201	K0US6300M201	Elcometer 6300 MM-2E UV/65	457 x 520 x 330mm (18 x 20 x 13”)	4
Packing List	Elcometer 6300 Light source, viewing surface, side walls, rear wall, power cable, assembly instructions, maintenance and operating instructions.				

Accessories

Part Number			
UK 240V	EUR 220V	US 110V	Description
KTUK6300P002	KT006300P002	KTUS6300P002	Elcometer 6300 MM-1E Lamp Kit D65, TL84 & Illuminant A
KTUK6300P001	KT006300P001	KTUS6300P001	Elcometer 6300 MM-2E Lamp Kit D65, TL84 & Illuminant A
KTUK6300P003	KT006300P003	KTUS6300P003	Elcometer 6300 MM-4E Lamp Kit D65, TL84, Illuminant A, UV & TL83
KTUK6300P202	KT006300P202	KTUS6300P202	Elcometer 6300 MM-1E UV/65 Lamp Kit D65, TL84, Illuminant A & UV
KTUK6300P201	KT006300P201	KTUS6300P201	Elcometer 6300 MM-2E UV/65 Lamp Kit D65, TL84, Illuminant A & UV

Light Source Key

D65	Artificial Daylight
TL84	Point of Sale Illuminant (supplied with UK 240V & EUR 220V units)
CWF	Point of Sale Illuminant (supplied with US 110V units)
TL83	Alternative Point of Sale Illuminant
Illuminant A	Home Illuminant
UV	Ultraviolet Illuminant

Elcometer 6210

RAL Colour Charts



A system of reference colours, enabling many industrial products to be identified, compared and classified, ideal for use with Elcometer 6300 Colour Assessment Cabinets, (see page 14-18).

Available either in the form of compact colour charts or in separate sheets of different sizes, with or without colourmetric identification, separately or in groups supplied in a file or a box.



Elcometer 6210 RAL Chart K1

High gloss colour chart, 16 colours per page, each with a 1.8 x 2.8cm colour illustration.

Part Number: K0006210M013



Elcometer 6210 RAL Chart K5

Fan deck with RAL Classic colours, complete with U-shaped protective cover. Each colour has a full page 5.0 x 15.0cm, perfect for colour combination and colour comparison.

Part Number: K0006210M001



Elcometer 6210 RAL Chart 841-GL

Box set of high gloss finish RAL Classic colour A5 card set featuring A6 colour illustrations.

Part Number: K0006210M015



Elcometer 6210 RAL Chart K7

Fan deck with RAL Classic colours, complete with U-shaped protective cover. Features 5 colours per page, with each colour swatch measuring 2.0 x 5.0cm.

Part Number: K0006210M002

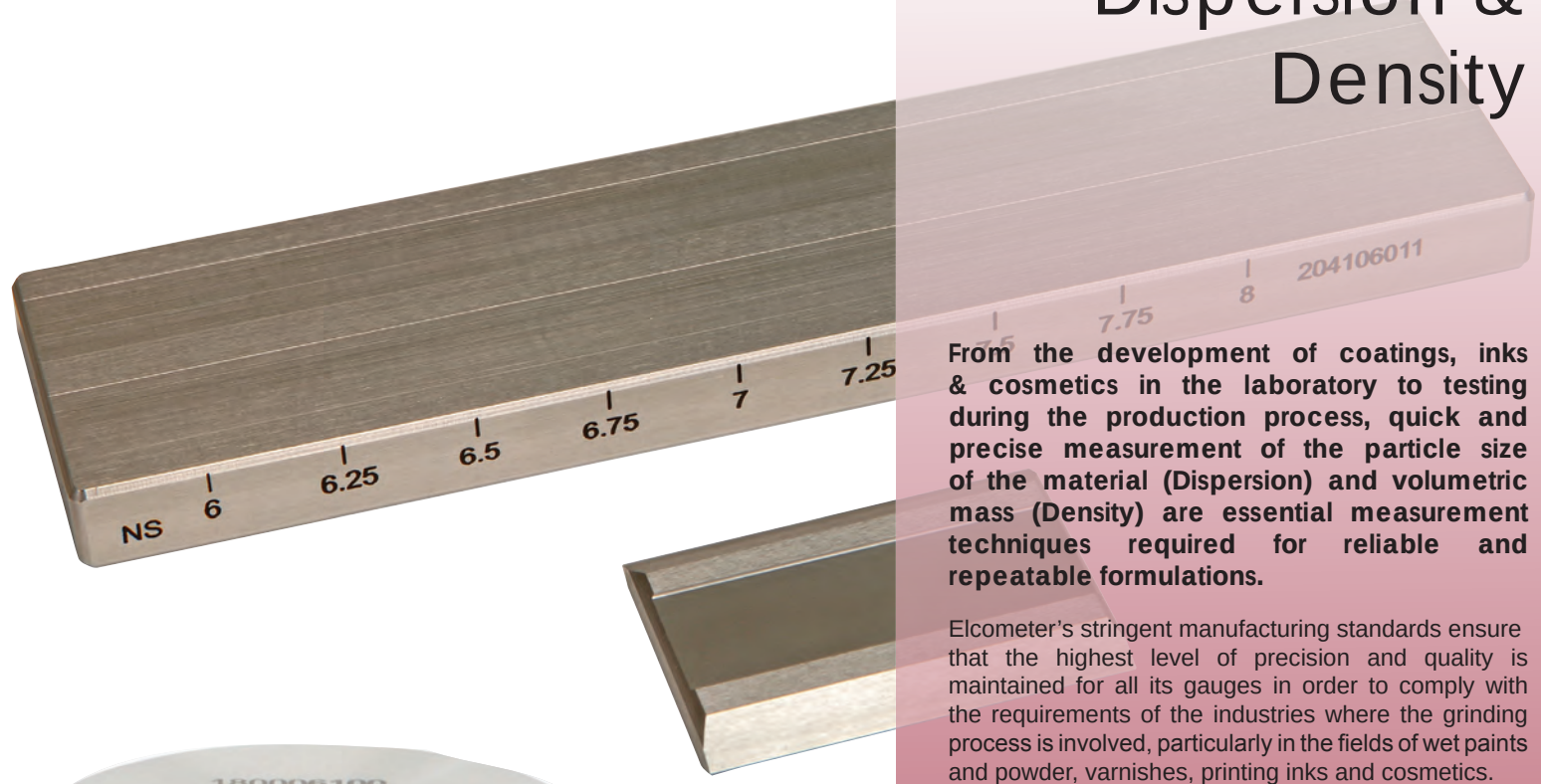


Elcometer 6210 RAL Chart 840-HR

Box set of matt finish RAL Classic colour A5 card set featuring A6 colour illustrations.

Part Number: K0006210M009

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.

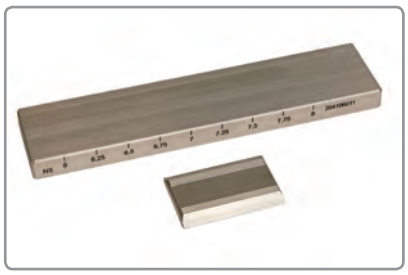
As the Specific Gravity Cup is an exact measurement of the volume of the liquid, it is imperative that the exact weight of the sample is obtained.

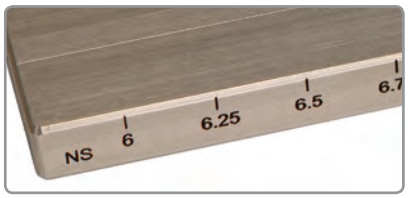
Elcometer offers a range of cups and laboratory balances for accurate measurements during the development of a coating.



Elcometer 2020 & 2041

Fineness of Grind Gauges (Dual Channels)





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

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").

Technical Specification C

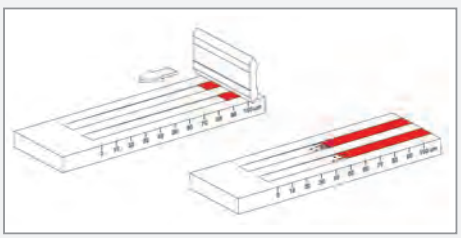
Part Number Metric	Part Number Imperial	Model	Range (µm)	Range (mils)	Graduation (µm)	Graduation (mils)	Hegman (NS or H)	Paint Club (PCU)	Certificate
K0002020M003	-	Elcometer 2020/3	0 - 15	-	1	-	8 - 7	10 - 9	○
K0002041M002	K0US2041M002	Elcometer 2041/2	0 - 25	0 - 1	2.5	0.1	-	-	○
K0002020M004	K0US2020M004	Elcometer 2020/4	0 - 25	0 - 1	2.5	0.1	8 - 6	10 - 8	○
-	K0US2041M003	Elcometer 2041/3	-	0 - 2	-	0.2	-	-	○
K0002020M001	K0US2020M001	Elcometer 2020/1	0 - 50	0 - 2	5	0.2	8 - 4	10 - 5	○
K0002041M004	K0US2041M004	Elcometer 2041/4	0 - 100	0 - 4	10	0.5	-	-	○
K0002020M002	K0US2020M002	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 or Elcometer 2041 Fineness of Grind Gauge, scraper, plastic case and operating instructions							

Accessories

KT002020N001	Replacement Scraper for Elcometer 2020
KT002030N001	Replacement Scraper for Elcometer 2041

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.

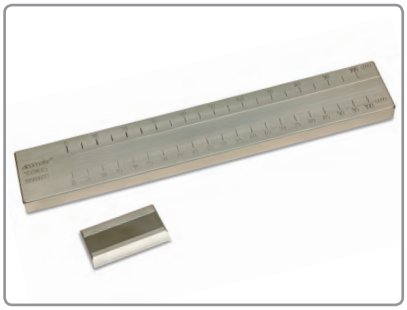
High Precision Grindometer (Single Channel)

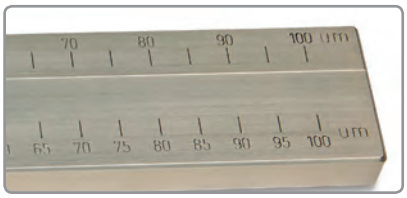
Elcometer 2050

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.





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 C

Part Number		Model	Range		Graduation		Certificate
Metric	Imperial		(µm)	(mils)	(µm)	(mils)	
K0002050M001	K0US2050M001	Elcometer 2050/1	0 - 25	0 - 1	1	0.05	○
K0002050M002	K0US2050M002	Elcometer 2050/2	0 - 50	0 - 2	2	0.1	○
K0002050M005	K0US2050M005	Elcometer 2050/5	0 - 100	0 - 4	5	0.2	○
K0002050M008	K0US2050M008	Elcometer 2050/8	0 - 250	0 - 10	12.5	0.5	○
Tolerance		±1µm (0.04mil)					
Packed Dimensions		250 x 40 x 15mm (9.8 x 1.6 x 0.6”)					
Packed Weight		1.45kg (3.2lb)					
Packing List		Elcometer 2050 High Precision Grindometer, scraper, plastic case and operating instructions					

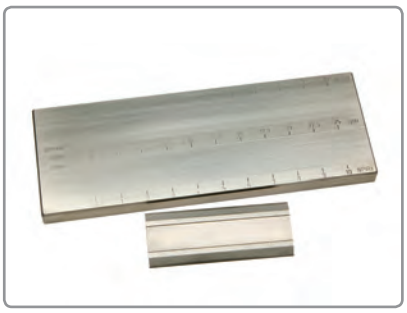
Accessories

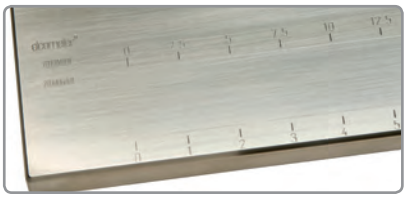
KT002030N001	Replacement Scraper for Elcometer 2050

○ Optional Calibration Certificate available.

Elcometer 2070

NPIRI Fineness of Grind Gauge





This precision gauge is used to determine particle size and the fineness of grind of particles in printing inks according 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

C

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.

Density Cup

Elcometer 1800

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 C

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.

Elcometer 8720



Compact Balance

The Elcometer 8720 KB is a compact, low cost balance which offers extensive weighing functions selectable by the user.

The Elcometer 8720/1 Compact Balance is very easy to use and is supplied with a protective working cover and an adjusting test weight to allow the user to quickly adjust the calibration.

Technical Specification C

Part Number			Description	Certificate
UK 240V	EUR 220V	US 110V		
K0UK8720M001	K0008720M001	K0US8720M001	Elcometer 8720/1 Standard Balance	
K0UK8720M001C	K0008720M001C	K0US8720M001C	Elcometer 8720/1 Standard Balance - Certified	●
Range	Elcometer 8720/1: 0 - 1210g (0 - 42.7oz)			
Reproducibility	Elcometer 8720/1: 0.01g (0.0004oz)			
Linearity	Elcometer 8720/1: ±0.03g (0.001oz)			
Dimensions	165 x 230 x 80mm (6 x 9 x 3.1”)			
Weight	1kg (2.2lb)			
Packing List	Elcometer 8720 Compact Balance, 1 x 200g test weight, power cable and operating instructions			

● Certificate supplied as standard.



Viscosity

Flow Cups, Dip Cups, Rotational & Krebs

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 from flow cups to dip cups to rotational viscometers.

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.

Rotational: Krebs and Rotational viscometers are used to determine the viscosity of liquids which do not depend solely on temperature or pressure.

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: Are 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 16-2.

Non-Newtonian fluids: Are fluids which change viscosity when a force is applied, e.g. paints and ketchup, etc.

Non-Newtonian fluids are usually measured using Rotational Viscometers, see page 16-11.

Elcometer 2353 & 2354

Viscosity Flow Cups



STANDARDS:
ISO: ASTM D 5125, ISO 2431
BS: AS/NZS 1580.214.2 (cup 4)
BS 3900-A6:1971
FORD/ASTM: ASTM D 1200
DIN: DIN 53211 (cup 4)
AFNOR: NF T30-014

Viscosity Flow Cups are very easy to use instruments 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 Apps.

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 16-5 for more information.

compatible with ElcoCalc™ | Download on the App Store | ANDROID APP ON Google play

Technical Specification C

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	● (e)
K0002353M002C	Elcometer 2353/2 with calibration certificate	4mm	34 - 135	● (e)
K0002353M003C	Elcometer 2353/3 with calibration certificate	5mm	91 - 326	● (e)
K0002353M004C	Elcometer 2353/4 with calibration certificate	6mm	188 - 684	● (e)
K0002353M005C	Elcometer 2353/5 with calibration certificate	8mm	-	● (d)

BS Viscosity Flow Cups

Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002354M001	Elcometer 2354/1 BS Viscosity Cup 2	2.38mm	6 - 43	◇
K0002354M002	Elcometer 2354/2 BS Viscosity Cup 3	3.17mm	28 - 150	◇
K0002354M003	Elcometer 2354/3 BS Viscosity Cup 4	3.97mm	89 - 340	◇
K0002354M004	Elcometer 2354/4 BS Viscosity Cup 5	4.76mm	79 - 441	◇
K0002354M005	Elcometer 2354/5 BS Viscosity Cup 6	7.14mm	369 - 1302	◇
K0002354M001C	Elcometer 2354/1 with calibration certificate	2.38mm	6 - 43	● (e)
K0002354M002C	Elcometer 2354/2 with calibration certificate	3.17mm	28 - 150	● (e)
K0002354M003C	Elcometer 2354/3 with calibration certificate	3.97mm	89 - 340	● (e)
K0002354M004C	Elcometer 2354/4 with calibration certificate	4.76mm	79 - 441	● (e)
K0002354M005C	Elcometer 2354/5 with calibration certificate	7.14mm	369 - 1302	● (e)

[1] For Information Only (d) Dimensional Certificate (e) Efflux Time Certificate

● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Viscosity Flow Cups

Elcometer 2351, 2350 & 2352

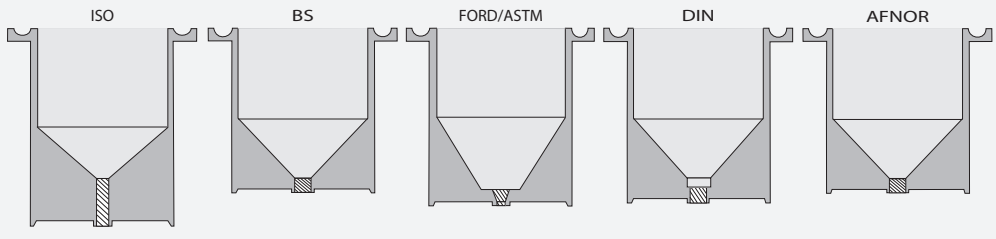
Technical Specification C

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 - 1200	◇
K0002351M001C	Elcometer 2351/1 with calibration certificate	1.90mm	10 - 35	● (e)
K0002351M002C	Elcometer 2351/2 with calibration certificate	2.53mm	25 - 120	● (e)
K0002351M003C	Elcometer 2351/3 with calibration certificate	3.40mm	49 - 220	● (e)
K0002351M004C	Elcometer 2351/4 with calibration certificate	4.12mm	70 - 370	● (e)
K0002351M005C	Elcometer 2351/5 with calibration certificate	5.20mm	200 - 1200	● (e)

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	-	● (d)
K0002350M002C	Elcometer 2350/2 with calibration certificate	4mm	96 - 683	● (e)
K0002350M003C	Elcometer 2350/3 with calibration certificate	6mm	-	● (d)
K0002350M004C	Elcometer 2350/4 with calibration certificate	8mm	-	● (d)

AFNOR Viscosity Cups Part Number	Description	Orifice Diameter	Range[1] (cP)[2]	Certificate
K0002352M001	Elcometer 2352/1 AFNOR Viscosity Cup 2.5	2.46mm	5 - 140	◇
K0002352M002	Elcometer 2352/2 AFNOR Viscosity Cup 4	4mm	50 - 1100	◇
K0002352M003	Elcometer 2352/3 AFNOR Viscosity Cup 6	6mm	510 - 5100	◇
K0002352M001C	Elcometer 2352/1 with calibration certificate	2.46mm	5 - 140	● (d)
K0002352M002C	Elcometer 2352/2 with calibration certificate	4mm	50 - 1100	● (d)
K0002352M003C	Elcometer 2352/3 with calibration certificate	6mm	510 - 5100	● (d)

Viscosity Flow Cups - Cup Designs



[1] For Information Only [2] cSt values only apply to fluids with a specific density of 1 (d) Dimensional Certificate (e) Efflux Time Certificate

● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Viscosity Cup Conversion

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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.

Viscosity Cup Type

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

Viscosity Flow Cups Accessories

Elcometer

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.



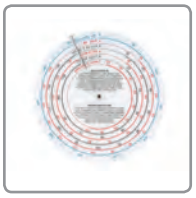
KT002400N002	Double-walled Stand with Thermojacket For heating test samples for viscosity measurement at specific elevated temperatures.



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



For a full range of Calibration Oils see page 16-10



Thermometers

To accurately measure flow for viscosity the temperature needs to be 23°C ± 2°C (73.4°F). Here are a range of thermometers from Elcometer. For more information see page 4-8.



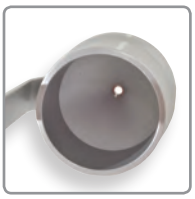
T1164441-	Spirit Thermometer in °C
T1164442-	Spirit Thermometer in °F
G212----1A	Elcometer 212 Digital Pocket Thermometer (°C/°F) with Liquid Probe
	For more information see page 4-9
G213----2	Elcometer 213/2 Digital Thermometer (°C/°F)
T9996390-	Elcometer 213/2 Liquid Probe
	For more information see page 4-10

Elcometer 2437 & 2435

Viscosity Dip Cups - Frikmar







STANDARDS:
DIN: DIN 53211 (cup 4 only)
FORD/ASTM: ASTM D 1200
ISO: ASTM D 5125, ISO 2431
AFNOR: NF T30-014

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 1100cSt.

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Technical Specification C

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	● (e)
K0002437M003C	Elcometer 2437/3 with calibration certificate	4mm	34 - 135	● (e)
K0002437M006C	Elcometer 2437/6 with calibration certificate	5mm	91 - 326	● (e)
K0002437M004C	Elcometer 2437/4 with calibration certificate	6mm	188 - 684	● (e)
K0002437M005C	Elcometer 2437/5 with calibration certificate	8mm	-	● (d)

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	● (e)



For a full range of Calibration Oils see page 16-10

[1] For Information Only (d) Dimensional Certificate (e) Efflux Time Certificate

● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Viscosity Dip Cups - Frikmar

Elcometer 2434 & 2436

Technical Specification C

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	-	● (d)
K0002434M002C	Elcometer 2434/2 with calibration certificate	4mm	96 - 683	● (e)
K0002434M003C	Elcometer 2434/3 with calibration certificate	6mm	-	● (d)
K0002434M004C	Elcometer 2434/4 with calibration certificate	8mm	-	● (e)

AFNOR Viscosity Dip Cups Part Number	Description	Orifice Diameter	Range[1] (cSt)	Certificate
K0002436M001	Elcometer 2436/1 AFNOR Dip Cup 4	3.99mm	50 - 1100	◇
K0002436M001C	Elcometer 2436/1 with calibration certificate	3.99mm	50 - 1100	● (d)

Lory Viscosity Cup

Elcometer 2215

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 - 1100

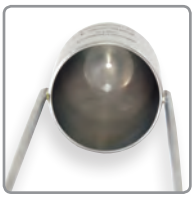
[1] For Information Only (d) Dimensional Certificate (e) Efflux Time Certificate

● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Elcometer 2210







STANDARDS:
ASTM D 1084-D, ASTM D 4212

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 1840cSt.

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Technical Specification C

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 - 1110	◇
K0002210M005	Elcometer 2210/5 Zahn Dip Cup 5	5.3mm	460 - 1840	◇
K0002210M001C	Elcometer 2210/1 with calibration certificate	1.8mm	5 - 56	● (e)
K0002210M002C	Elcometer 2210/2 with calibration certificate	2.7mm	21 - 231	● (e)
K0002210M003C	Elcometer 2210/3 with calibration certificate	3.8mm	146 - 848	● (e)
K0002210M004C	Elcometer 2210/4 with calibration certificate	4.3mm	222 - 1110	● (e)
K0002210M005C	Elcometer 2210/5 with calibration certificate	5.3mm	460 - 1840	● (e)



For a full range of Calibration Oils see page 16-10

[1] For Information Only (e) 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 cups for quick measurements on-site or during production. These cups are often used in the printing or ink industry.

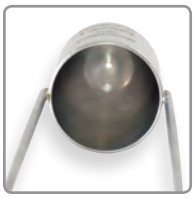
Simply dip the cup into the product to be measured, lift it out and measure how long it takes for the contents to empty through the orifice.

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 1300cSt.







compatible with ElcoCalc™

Download on the App Store

ANDROID APP ON Google play

STANDARDS:
ASTM D 4212

Technical Specification C

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	● (e)
K0002310M002C	Elcometer 2310/2 with calibration certificate	2.4mm	10 - 50	● (e)
K0002310M003C	Elcometer 2310/3 with calibration certificate	3.1mm	30 - 120	● (e)
K0002310M004C	Elcometer 2310/4 with calibration certificate	3.8mm	70 - 270	● (e)
K0002310M005C	Elcometer 2310/5 with calibration certificate	4.6mm	125 - 520	● (e)
K0002310M006C	Elcometer 2310/6 with calibration certificate	5.8mm	320 - 1300	● (e)

For a full range of accessories see page 16-5



[1] For Information Only (d) Dimensional Certificate (e) Efflux Time Certificate

● Calibration Certificate supplied as standard. ◇ Batch Calibration Certificate supplied as standard.

Elcometer 2410

Elcometer Viscosity Cup Standard Calibration Oils



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 C

	Dip Cups				Flow Cups				
Part Number	Zahn	DIN 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	6	5	4	4	6	230cSt	●
K0002410M024	4	4	6	6	4		6	460cSt	●
K0002410M025	5							850cSt	●
K0002410M026	6							1600cSt	●

† Nominal Value

● Calibration certificate supplied as standard.

Rotational Viscometers

Elcometer 2300

Available in four versions with a choice of low to medium or medium to high viscosity ranges, either manually or PC controlled, the Elcometer 2300 range of rotational viscometers can be used to measure the viscosity of liquids in accordance with ISO 2555 and a number of ASTM standards.

STANDARDS:
AS/NZS 1580.214.5, ASTM D 1084-B, ASTM D 2196, BS 3900-A7-2, ISO 2555, ISO 2884-2

Low to medium or medium to high viscosity versions - manually or PC controlled via ViscosityMaster™

Clear, backlit LCD displays:

- Viscosity reading (cP or mPas)
- Spindle rotation speed
- % torque
- Sample temperature
- Auto range
- Shear rate & shear stress

Wide range of spindles for various viscosity and shear rate measurements



Automated Krebs test - set up and press 'Start'

Audible warning if viscosity reading exceeds the limits set by the user

Temperature probe supplied for increased accuracy of measurement

supplied with
ViscosityMaster™

Elcometer 2300 Rotational Viscometers

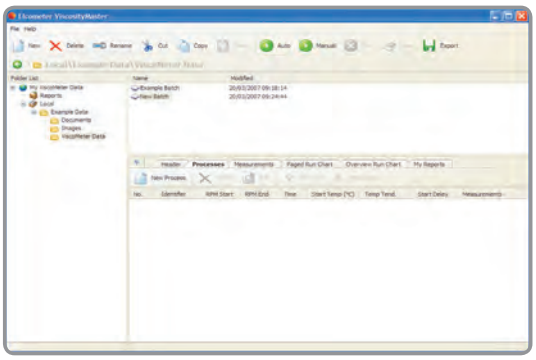
Technical Specification C

Model Elcometer 2300	RV1-L	RV2-L	RV1-R	RV2-R
Part Number	K2300M101	K2300M201	K2300M102	K2300M202
Measuring Range (mPas)	3 - 2,000,000	3 - 2,000,000	20 - 13,000,000	20 - 13,000,000
Spindles Supplied	L1 to L4	L1 to L4	R2 to R7	R2 to R7
Backlit LCD	■	■	■	■
Readings in cP and mPas	■	■	■	■
Low to Medium Viscosity	■	■		
Medium to High Viscosity			■	■
Sample Temperature Measurement	■	■	■	■
Manually Controlled	■	■	■	■
PC Controlled		■		■
Certificate	●	●	●	●
Measurement Accuracy & Repeatability	±1% of full scale	±0.2%		
Maximum Altitude above Sea Level	2000m (6562ft)			
Speeds (rpm)	0.3, 0.5, 0.6, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 10, 12, 20, 30, 50, 60, 100, 200			
Accuracy (Speed)	<0.5% of the absolute value			
Sample Temperature Measurement Range†	-15°C to +180°C (5°F to 356°F)			
Sample Temperature Measurement Resolution†	0.1°C (0.18°F)			
Sample Temperature Measurement Accuracy†	±0.1°C (±0.18°F)			
Ingress Protection	Level 2			
Dimensions & Weight (including carry case)	495 x 420 x 200mm (19.5 x 16.5 x 8”), 9kg (20lb)			
Packing List	Elcometer 2300 Digital Rotational Viscometer, spindle set, 3 x mains lead (UK, EUR and US), hexagonal wrench, RS232 connection cable, ViscosityMaster™ Software‡, calibration certificate and operating instructions			

† Temperature measurement using PT100 Thermometer

‡ RV1 Models: For data transfer from Viscometer to PC only; RV2 Models: For bi-lateral data transfer between Viscometer and PC

ViscosityMaster™



Elcometer ViscosityMaster™ Software

ViscosityMaster™ is the powerful, yet easy to use software supplied with all Elcometer 2300 Rotational Viscometers. Specifically designed to maximise the versatility and usability of the viscometer, data can be stored along with associated images, test notes and all related test information.

ViscosityMaster™ makes it easy to collate and use the data recorded. Whether the data is required for analysis or to create professional reports for distribution to customers or colleagues, ViscosityMaster™ can deliver. With inbuilt report templates and easy access to all data, images and other associated files, ViscosityMaster™ makes managing data quick and easy.

● Calibration Certificate supplied as standard.

Rotational Viscometers

Elcometer 2300

Accessories

Spindles

Each Elcometer 2300 is supplied with a set of stainless steel spindles as standard, suitable for both Newtonian & non-Newtonian fluids.
Elcometer 2300 RV-L is supplied with spindles L1-L4 for low to medium viscosity testing.
Elcometer 2300 RV-R is supplied with spindles R2-R7 for medium to high viscosity testing.
A large R1 spindle (underlined) can be purchased separately.



Part Number	Description
KT00230019698	Spindle Set: Type L1 to L4 for Low to Medium Viscosity Testing
KT00230019699	Spindle Set: Type R2 to R7 for Medium to High Viscosity Testing
KT00230019700	R1 Spindle

Small Sample Adaptor

The small sample adaptor consists of a cylindrical sample chamber which can be used in conjunction with spindles TL & TR to accurately obtain viscosity measurements, shear rate and shear stress of sample volumes between 8 - 13ml (0.27 - 0.44fl.oz).

The TL spindles are for low to medium viscosity samples and TR spindles are for use with medium to high viscosity samples.



Part Number	Description
KT00230019702	Adaptor Kit for Small Volume Samples‡
KT00230019784	Adaptor Kit for Small Volume Samples & Integrated Temperature Sensor‡
KT00230019703	Small Volume Spindle Set: Type TL5 to TL7 for Low to Medium Viscosity Testing
KT00230019704	Small Volume Spindle Set: Type TR8 to TR11 for Medium to High Viscosity Testing

‡ Small volume spindle set required

Low Viscosity Adaptor

The low viscosity adaptor consists of a cylindrical sample chamber and is supplied complete with spindle. Used to accurately obtain viscosity measurements, shear rate and shear stress of low viscosity materials from 1cP (mPa), the stainless steel chamber can hold a sample volume from 16 - 18ml (0.54 - 0.61fl.oz).
Running temperature controlled water through the water jacket supplied keeps the sample at a constant specified temperature of between 0°C and 100°C (32°F and 212°F).



Part Number	Description
KT00230019710	Low Viscosity Adaptor Kit with Spindle

Elcometer 2300 Rotational Viscometers

Accessories



High Temperature Adaptor

Ideal for use with materials such as hot resins, bitumens and oils, the high temperature adaptor allows precise measurement of viscosity at high temperatures. It can accurately obtain viscosity measurements, shear rate and shear stress from 1-2100cP (mPa)‡ up to temperatures of 200°C (392°F).

The stainless steel chamber can hold a sample volume from 16 - 18ml (0.54 - 0.61fl.oz). Each adaptor is supplied complete with a spindle.

Part Number	Description
KT00230019711	High Temperature Adaptor Kit with Spindle



Helical Movement Adaptor

Some materials, such as creams, pastes and gels, do not flow easily, so standard spindles and testing methods cannot be used as they create a 'hole' in the material, generating invalid results. The helical movement adaptor moves smoothly up and down, automatically staying within pre-programmed limits, allowing the needle style spindle to cut into the material without making a 'hole' and making the measurement of viscosity possible.

The kit is supplied with the motor and 6 T-shaped spindles: PA, PB, PC, PD, PE, PF.

Part Number	Description
KT00230019705	Helical Movement Adaptor Kit with Spindle Set, UK 240V
KT00230019706	Helical Movement Adaptor Kit with Spindle Set, EUR 220V
KT00230019707	Helical Movement Adaptor Kit with Spindle Set, US 110V



Standard Calibration Oils

Silicone standard oils are used to check viscosity measurements. The values are given for 6 different temperatures between 20°C and 27°C (68°F and 80°F).

These oils are specifically manufactured for use with Elcometer 2300 Rotational Viscometers and values quoted are nominal at 25°C (77°F).

Part Number 500ml (1 pint)	Description	Centipoise (cP)	Certificate
KT009999N101	Rotational Viscosity Calibration Oil	300	●
KT009999N102	Rotational Viscosity Calibration Oil	700	●
KT009999N103	Rotational Viscosity Calibration Oil	1000	●
KT009999N104	Rotational Viscosity Calibration Oil	2500	●
KT009999N105	Rotational Viscosity Calibration Oil	4000	●

● Calibration Certificate supplied as standard.

‡ Based on Model RVR1-R & RV2-R.

Krebs Viscometer

Elcometer 2250

Featuring a unique automatic test mode, the Elcometer 2250 Krebs Viscometer measures the viscosity of paints, varnishes, adhesives, pastes and liquid inks at the touch of a button.

- Fully automated Krebs test - simply set up and press ‘Start’
- Choice of measurement: Krebs Units (KU), Grams (g), or Centipoise (cP)
- Designed for use with either a 600ml beaker, 1 pint or ½ pint cans
- Standard Krebs spindle with fixed spindle speed of 200rpm
- Can be used with non-standard containers and sample volumes
- User adjustable “Sample Waiting Time” and “Measuring Time”
- Date and time stamp for each reading



Designed for use in accordance with National and International Standards - the Elcometer 2250 is ideal for both process control and quality assurance.

Elcometer 2250

STANDARDS:
AS/NZS 1580.214.1, ASTM D 562, ASTM D 856, ASTM D 1084-C, ASTM D 1131



Krebs Viscometer

The Elcometer 2250 offers users both an automatic or manual Krebs viscosity test. The unit has a fixed spindle speed of 200rpm and displays the viscosity value on screen in Krebs Units (KU), Grams (g) or Centipoise (cP).

The Elcometer 2250 has two operating modes; 'Automatic' and 'Manual'.

- Automatic Mode:

  Automatic test - ensuring reliability and consistency of results - ideal for repeatable and reproducible testing.

  Once the sample beaker is positioned on the support, and the 'Start' button is pressed, the drive head automatically moves down until the spindle reaches the correct position within the sample.

  After a pause to let the sample settle, the Elcometer 2250 begins the test and displays the viscosity value. Once the test has been completed, the head automatically returns to the start position allowing the sample to be removed.

- Manual Mode:

  The Elcometer 2250 can also be used manually - ideal for measuring non-standard sample sizes.

Measuring viscosity of non-Newtonian fluids

The viscosity of non-Newtonian fluids is dependent upon temperature, shear rate and time. There are several different categories of non-Newtonian fluids and depending on how viscosity changes with time, the flow behaviour is characterised as:

Thixotropic - time thinning, i.e. viscosity decreases with time. Thixotropics - are gel-like substances at rest but liquid when agitated, eg: non-drip paints, ketchup and varieties of honey.

Rheopectic - time thickening, i.e. where viscosity increases with duration of stress, eg: some lubricants. Rheopectic liquids are very rare. Some liquids show time thinning behaviour due to breakdown of the structure. This phenomenon is sometimes known as Rheomaiaxis.

Depending on how viscosity changes with shear rate, the flow behaviour is characterised as:

Pseudoplastics or shear thinning - where viscosity decreases with increased shear rate, eg: blood, gelatin and clay.

Dilatant or shear thickening - the viscosity increases with increased shear rate, eg: corn starch or concentrated sugar solution.

Plastic - exhibits a so-called yield value, i.e. a certain shear stress must be applied before a flow occurs.

Newtonian fluids, (such as water, paints, etc.), which continue to flow at a given temperature regardless of the forces acting on it are typically measured using viscosity flow and dip cups, see page 16-2.

Krebs Viscometer

Elcometer 2250

Technical Specification C

Part Number	Description		Certificate
K2250M001	Elcometer 2250 Krebs Viscometer		●
Measurement Units	Krebs Units (KU)	Grams (g)	Centipoise (cP)
Range	40 KU to 141 KU	32g to 1099g	27 cP to 5274 cP
Resolution	0.1 KU	1g	5 cP
Measurement Accuracy	±1% of full scale		
Repeatability	±0.5%		
Speed (Accuracy)	200rpm (±1rpm)		
Operating Temperature	10°C to 40°C (50°F to 104°F)		
Maximum Altitude	2000m (6500ft) above sea level		
Dimensions	500 x 325 x 190mm (19.7 x 12.8 x 7.5”)		
Weight	8.5kg (18.7lb)		
Packing List	Elcometer 2250 Krebs Viscometer, krebs spindle, large sample container support for 600ml glass beaker or 1 pint (USA) can, small sample container support for ½ pint (USA) can, sample container support locating plug, glass beaker 600ml (20.3fl.oz.), hexagonal wrench, 3 x mains lead (UK, EUR and US), calibration certificate and operating instructions		

Accessories

Part Number	Description
KT00225021791	Special Krebs Spindle
KT00225022906	Special Paste Spindle
KT00225021794	Sample Container Support for 600ml (20.3 fl.oz.) Glass Beaker or 1 pint (USA) Can
KT00225021795	Sample Container Support for ½ pint (USA) Can
KT00225021793	Sample Container Support Locating Plug
KT00225021796	Glass Beaker: 600ml (20.3 fl.oz.)

Krebs Viscosity Standard Calibration Oils C

Part Number	Description	Krebs Units (KU)	Centipoise (cP)	Certificate
KT002250N001	Krebs Calibration Oil: S200	64	400	●
KT002250N002	Krebs Calibration Oil: N350	79	750	●
KT002250N003	Krebs Calibration Oil: N400	84	940	●
KT002250N004	Krebs Calibration Oil: S600	95	1400	●
KT002250N005	Krebs Calibration Oil: N1000	115	2600	●
Packing List	Supplied in 500ml (1 pint) bottles complete with calibration certificate and accurate to ±1% of the stated viscosity values			

● Calibration Certificate supplied as standard.

Elcometer 2280

Matthis Fluidometer



The Elcometer 2280 is a simple and easy-to-use instrument 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. The instrument 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
K0002280N001	Elcometer 2280 Replacement Sand Bottle

Elcometer 2290

Daniel Flow Gauge



This simple instrument is used to assess the ability of thick or paste-like materials such as paints or printing inks to flow.

The product is poured into the semi-cylindrical reservoir. When the instrument 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

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 97.7 (3.9mils) and 102.3µm (4.1mils). On glass, the readings produced would be between 88 (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 Chart covers a variety of testing needs including the hiding power of coatings, ink qualities, penetration, spreading rates and opacity.

Elcometer 4340 Motorised/Automatic Film Applicator

The Elcometer 4340 Motorised Film Applicator is the essential machine for preparing a wide variety of product samples including paint, varnish, cosmetics and glue.

11 pre-set transverse speeds from 0.2 - 3.9 inches per second

Ideal for testing liquids including: paint, varnish, cosmetics, glue



Adjustable travel carriage with 'auto stop' at end of travel

Precision engineered flat aluminium table for better repeatability - 5 times flatter than glass

Heavy base unit to minimise vibration and to produce high quality samples, without "Vibration ridges"

Motorised/Automatic Film Applicator

Elcometer 4340

STANDARDS:
ASTM D 823-C

Standard table & perforated or channelled vacuum tables available

Electric or water heated sample tables available for temperature control

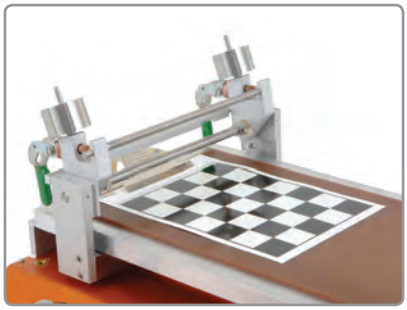




Each table is engineered to the highest flatness rating



Use up to 3 film applicators simultaneously



11 pre-set speeds and adjustable stroke length - from 5-150mm (0.2 - 5.9")

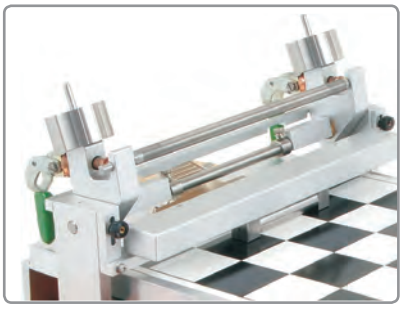
Can be used with a full range of Elcometer Film Applicators, see page 17-9

The Elcometer 4340 Motorised Film Applicators are versatile, rugged and precise. The rigid construction ensures a smooth, consistent application without the ridges often associated with film application.

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.

STANDARDS:
ASTM D 823-C



Interchangeable head attachments

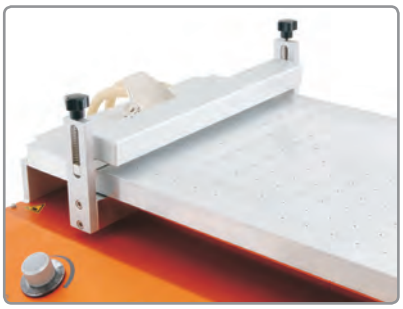
Easily switched between film applicators

- Spiral Bar Head Attachment
- Standard Applicator Head Attachment
- Combined Spiral/Standard Head Attachment



Durable & Rugged

- Sturdy rigid design to eliminate vibration during film application
- Up to 15 years of standard use



Choice of Bed

- Standard flat table
- Single and double channelled vacuum tables
- Perforated and heated vacuum tables



Smooth & multiple concurrent tests

- Use up to 3 film applicators simultaneously
- Test up to 2 test charts simultaneously

Motorised/Automatic Film Applicator

Elcometer 4340

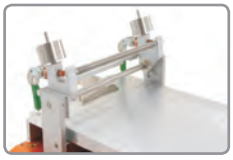
A range of applicator head attachments is available separately, allowing the user to select the most appropriate for their specific use and Standard (if applicable).

The Elcometer 4340 range of motorised Film Applicators comes as one universal base with user selectable head attachments - allowing the flexibility to test using standard film applicators (filmographs), spiral bar coaters or using the combined attachment of both the film applicator and spiral bar attachment. For a complete range of film applicators and spiral bar coaters etc. see page 17-7.

Each table is engineered to the highest flatness rating (up to five times flatter than glass - see page 17-6), and can be supplied in a number of variations to meet your specific test requirements, simply select the model from the Technical Specification below.



Film Applicator Attachment



Spiral Bar Attachment



Combined Film Applicator and Spiral Bar Attachment

Technical Specification C

Part Number	Test Chart Clip	Standard Table	Perforated Vacuum Table+	Single Channel Vacuum Table+	Double Channel Vacuum Table+	High Speed	Water Heated Temperature* +15 to 100°C (59 to 212°F)	Electrically Heated Ambient to 200°C (Ambient to 392°F)	Certificate
K4340M10-	■	■							○
K4340M11-	■	■					■		○
K4340M12-‡	■	■						■	○
K4340M13-‡	■	■				■			
K4340M100	■		■						○
K4340M101	■			■					○
K4340M102	■				■				○
K4340M110	■		■				■		○
K4340M111	■			■			■		○
K4340M112	■				■		■		○
K4340M120 ‡	■		■					■	○
K4340M130 ‡	■		■			■		■	
K4340M121 ‡	■			■				■	○
K4340M122 ‡	■				■			■	○
Dimensions	780 x 490 x 320mm (30.7 x 19.3 x 12.6”)								
Weight	29kg (64lb)								
Packing List	Elcometer 4340 Film Applicator, 3x mains leads (UK, EUR & US) and operating instructions								

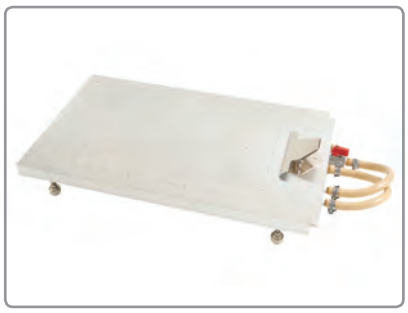
Motorised Film Applicator Attachments

Models		
M10-, M100, M101, M102	M11-, M12-, M110, M111, M112, M120, M121, M122	
KT004340N001	KT004340N101	Film Applicator Attachment
KT004340N002	KT004340N102	Spiral Bar Coater Attachment#
KT004340N003	KT004340N103	Combined Film Applicator & Spiral Bar Coater Attachment#

‡ For 110V unit, add D to end of part number, e.g. K4340M120D
# Each Spiral Bar Coater Attachment is supplied with a rubber mat
+ Vacuum Pump supplied separately (Elcometer 4930, see page 17-6)
* Supplied ready to be fitted with a temperature bath. Temperature bath is not supplied

○ 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.

Perforated tables have two sample size settings, 210 x 297mm (8.3” x 11.7”) and 297 x 420mm (11.7” x 16.6”), selected by means of a switch on the table.

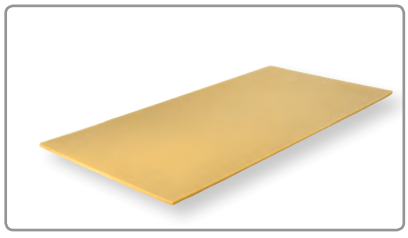
Technical Specification

Part Number	Description	Paper Size	Table Dimensions	
			mm	inches
K0004900M001	Perforated Vacuum Table	A4	220 x 300	8.5 x 12
K0004900M002	Perforated Vacuum Table	A3	300 x 450	12 x 18

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 17-7 and 17-2.

Technical Specification

Part Number	Description	Depth		Dimensions	
		mm	inches	mm	inches
KT004350P051	Elcometer 4350/51 Non-Slip Rubber Mat	5	0.2"	510 x 140	20 x 5.5
KT004350P052	Elcometer 4350/52 Non-Slip Rubber Mat	5	0.2"	510 x 250	20 x 9.8

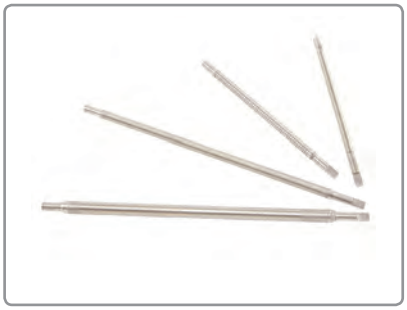
Spiral Bar Coaters

Elcometer 4361

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).
- 2 standard bar widths are available,140mm (5.5”) or 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 17-2.
A range of standard and heated vacuum tables are available; see page 17-6 for more information.





STANDARDS:
ASTM D 4147

Technical Specification

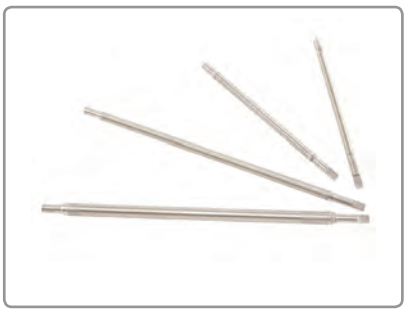
Bar Width 140mm (5.5”)		Coating Thickness				Coating Thickness	
Part Number	Model	µm	mils	Part Number	Model	µm	mils
K0004361P001	Elcometer 4361/1	4	0.157	K0004361P017	Elcometer 4361/17	66	2.598
K0004361P002	Elcometer 4361/2	6	0.236	K0004361P018	Elcometer 4361/18	70	2.755
K0004361P003	Elcometer 4361/3	8	0.315	K0004361P019	Elcometer 4361/19	76	2.992
K0004361P004	Elcometer 4361/4	10	0.393	K0004361P020	Elcometer 4361/20	80	3.149
K0004361P005	Elcometer 4361/5	12	0.472	K0004361P021	Elcometer 4361/21	90	3.543
K0004361P006	Elcometer 4361/6	16	0.630	K0004361P022	Elcometer 4361/22	100	3.937
K0004361P007	Elcometer 4361/7	20	0.787	K0004361P023	Elcometer 4361/23	110	4.330
K0004361P008	Elcometer 4361/8	26	1.024	K0004361P024	Elcometer 4361/24	120	4.724
K0004361P009	Elcometer 4361/9	30	1.181	K0004361P025	Elcometer 4361/25	130	5.118
K0004361P010	Elcometer 4361/10	34	1.338	K0004361P026	Elcometer 4361/26	140	5.511
K0004361P011	Elcometer 4361/11	38	1.496	K0004361P027	Elcometer 4361/27	150	5.905
K0004361P012	Elcometer 4361/12	40	1.574	K0004361P029	Elcometer 4361/29	175	6.890
K0004361P013	Elcometer 4361/13	46	1.811	K0004361P030	Elcometer 4361/30	200	7.874
K0004361P014	Elcometer 4361/14	50	1.968	K0004361P031	Elcometer 4361/31	300	11.811
K0004361P015	Elcometer 4361/15	56	2.205	K0004361P032	Elcometer 4361/32	400	15.748
K0004361P016	Elcometer 4361/16	60	2.362	K0004361P033	Elcometer 4361/33	500	19.685

Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2



Elcometer 4360

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).
- 2 standard bar widths are available,140mm (5.5”) or 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 17-2.
A range of standard and heated vacuum tables are available; see page 17-6 for more information.

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	K0004360P017	Elcometer 4360/17	66	2.598
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	K0004360P023	Elcometer 4360/23	110	4.330
K0004360P008	Elcometer 4360/8	26	1.024	K0004360P024	Elcometer 4360/24	120	4.724
K0004360P009	Elcometer 4360/9	30	1.181	K0004360P025	Elcometer 4360/25	130	5.118
K0004360P010	Elcometer 4360/10	34	1.338	K0004360P026	Elcometer 4360/26	140	5.511
K0004360P011	Elcometer 4360/11	38	1.496	K0004360P027	Elcometer 4360/27	150	5.905
K0004360P012	Elcometer 4360/12	40	1.574	K0004360P029	Elcometer 4360/29	175	6.890
K0004360P013	Elcometer 4360/13	46	1.811	K0004360P030	Elcometer 4360/30	200	7.874
K0004360P014	Elcometer 4360/14	50	1.968	K0004360P031	Elcometer 4360/31	300	11.811
K0004360P015	Elcometer 4360/15	56	2.205	K0004360P032	Elcometer 4360/32	400	15.748
K0004360P016	Elcometer 4360/16	60	2.362	K0004360P033	Elcometer 4360/33	500	19.685



Can be used with the Elcometer 4340 Motorised Film Applicator, see pages 17-2

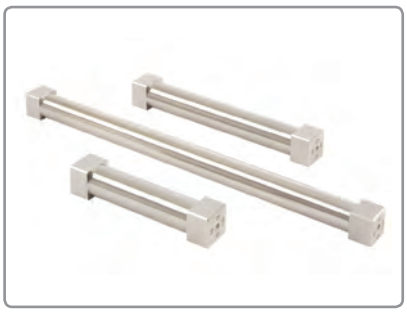
Baker Film Applicator

Elcometer 3520

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.

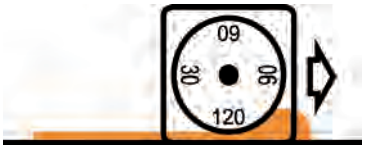
It can also be used with the Elcometer 4340 Motorised Film Applicators, see pages 17-2.

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

STANDARDS:
ASTM D 823-E

Technical Specification C

Part Number Metric	Model	Film Thickness µm	Film Width+ mm	Certificate
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	○
K0003520M011	Elcometer 3520/11	30, 60, 90, 120	175	○
K0003520M008	Elcometer 3520/8	30, 60, 90, 120	200	○
K0003520M009	Elcometer 3520/9	30, 60, 90, 120	250	○

+ Add 30mm (1.2") to the Film Width to calculate the total width of the applicator

Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2



○ Optional Calibration Certificate available.

Elcometer 3525 & 3530

Adjustable Baker Film Applicators







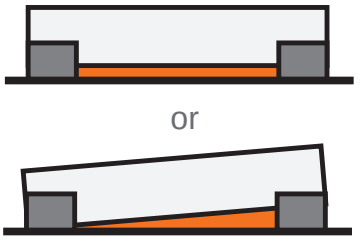
STANDARDS:
ASTM D 823-E

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 17-2.



Elcometer 3530



Technical Specification C

Part Number		Model	Film Thickness		Film Width+		Certificate
Metric	Imperial		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	K0US3530M001	Elcometer 3530/1	0 - 250	0 - 10	50	2	○
K0003530M002	K0US3530M002	Elcometer 3530/2	0 - 250	0 - 10	75	3	○
K0003530M003	K0US3530M003	Elcometer 3530/3	0 - 250	0 - 10	100	4	○
K0003530M004	K0US3530M004	Elcometer 3530/4	0 - 250	0 - 10	150	6	○
K0003530M005	K0US3530M005	Elcometer 3530/5	0 - 250	0 - 10	200	8	○
K0003530M006	K0US3530M006	Elcometer 3530/6	0 - 250	0 - 10	250	10	○

+ Add 30mm (1.2") to the Film Width to calculate the total width of the applicator



Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2

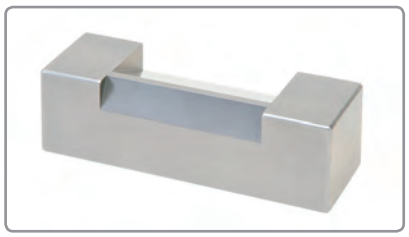
○ Optional Calibration Certificate available.

Single Sided Film Applicator

Elcometer 3550

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 Applicator can be used with the Elcometer 4340 Motorised Film Applicators, see page 17-2.



STANDARDS:
ASTM D 823-E

Technical Specification C

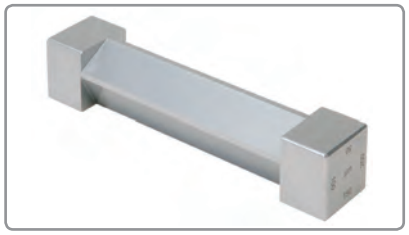
Part Number Metric	Part Number Imperial	Model	Film Thickness µm	Film Thickness mils	Film Width+ mm	Film Width+ inches	Certificate
K0003550M001	K0US3550M001	Elcometer 3550/1	50	2	50	2	○
K0003550M002	K0US3550M002	Elcometer 3550/2	50	2	75	3	○
K0003550M003	K0US3550M003	Elcometer 3550/3	50	2	150	6	○
K0003550M201	K0US3550M201	Elcometer 3550/1	75	3	50	2	○
K0003550M202	K0US3550M202	Elcometer 3550/2	75	3	75	3	○
K0003550M203	K0US3550M203	Elcometer 3550/3	75	3	150	6	○

Four Sided Film Applicator

Elcometer 3540

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 17-2.



STANDARDS:
ASTM D 823-E

Technical Specification C

Part Number Metric	Part Number Imperial	Model	Film Thickness µm	Film Thickness mils	Film Width+ mm	Film Width+ inches	Certificate
K0003540M001	K0US3540M001	Elcometer 3540/1	50, 100, 150, 200	2, 4, 6, 8	50	2	○
K0003540M002	K0US3540M002	Elcometer 3540/2	50, 100, 150, 200	2, 4, 6, 8	75	3	○
K0003540M003	K0US3540M003	Elcometer 3540/3	50, 100, 150, 200	2, 4, 6, 8	100	4	○
K0003540M004	K0US3540M004	Elcometer 3540/4	50, 100, 150, 200	2, 4, 6, 8	150	6	○
K0003540M005	K0US3540M005	Elcometer 3540/5	50, 100, 150, 200	2, 4, 6, 8	200	8	○
K0003540M006	K0US3540M006	Elcometer 3540/6	50, 100, 150, 200	2, 4, 6, 8	250	10	○

Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2



○ Optional Calibration Certificate available.

+ Add 40mm (1.6") to the Film Width to calculate the total width of the applicator

Elcometer 3570

Micrometric Film Applicators







STANDARDS:
ASTM D 823-E

The Elcometer 3570 is made of anodised aluminium with a reservoir and a bevelled blade applicator body, and is 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

Technical Specification C

Part Number	Description	Film Thickness µm	Film Width+ mm	Film Width+ inches	Certificate
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.

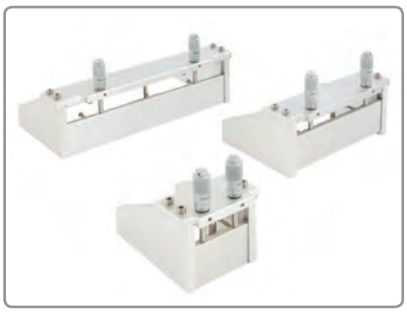
Casting Knife Film Applicator

Elcometer 3580

The Elcometer 3580 is available in a wide range of film widths and has extended sides to confine the coating during the application and is an ideal gauge for the laboratory.

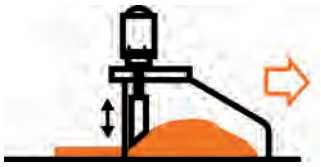
The film thickness can be adjusted in 10 micron steps from 0 to 6mm by means of two integrated micrometric screws.

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

STANDARDS:
ASTM D 823-E

Technical Specification C

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
Also available in Stainless Steel - Contact Elcometer for further information

○ Optional Calibration Certificate available.

Elcometer 3505

Cube Film Applicators



These two cube film applicators, manufactured from hardened stainless steel, accurately apply film stripes in either a single or up to a block of five film stripes, each 12mm (0.5” wide).

Ideal for preparing samples for use with the Elcometer 5300 Linear Drying Time Recorder (see page 18-2) or for simultaneously comparing formulations. 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

Technical Specification C

Part Number		Model	Film Thickness		Film Width+		Number	Certificate
Metric	Imperial		µm	mils	mm	inches	of Stripes	
K0003505M001	K0US3505M001	Elcometer 3505/1	30 - 1000	1 - 40	12	0.50	1	○
K0003505M202	K0US3505M202	Elcometer 3505/2	30 - 1000	1 - 40	12	0.50	5	○

+ Elcometer 3505/1 total width: 26mm (1.0”); Elcometer 3505/2 total width: 146mm (5.7”)

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)

Elcometer 3508 & 3560

4 Gap Applicator with Reservoir



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 19-2) or for comparing two coatings simultaneously.

STANDARDS:
ASTM D 823-E (Elcometer 3560)

Technical Specification C

Part Number		Model	Film Thickness		Film Width+		Certificate
Metric	Imperial		µm	mils	mm	inches	
K0003560M201	K0US3560M201	Elcometer 3560/1	30, 60, 90, 120	1, 2, 3, 4	60	2	○
K0003560M202	K0US3560M202	Elcometer 3560/2	50, 100, 150, 200	2, 4, 6, 8	60	2	○
K0003508M001	K0US3508M001	Elcometer 3508/1	100, 150, 200, 250	4, 6, 8, 10	2 x 50	2 x 2	○

+ Elcometer 3560 total width: 90mm (3.5”); Elcometer 3508 total width: 165mm (6.5”)

○ Optional Calibration Certificate available.

Sag Tester

Elcometer 4270

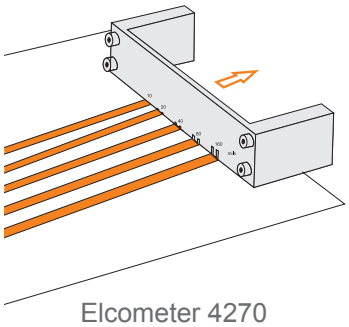
Made from stainless steel, the straight scraper has 11 notches of increasing clearance. The Elcometer 4270 Sag Tester is used to establish a coating's resistance to sag due to gravity.

A contrast chart is immediately placed in a vertical position with the thinnest film at the top.









Elcometer 4270

STANDARDS:
ASTM D 4400, FTMS 141 4494.1

Technical Specification C

Part Number		Description+	Range		Notch Depth		Certificate
Metric	Imperial		µm	mils	µm	mils	
K0004270M001	K0US4270M001	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	○
K0004270M002	K0US4270M002	Elcometer 4270/2	25 - 150	1 - 6	25, 37, 50, 62, 75, 87, 100, 112, 125, 137, 150	1, 1.5, 2., 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6	○
K0004270M203	K0US4270M203	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	K0US4270M204	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")

○ Optional Calibration Certificate available.

Elcometer 4695

Leneta Test Charts



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-flourescent 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.

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 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	5 1/2 x 10	2.72kg (6lb)	250	6
K0004695M004	-	Leneta Chart 2C	194 x 260	7 5/8 x 10 1/4	4.08kg (9lb)	250	4
K0004695M006	K0004695M206	Leneta Chart 3B	194 x 289	7 5/8 x 11 3/8	4.08kg (9lb)	250	4
K0004695M015	K0004695M215	Leneta Chart 5C	194 x 260	7 5/8 x 10 1/4	4.08kg (9lb)	250	4



Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2

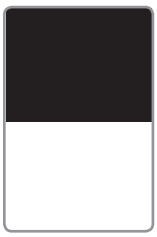
Brushout Cards

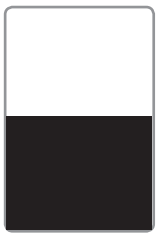
Elcometer 4695

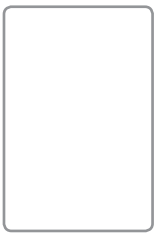
Designed for informal brushout applications, thicker paper is used for the testing of coatings applied with a brush or roller.

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	3 7/8 x 6	3.18kg (7lb)	500	4
K0004695M016	K0004695M216	Leneta Chart 5DX	98 x 152	3 7/8 x 6	3.18kg (7lb)	500	4
K0004695M102	K0004695M302	Leneta Chart WDX	98 x 152	3 7/8 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 7 1/4	2.27kg (5lb)	500	-

Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2



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.

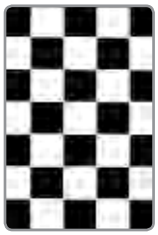
Technical Specification

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	7 5/8 x 11 3/8	4.08kg (9lb)	250	4
K0004695M023	K0004695M223	Leneta Chart 8H	286 x 438	11 1/4 x17 1/4	5kg (11lb)	125	4

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	7 5/8 x 11 3/8	4.08kg (9lb)	250	4



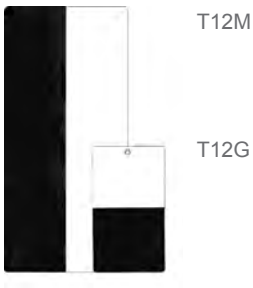
Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2

Metopac™ Metal Test Panels

Elcometer 4695

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 Box	Case	Description	Chart Dimensions mm	Chart Dimensions inches	Box Weight	Quantity per Box	Boxes per Case
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

Plain White Charts

Elcometer 4695

Available in varying thicknesses and size. The Leneta WDX card comes with convenience hole at the top.



Technical Specification

Part Number Box	Case	Description	Chart Dimensions mm	Chart Dimensions inches	Box Weight	Quantity per Box	Boxes per Case
Card thickness 0.5mm							
K0004695M102	K0004695M302	Leneta Chart WDX	98 x 152	3 7/8 x 6	3.18kg (7lb)	500	4
Card thickness 0.3mm							
K0004695M103	-	Leneta Chart WF	76 x 184	3 x 7 1/4	2.27kg (5lb)	500	6

Can be used with the Elcometer 4340 Motorised Film Applicator, see page 17-2



Elcometer 4695

Unvarnished Test Charts



Form N2A

Unvarnished Test Charts are ideal for testing applications of clear coatings and stains.

The unvarnished (semi-porous) surface simulates wood or unsealed wallboard.

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	5 1/2 x 10	2.72kg (6lb)	250	6

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.

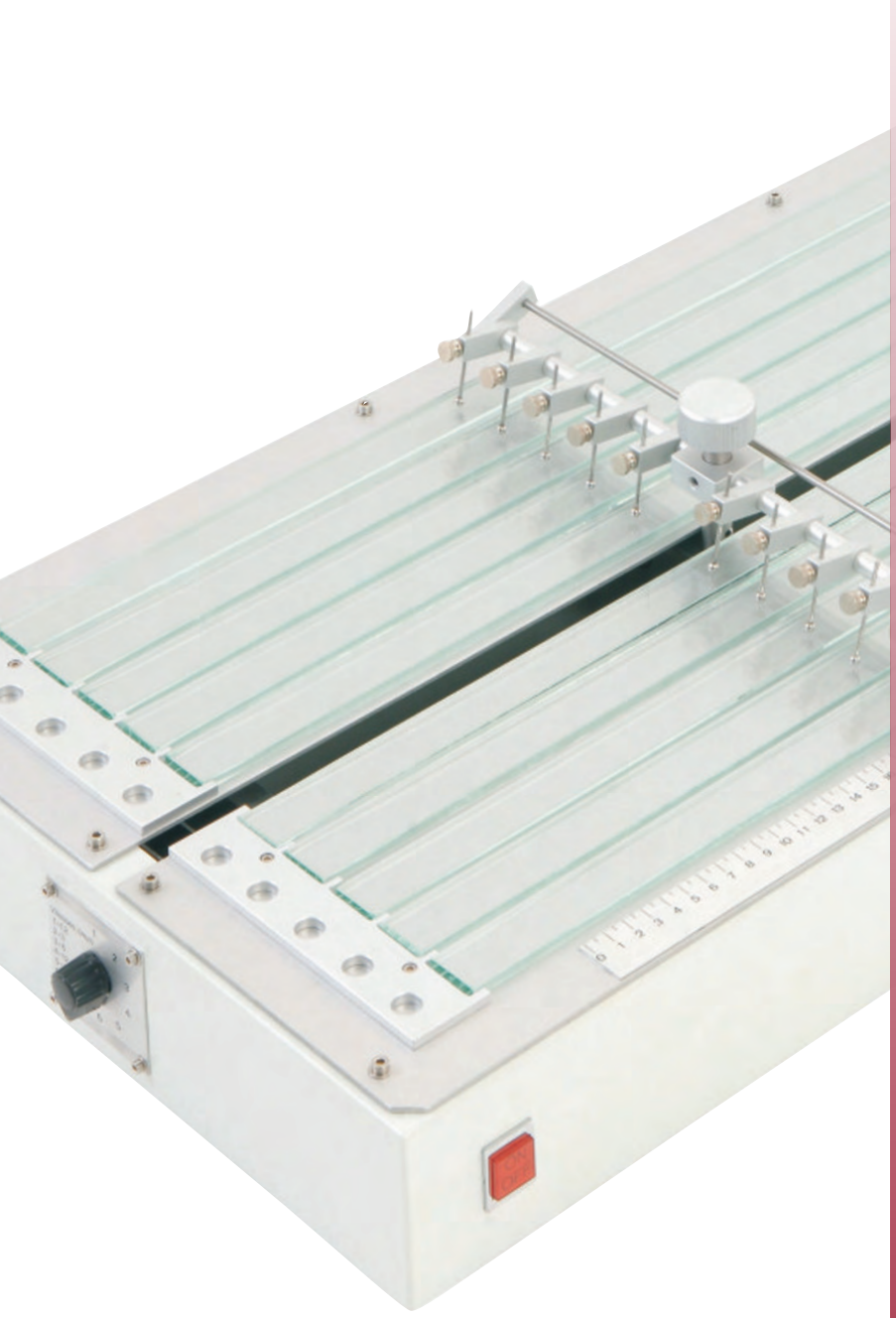
Technical Specification

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 page 17-2

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.

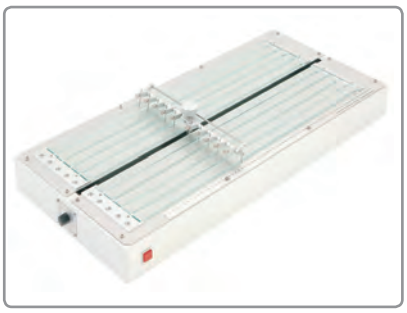
Permeability: Describes how much and how fast moisture transfers through a film as vapour. The film is gripped between a ring fitted with a seal and the cup, which contains a quantity of water or desiccant.

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.



Elcometer 5300

Linear Drying Time Recorder







The Elcometer 5300 is designed to determine paint drying time by linear recording, with up to 10 positions (5 each side of the centre column) tested simultaneously.

Ten rods with hemispherical tips, fitted to a carriage, are brought into contact with the fresh films at one end of the test piece and moved lengthwise.

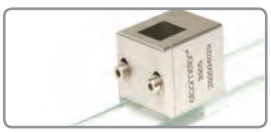
The drying time is calculated from the distance travelled, measured using a graduated rule along the edge, corresponding to the various stages observed on the trace.

The coatings are applied beforehand on glass strips 25mm (0.98”) wide and 700mm (27.5”) long. Using the Elcometer 3505 Cube Film Applicators (see page 17-14), it is possible to apply up to five coatings simultaneously on a glass plate.

- The drying time recorder automatically stops at the end of travel
- The load on each ball is 11g (0.37oz), although additional weights can bring this load up to 21g (0.71oz)

Technical Specification C

Part Number UK 240V/ EUR 220V	US 110V	Description	Certificate
K0005300M002	K0US5300M002	Elcometer 5300 Linear Drying Time Recorder	○
Tool Diameter	4.76mm (0.19”)		
Speed	6 speeds, between 12mm (0.5”) and 600mm (24”) per hour		
Dimensions	860 x 420 x 170mm (34 x 16.5 x 6.7”)		
Weight	18kg (40lb)		
Packing List	Elcometer 5300, 12 glass strips, 10 x 10g (0.35oz) weights and operating instructions		



For a full range of accessories, see page 18-3

○ Optional Calibration Certificate available.

Linear Drying Time Recorder

Elcometer 5300

Accessories

Part Number	Description
K0003505M001	Elcometer 3505/1 Metric Cube Film Applicator - 1 Stripe*
K0US3505M001	Elcometer 3505/1 Imperial Cube Film Applicator - 1 Stripe*
K0003505M202	Elcometer 3505/2 Metric Cube Film Applicator - 5 Stripes*
K0US3505M202	Elcometer 3505/2 Imperial Cube Film Applicator - 5 Stripes*

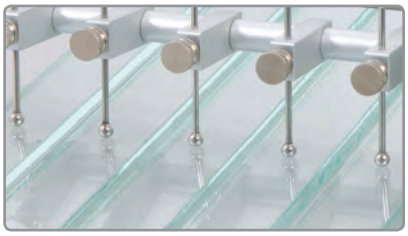
* see page 17-14 for details



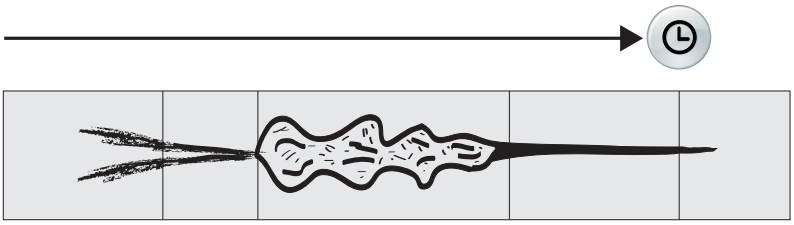
Part Number	Description
KT005300P002	Ball Tool - set of 5
KT005300P003	Additional 10g (0.35oz) Weights, set of 5



Part Number	Description
KT005300P001	Glass Strip 700 x 25mm (28 x 1”), set of 10
KT005300P004	Glass Plate 700 x 145mm (28 x 5.7”), set of 6



How to use a linear drying time recorder



A Linear Drying Time Recorder calculates the drying time using the principle that

Distance = Speed x Time

A ball tip is placed into the coating being tested and the drying time recorder begins to move the ball at a predefined speed. As the coating dries, the visual trace left in the coating by the ball identifies each stage of the cure.

Elcometer 5100

Payne Permeability Cups



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				

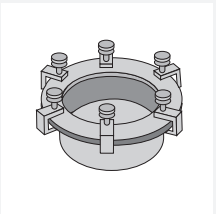
Accessories

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

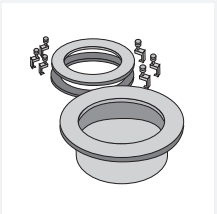


For use with Elcometer 8720 compact balance, see page 15-6

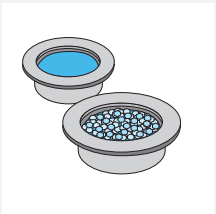
How to use Payne Permeability Cups



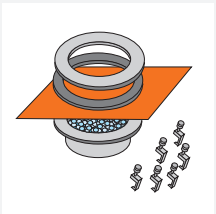
Prepare the film to be tested using a film applicator and suitable test chart.



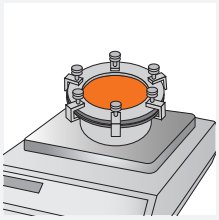
Disassemble the permeability cup.



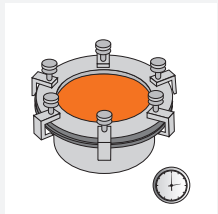
Fill with required liquid (typically water) or dry desiccant (absorbent).



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.

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.

Definitions:

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.

Elcometer 1720 Washability & Abrasion Testers

These robust, reliable and extremely versatile machines have been designed for testing the washability, brushability and resistance of a wide range of materials including paint, lacquers, inks, coatings, leather, wood, plastics, printed material, fabrics etc.

Made from anodised aluminium making it durable and robust

All stations can be tested wet or dry

The durable and robust design is stable under test allowing repeatable results, even at the fastest stroke speeds

Rapid tool change





Washability & Abrasion Testers

Elcometer 1720

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 12956, 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)

Test up to 4 samples simultaneously

Multi-lingual digital display



User adjustable stroke length from 10 to 300mm (0.4 to 11.8”)

Speed Cycles can be adjusted from 10 to 65 cycles per minute or set to the ISO Standard of 37 cycles /min

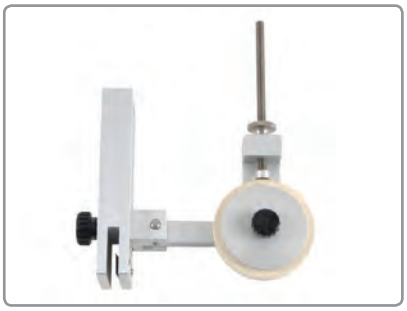
Wide range of tools available, for testing flat and curved samples (see page 19-6)





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

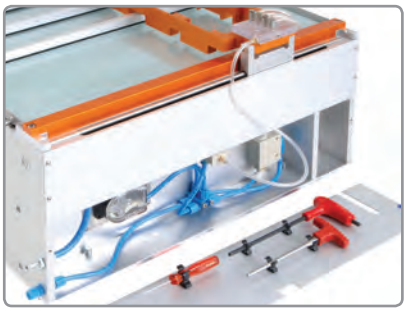
- All tools are interchangeable with the rapid tool change system, making the unit ideal for use in accordance with a wide range of Standards

For the complete range of tools, see page 19-6



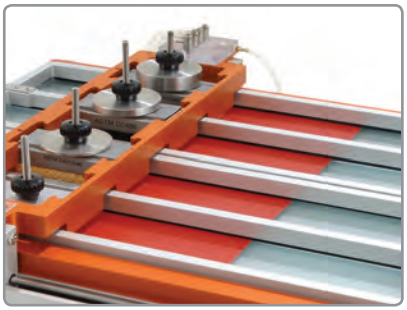
User Adjustable

- 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 for 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 it’s rapid tool change system setting up tests is fast and easy
- Easy sample placement allows quick change between tests

Washability & Abrasion Testers

Elcometer 1720



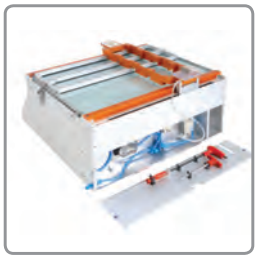
Available in 2 versions:
2 station - undertakes two tests at a time,
4 station - tests up to four samples with 4 different tests.



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 C

Part Number	Description	Certificate
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



○ Optional Calibration Certificate available.

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 for details. 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 allowing 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 (14.11oz)

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 (31.74oz)

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

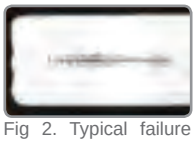


Fig 2. Typical failure without

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 calculation of equivalent loss in film thickness.

These Scrub Test Panels are ideal for use with the Elcometer 1720 Washability & Abrasion Testers, see page 19-2.

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	6 1/2 x 17	100	5
K0004695M069	K0004695M269	White Scrub Test Panel P122-10N	165 x 432	6 1/2 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		
ST131852-1	Wearaser™ Holder (collet) Kit - Plastic		
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 and operating instructions		



For the complete range of Accessories, see pages 19-11 to 19-13

● Calibration Certificate supplied as standard.

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

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 Model 155 uses an alignment guide screw to set the position of the instrument. An alignment block is incorporated into the base of Model 255, 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 Abrasers

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 work space for the Abraser and features a Plexiglas® viewing window to monitor testing and 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 - work space 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

elcometer®

ELCOMETER 480 GLOSSMETERS

Repeatable and reproducible test results, time after time after time



From appearance to film application, abrasion and washability to coating thickness; Elcometer's range of high quality instruments ensure accurate, repeatable and reproducible test results, every time.

Film Application



Our range of manual & automatic film applicators ensure smooth, reproducible, accurate and reliable application of a wide range of coatings & product samples.

See page 17-1

Coating Thickness



Up to 40% faster than other coating thickness gauges, the new Elcometer 456 provides you with accurate and repeatable readings. Integral & separate probes available.

See page 8-1

Colour



The Elcometer 6300 range of colour assessment cabinets ensures accurate visual colour assessment and colour comparison.

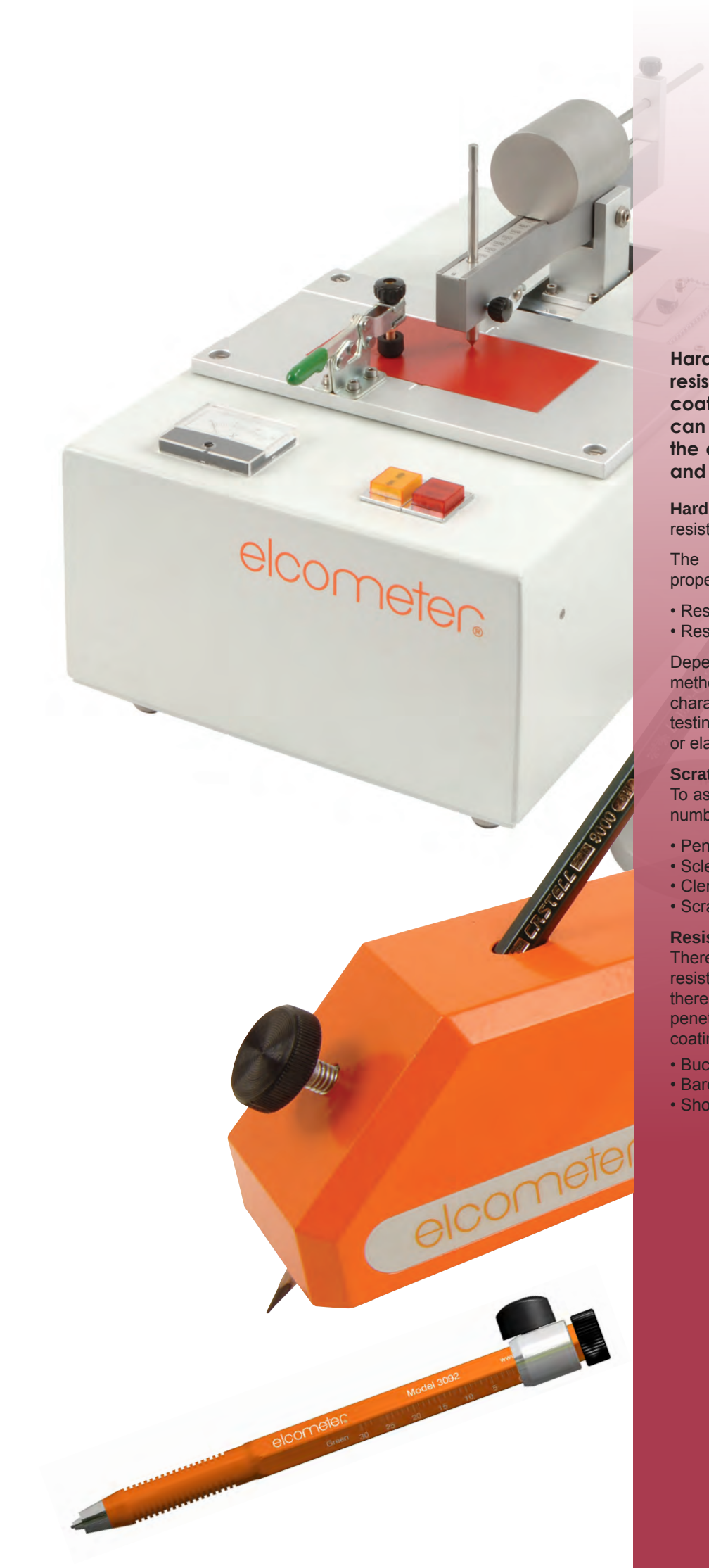
See page 14-18

ElcoMaster™



ElcoMaster™ is the simple yet powerful software solution; combining all your inspection results in one professional report, instantly.

See page 1-2



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

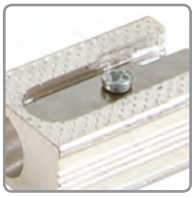
Resistance to Indentation:
There are many instruments available to assess the resistance to penetration. For coatings in particular, there are three common methods where the depth of penetration of a weighted tool is used to show the coating's resistance to penetration:

- Buchholz
- Barcol
- Shore

Elcometer 3080

Pencil Hardness Tester







STANDARDS:
ASTM D 3363, ECCA T4,
EN 13523-4, ISO 15184:2012,
JIS K 5600-5-4

This is a simple and effective technique to evaluate the hardness of many coatings.

The pencil lead, prepared 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.

Technical Specification

Part Number	Description
K0003080M003	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 - (14 pencils, grades 6B - 6H), x 2 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)		
T501190451	Pencil Sharpener (6H to 2B)		
T501190452	Pencil Sharpener (3B to 6B)		

Pencil Hardness Tester

Elcometer 501

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, prepared 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.







STANDARDS:
ASTM D 3363, ECCA T4,
EN 13523-4, ISO 15184:2012,
JIS K 5600-5-4

Technical Specification C

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 (14 pencils, grades 6B - 6H), positioning block, 2 x 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)		
T501190451	Pencil Sharpener (6H to 2B)		
T501190452	Pencil Sharpener (3B to 6B)		

○ Optional Calibration Certificate available.

Elcometer 3086

Motorised Pencil Hardness Tester







STANDARDS:
ASTM D 3363, ECCA T4,
EN 13523-4, ISO 15184:2012,
JIS K 5600-5-4

Traditional pencil hardness testers can be limited in their reproducibility and repeatability by two key factors; the uniformity of the carriage speed and the variation of the applied force by the user as the manual tester is moved across the coating.

The Elcometer 3086 Motorised Pencil Hardness Tester, using the same test methods and principles as the Elcometer 501 pencil hardness tester, removes both of these variables by being fully independent. The internal motor drives the unit at a constant, uniform speed across the coated surface, exerting a fixed, user determined force between 0 - 10N (0 - 2.25lbF).

Using the pencil lead holder, pencil leads of varying hardness values can be quickly interchanged to determine a coating's hardness rating.

Manufactured from anodised aluminium, the Elcometer 3086 can travel forwards (chip method) or backwards (indentation method), as required.

Technical Specification

C

Part Number			Description	Certificate
UK 240V	EUR 220V	US 110V		
K0UK3086M001	K0003086M001	K0US3086M001	Elcometer 3086 Motorised Pencil Hardness Tester	○
Dimensions	280 x 140 x 240mm (11 x 5.5 x 9.4")			
Weight	3.8kg (8.4lb)			
Packing list	Elcometer 3086, lead holder, lead set (14 packs of leads, grades 6H to 6B), positioning block, abrasive sharpener, abrasive paper and operating instructions			

Accessories

Part Number	Description	Part Number	Description
KT003084P220	Spare Metal Pencil Lead Holder		
KT003084P001	12 Hardness Leads (6B)	KT003084P008	12 Hardness Leads (F)
KT003084P002	12 Hardness Leads (5B)	KT003084P009	12 Hardness Leads (H)
KT003084P003	12 Hardness Leads (4B)	KT003084P010	12 Hardness Leads (2H)
KT003084P004	12 Hardness Leads (3B)	KT003084P011	10 Hardness Leads (3H)
KT003084P005	12 Hardness Leads (2B)	KT003084P012	10 Hardness Leads (4H)
KT003084P006	12 Hardness Leads (B)	KT003084P013	10 Hardness Leads (5H)
KT003084P007	12 Hardness Leads (HB)	KT003084P014	10 Hardness Leads (6H)

○ 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 - 30N is also available.



new





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

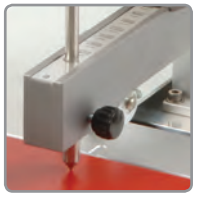
Accessories

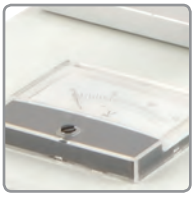
Part Number	Description
KT003092P001	0.5mm (0.02”) Tungsten Carbide Tip
KT003092P002	0.75mm (0.03”) Tungsten Carbide Tip
KT003092P003	1.0mm (0.04”) Tungsten Carbide Tip
KT003092P008	90° Diamond Point Cone, 90µm (3.54mils) Radius - ISO Type
KT003092P004	Grey Spring 0 - 3N (0 - 0.67lbF)
KT003092P005	Red 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 C

Part Number	Description			Certificate
K0003000M003	Elcometer 3000 Motorised Clemen Unit (UK 240V / EUR 220V)			○
K0US3000M003	Elcometer 3000 Motorised Clemen Unit (US 110V)			○
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) x 4 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
KT003000N002	1cm² (0.15 inch²) Rubber Tool (to be used as a guide to the dryness of a sample)
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.

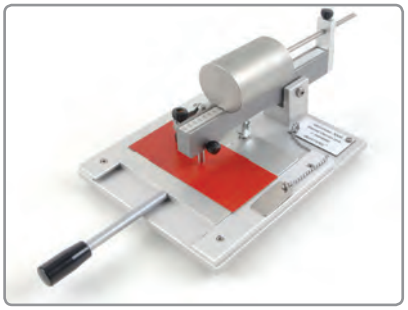
Manual Clemen Unit

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 C

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			

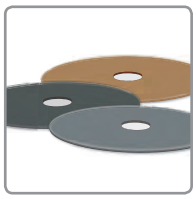
Accessories

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
KT003000N002	1cm² (0.15 inch²) Rubber Tool (to be used as a guide to the dryness of a sample)
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







STANDARDS:
EN 438-2, ISO 4586-2

Scratch/Shear Tester

The Elcometer 3025 is a motorised device to test the resistance of many materials to scratching, shearing, gouging, marring, scraping and engraving. This portable instrument tests 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 - 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 C

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, fibreglass 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, and some of the harder plastics and fibreglass. 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, 2 x 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)	48 - 50 BU
KT003101P005	Certified Test Disc 936; (x5)	48 - 50 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; 48 - 50 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 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 C

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 →

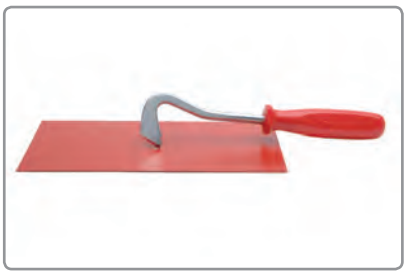
Shore A ASTM D2240, DIN 53505, ISO 868, ISO 7267-2

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 C

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:
DIN 53167

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.

A Renault-version of the tool with a blade adjustment device to ensure accurate settings, is also available.

Technical Specification C

Part Number	Description	Certificate
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, operating instructions	

Accessories

KT001538N002	Spare 0.5mm (0.02”) Cutter	KT001538N001	Spare 1mm (0.04”) Cutter

○ Optional Calibration Certificate or Certificate of Conformity available.

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.

Elcometer 1500

Cylindrical Mandrel on a Stand



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.

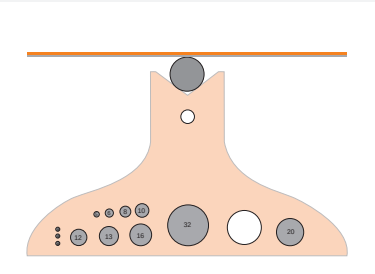


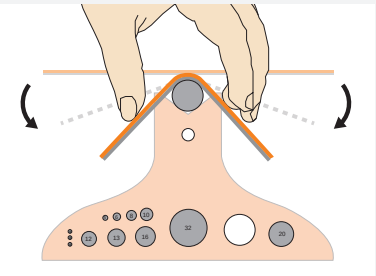


STANDARDS:

AS/NZS 1580.402.1, ASTM D 522-B, ASTM D 1737, BS 3900-E1, DIN 53152, ISO 1519-1, JIS K 5600-5-1 NF T30-040

How to use the Cylindrical Mandrel on a Stand

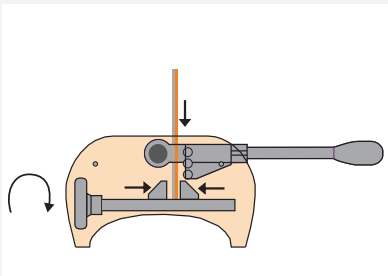




Technical Specification

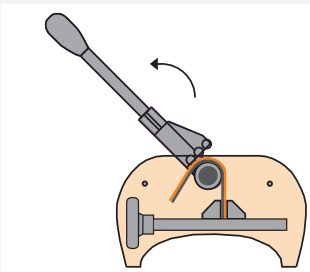
Part Number	Description
K0001500M002	Elcometer 1500/2 Metric Set of 13 Cylindrical Mandrels on a stand from 2 to 32mm
K0US1500M001	Elcometer 1500/1 Imperial Set of 7 Mandrels from ⅛” to 1”
Mandrel Size	Metric Version: 2, 3, 4, 5, 6, 8, 10, 12, 13, 16, 20, 25, and 32mm
	Imperial Version: ⅛, ¼, ⅜, ½, ⅝, 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.

Cylindrical Mandrel Bend Tester

Elcometer 1506

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.







STANDARDS:
AS/NZS 1580.402.1, ASTM D 522-B, ASTM D 1737, ISO 1519-2, JIS K 5600-5-1

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		

Elcometer 1510

Conical Mandrel Bend Tester







STANDARDS:
ASTM D 522-A, BS 3900-E11, ISO 6860

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 - 38.1mm (0.12 - 1.5”). A graduation indicates the mandrel diameter in both mm 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 long service life. A large, sturdy anodised base, which can be permanently fixed to a workstation, ensures stability during testing.

Technical Specification C

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.

Cupping Tester

Elcometer 1620

This robust and user-friendly instrument 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 x10 illuminated magnifying glass.







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

Technical Specification C

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 10x magnifying glass with magnet and operating instructions		

○ Optional Calibration Certificate available.

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 suitable for use on both direct and indirect test methods.

Direct: either 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 21-8.

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.



Tube height 1000mm (39”)

Fast and safe weight release mechanism

Graduated tube engraved in both kg-cm & lb-inch (1m, 39” height) metric and imperial units

Integrated bubble level to ensure the tester is perpendicular for repeatable accurate results

Stop collar with 10 settings between 2mm and 15mm (0.08 and 0.60”) to change the depth of impact when working in accordance with ISO Standards, supplied with Kits A, D and F

Magnifier x10

Rapid 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

Heavy-duty, passivated base plate and anodised arm to prevent rusting

Variable Impact Tester

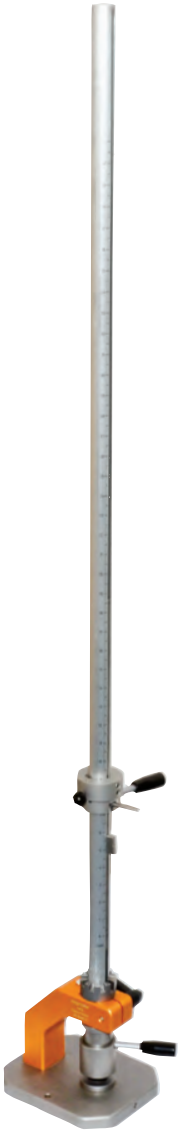
Elcometer 1615

Variable Impact Tester Kits
The Elcometer 1615 Variable Impact Testers are designed to meet a wide range of National and International Standards. Simply select the appropriate kit from page 21-8 and attach the punch, die and accessories to the base unit.

Interchangeable dies - enable the user to match the die to the size of the relevant punch to conform to the required Standard or method.



Please see page 21-8 for the list of available kits and page 21-10 for the full range of accessories



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

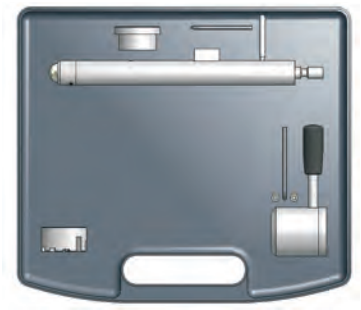
Technical Specification

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 1615

Elcometer Impact Tester Kits

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, allow 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

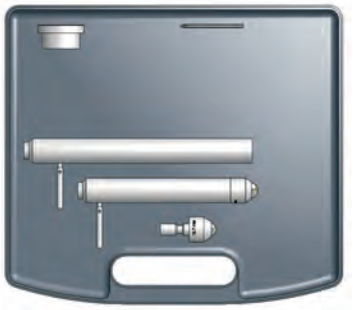
STANDARDS:
ISO 6272:1993, EN 13523, JIS K 5600-5-3, DIN EN ISO 6272-1



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

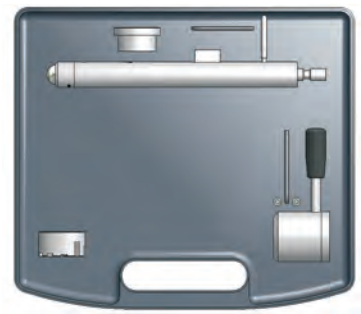
STANDARDS:
ASTM D 2794, BS EN ISO 6272-2, ISO 6272-2 :2002, Qualicoat



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 Impact Tester Kits

Elcometer 1615

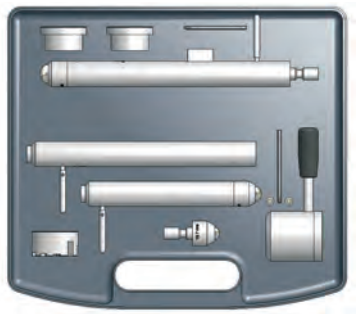
Part Number	Description	Certificate
KT001615KITE	Elcometer Impact Tester Kit E	○



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

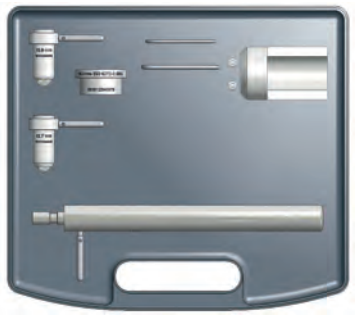
Part Number	Description	Certificate
KT001615KITF	Elcometer Impact Tester Kit F	○



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	○

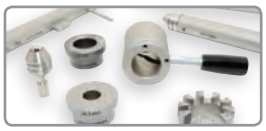


Kit G: Falling 1kg (2.2lb) weight with a 15.9mm (0.62”) static indenter with handle and punch; 12.7mm (0.5”) static indenter with handle and punch; 16.3mm (0.64”) die with fixing screw; guide bracket with two fixing screws; 3mm (0.12”) hexagonal wrench; 4mm (0.16”) hexagonal wrench

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 21-8



○ Optional Calibration Certificate available.

Elcometer 1615

Variable Impact Tester Accessories



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	Additional 1kg (2.2lb) Falling Weight, 24.6mm (0.97) Diameter				■			
KT001615N221	Additional 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	■			■		■	



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.

More extensive range 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.

Elcometer 181

Analogue Concrete Test Hammer



STANDARDS:
ASTM C805, BS 1881:202, DIN 1048, EN 12504-2, ISO 8045, NFP18-417, UNI 9189

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 and Elcometer offer both mechanical and digital models.

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

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.

Digital Concrete Test Hammer

Elcometer 182

The Elcometer 182 Digital Concrete Test Hammer is equipped with an electronic transducer which converts the rebound values into a reading on the digital display. It displays a range of statistics and there is a facility to download to a PC.

The software and digital display are integrated into the design of the hammer.

- Light and easy to use
- High resolution and accuracy
- Possibility to store measurements and download data to PC
- Setting of test parameters and factors (age, shape, correction factors)
- Rapid and simple calibration procedure
- Selection of testing angle
- Selection of unit (N/mm², MPa, PSI, kgf/cm²) Automatic conversion of rebound index to equivalent compression strength
- Selection between 7 different correlation curves between rebound index and compressive strength, 2 pre-set and 5 user definable
- Statistical evaluation of test results (mean value, standard deviation, concrete strength estimation)
- Supplied with abrasive stone to prepare test surface
- Storage of up to 5,000 results
- RS 232 output to PC
- Rechargeable internal battery



STANDARDS:

ASTM C805, BS 1881:202, DIN 1048, EN 12504-2, ISO 8045, NFP18-417, UNI 9189

Technical Specification

Part Number	Description	Certificate
W182---4	Elcometer 182 Digital Concrete Test Hammer	●
Impact Energy	2.207 Nm	
Accuracy	Better than ± 2 Rebound Number(s) (When tested on Calibration Anvil at 80)	
Resolution	0.1 Rebound Number	
Range	10 to 70 MPa	
Memory	5,000 tests	
Unit Selection	N/mm²; MPa; kgf/cm²; PSI	
Autonomy (Continuous Use)	>5 Hours	
Dimensions	Hammer: 280mm (11.02”) length x 55mm (2.17”) diameter In Case: 190 x 100 x 350mm (7.48” x 3.94” x 13.78”)	
Weight	2kg (4.4lbs) with case	
Packing List	Hammer, battery charger (UK, EUR & US), serial cable for PC, abrasive stone, instruction manual, calibration certificate and carry case	

Accessories

TW99919563	Calibration Anvil (supplied complete with Test Certificate)
TW18219475-1	Replacement Mains Adaptor, UK 240V
TW18219475-2	Replacement Mains Adaptor, EUR 220V
TW18219475-3	Replacement Mains Adaptor, US 110V

● Calibration certificate supplied as standard

Elcometer 331

Covermeters & Half-Cell Meters

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

Intuitive menus in multiple languages:
Clear on-screen instructions

Fast and accurate:
Locate and determine orientation of rebar quickly, easily & accurately

Large, easy to read backlit display:
For easy viewing in dark environments









Range of fully interchangeable search heads including standard, narrow pitch, deep cover, borehole probe and half cell.

Covermeters & Half-Cell Meters

Elcometer 331

Single handed operation:
All functions can be accessed & controlled through 4 simple keys on both the main unit and search head

International bar sizes:
User selectable bar sizes: metric, US Bar Numbers, ASTM/Canadian and Japanese



Rechargeable battery supply:
Battery packs can be charged in the unit or externally

Ergonomically designed:
For ease of use and comfort

Probe Storage Locator on base unit for portability

An easy to use gauge that quickly and accurately locates/orientates reinforcement bars and measures the depth of cover over the rebar.

Designed to meet IP65 this rugged waterproof gauge can be used in the harshest of environments.

Elcometer 331 Covermeters & Half-Cell Meters

Elcometer have seven covermeters in their range, The Elcometer 331² H & HM are Half-Cell only instruments, the Elcometer 331² Model B is a Covermeter only and the Elcometer 331² Models BH, SH and TH incorporate the Half-Cell technology required to assess potential corrosion of rebar. Finally, the THD model can accurately locate stainless steel rebar.

User Friendly

- Easy to transport and store
- Ergonomically shaped case for comfort
- Single handed operation: All functions can be accessed & controlled through 4 simple keys/ buttons

Accurate

- Locate and determine orientation of rebar quickly, easily & accurately
- Up to 240,000 readings can be stored on the gauge for detailed reporting*
- Memory and data logging with data output to PC or direct to printer*
- Graph Plotting allows an immediate visual indication of results

Reliable

- Stainless Steel rebars can be located by the THD Model
- Battery packs can be charged in the unit or externally. Additional batteries allow continued use

Tough

- Specifically designed for use on-site
- Rugged, waterproof IP65 case provides protection against the elements.
- Backlit screen for viewing in dark environments

Efficient

- Rebar locator, concrete covermeter and half-cell measurement all available in a single gauge - (selected models)
- Intuitive menus enable each gauge to be used straight from the box

Powerful

- Links to Covermaster™ software
- Ultimate data management tool to store cover & half cell readings and produce professional reports
- On Screen graphic display provides visual assessment of readings allowing identification of areas of low concrete cover or potential areas of corrosion



Elcometer 331 Covermeter



Elcometer 331 Half-Cell Meter

* Selected models only

Covermeters & Half-Cell Meters

Elcometer 331

Product Features

Models	H	HM	B	BH	SH	TH	THD
Covermeter /rebar location			■	■	■	■	■
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		■			■	■	■
Minimum & maximum cover limits					■	■	■
Date & Time		■			■	■	■
Memory					■	■	■
Linear batch memory		Up to 200 batches of 1000 readings#			10 linear batches of 1,000 readings each	Up to 200 batches of 1000 readings#	Up to 200 batches of 1000 readings#
Grid batch memory		Up to 240,000 readings#				Up to 240,000 readings#	Up to 240,000 readings#
User certified 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

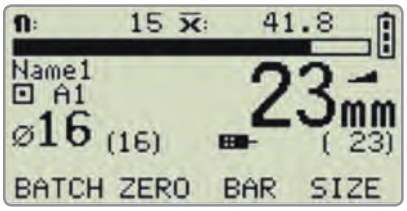
Technical Specification

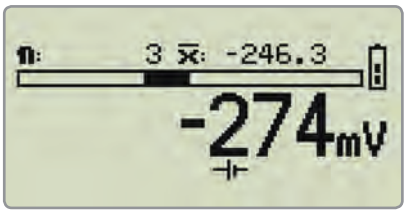
	Model H	Model HM	Model B	Model BH	Model SH	Model TH	Model THD
Part Numbers	W331H---4	W331HM--4	W331B---4	W331BH--4	W331SH--4	W331TH--4	W331THD-4
Power supply	7.4V battery pack provides up to 32 hours of continuous use (20 hrs if backlight is on). Rechargeable in 4 hours either inside or outside the gauge using an external charger.						
Operating temperature	0 to 50°C (32 to 120°F)						
Dimensions	230 x 130 x 125mm (9 x 5.1 x 4.9")				Weight	1.54kg (3.4lbs)	
Packing List	Standard Items: Rechargeable battery pack & charger (UK, US & EU), earphone, shoulder strap, plastic carry case & operating instructions. Model H & HM: Half Cell Meter, 25m extension cable on spool, 1.7m red rebar connecting cable with connecting clip & 1.7m black half-cell connecting cable. Model B: Concrete Covermeter, standard search head & search head connecting cable. Model BH, SH, TH & THD*: Concrete Covermeter with Half-Cell & search head connecting cable. Model HM, SH, TH & THD are also supplied with Covermaster™ software and PC cable.						

* Search Heads and Half-Cell Probes are not included as standard and must be ordered separately

Elcometer 331

Covermeters & Half-Cell Meters

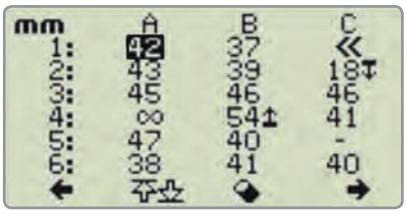




Cover Display Screen -

Alternative / Typical Data Review Screen View

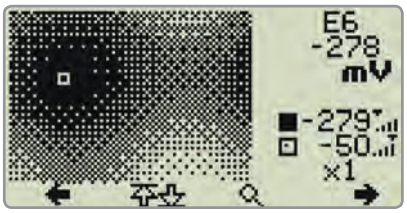
- Backlit screens for use in dark conditions
- Easy to use menus, in multiple languages to enable access to all data needed whilst on site without constant reference to the instruction book
- Alternative view shows the typical display when using the deep cover search head
- Bar size and depth of cover can be manually inputted to suit specific requirements
- Typical data review screen clearly displays where readings are below or above a user specified tolerance, where a reading has not been taken
- Units of measurement can be displayed in mm or inches for cover, or mV for Half Cell



Half-Cell Mode -

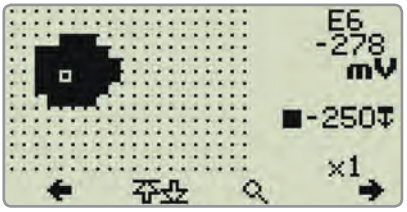
Typical Screen View

- Elcometer 331 Model BH/SH/TH/THD can read both Cover and Half-Cell Values
- Elcometer 331 Model B can read Cover Values only
- Data logging information displayed on screen
- Menu soft keys are visible in Elcometer 331 Model SH and TH



Graphics Plot Mode

- Half-Cell Mode - the gauge indicates the areas with the most potential for corrosion
- Covermeter mode - the gauge indicates the depth of cover
- Black indicates most potential for corrosion
- White indicates least potential for corrosion with varying greyscale shade in between
- Zoom feature allows the user to take a closer look at different areas that are of interest



Threshold View

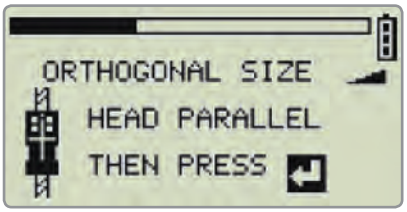
- Ideal method for a simple pass or fail analysis
- Once the threshold value has been set, anything before the value is shown in black, while anything over the value is shown in white

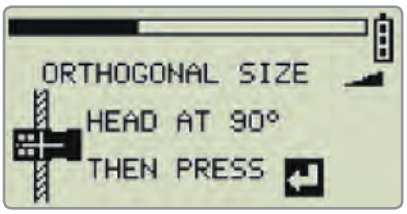
Covermeters & Half-Cell Meters

Elcometer 331

Autosizing and orthogonal function

- Autosizing automatically estimates the size of rebar and the depth of cover
- If this estimated figure differs greatly from your expected rebar size or you do not know the expected rebar size, the orthogonal size function provides an accurate measurement of bar size
- The step by step directions for orthogonal function on the covermeter make the accurate sizing of bars quick and easy





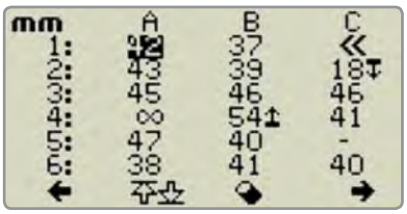
Bar Size Dimensions

Selecting a bar size

Dimensions of reinforcement bars are stored in the covermeter 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, 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		US Bar		ASTM/Canadian		Japanese	
Bar Size	Diam. (mm)	Bar Size	Diam. (Inch)	Bar Size	Diam. (mm^2)	Bar Size	Diam. (mm)
5	5	#2	0.250	10M	100	6	6
5.5	5.5	#3	0.375	15M	200	10	10
6	6	#4	0.500	20M	300	13	13
7	7	#5	0.625	25M	500	16	16
8	8	#6	0.750	30M	700	19	19
9	9	#7	0.875	35M	1000	22	22
10	10	#8	1.000	45M	1500	25	25
11	11	#9	1.125	55M	2500	29	29
12	12	#10	1.250			32	32
14	14	#11	1.375			35	35
16	16	#12	1.500			38	38
18	18	#13	1.625			41	41
20	20	#14	1.750			44	44
22	22	#15	1.875			48	48
25	25	#16	2.000			51	51
28	28	#18	2.250			57	57
32	32						
36	36						
40	40						
44	44						
50	50						

Elcometer 331



Covermeters & Half-Cell Meters

Data Logging Feature

- Simple Data Management on the Elcometer 331 Models SH, TH and THD
- The Elcometer 331 Model SH can store up to 10 batches of 1,000 cover or half-cell readings, with batch statistics, ready for evaluation and report generation using Covermaster™ software package
- The Elcometer 331 TH and THD models have user definable memory batches with either linear and grid batch data logging modes. (Linear batching is where data is stored in a batch one reading after another)
- Grid batches allow data to be stored in a 'spreadsheet format' with each cell relating to the survey area typically mapped out on the structure prior to inspection. The grid batch feature facilitates fast surveying for both cover and half-cell readings. Problem areas that do not fall within specification can be immediately identified and marked directly on the concrete
- Cover and half-cell readings can be recorded and 'overlaid' in each grid location

Powerful Statistics Feature

- Continually calculates and displays the statistical analysis of readings as they are taken. So, while the covermeter is in use, you are always informed and know exactly how your site survey is progressing
- Statistics values are also calculated for the readings within each batch and these values are stored in the batch along with all individual readings

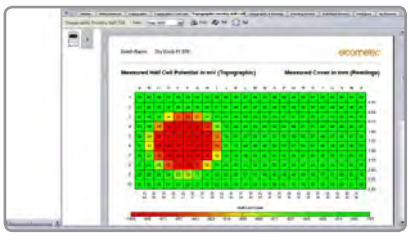
The following statistics and values can be viewed and stored within the gauge:

Icon	Icon Meaning	Description
η	Number of readings	The running value for the number of readings taken in a group
$\bar{x}$	Mean	The average of a group of readings; the sum of the individual readings divided by the numbers of readings
σ	Standard deviation	A statistical measure of the spread of values in a group of readings
CV%	Coefficient of Variation	The standard deviation divided by the mean for a group of readings expressed as a percentage
	Lowest Reading	The value of the lowest reading taken in a group of readings
	Highest Reading	The value of the highest reading taken in a group of readings
<<	Under Range	The number and percentage of readings under range
or <	Low Limit	The number and percentage of readings below the limit
┤├	Within Limits	The number and percentage of readings within limits
or >	High Limit	The number and percentage of readings above the high limit
∞	Over Range	The number and percentage of readings over range (or infinite)
	Blank Readings	Number and percentage of blank readings (skipped/ not recorded /deleted)

Covermaster™ Software

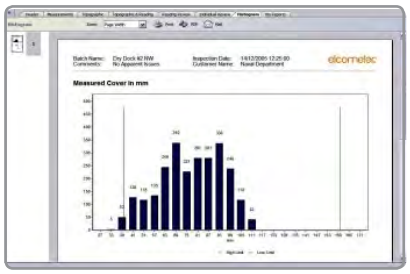
Elcometer 331

Elcometer's Covermaster™ software will manage your data efficiently and effectively.



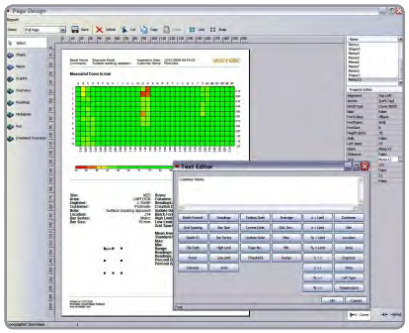
Data is transferred quickly into the Covermaster™ software data management system via RS232 connection. Both Covermeter and half-cell readings can be stored together with associated photographs, Word documents, Excel spreadsheets and other files.

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 giving the ability to add corporate logos, photos, memos and to provide 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, photographs, 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
Design 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 specifically 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

Consisting of either a copper electrode in a copper sulphate solution or a silver electrode in a silver 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

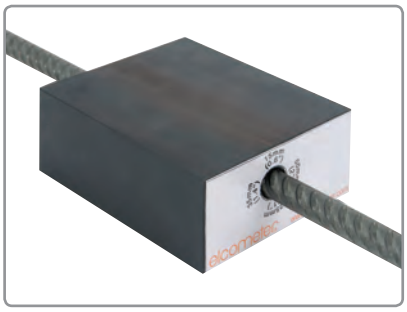
The extension cable for use with the half-cell kits gives the flexibility to take readings in difficult to reach areas.



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. Both the standard or narrow pitch search head can be attached to the extension arm.

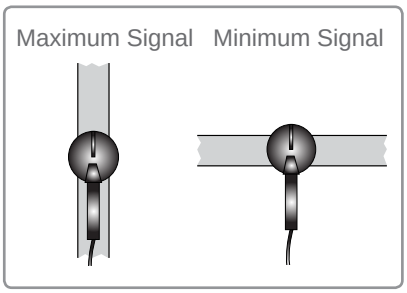


Part Number	TW33119222

Elcometer P100

'Imp' Rebar Locator





The Elcometer P100 is a robust and economical gauge designed to identify the location and orientation of reinforcement bars and metal pipes.

Mild steel and stainless steel galvanised wall ties can also be found with an optional search coil (or probe).

Simple to use, the Elcometer P100 is supplied in an ABS plastic carry case, together with a 100mm (4") search coil and batteries.

- Fast and accurate - gives a loud audible signal when the exact location of the rebar has been found
- Directional search field - distinguishes between horizontal and vertical bars – see diagram
- No need to re-zero - unaffected by moisture, temperature changes and electrical interference

Technical Specification

Part Number	Description
W100157A9D	Elcometer P100 Imp Rebar Locator
Packing List	Elcometer 100 Imp Rebar Locator, search head, 4 x LR6 (AA) batteries, leather carry case, operating instructions

Accessories

TW999198F	100mm (4") Directional Search Coil for Rebar
TW999198G	200mm (8") Hi-Depth Locator Search Coil - Short-handled (250mm)
TW999198H	200mm (8") Hi-Depth Locator Search Coil - Long-handled (650mm)

Detection Ranges For Single Reinforcement Bars

Rebar Diameter		Detection Depth	
mm	inches	mm	inches
8	0.32	90	3.5
16	0.63	100	3.9
32	1.25	110	4.3

Rebar Locator

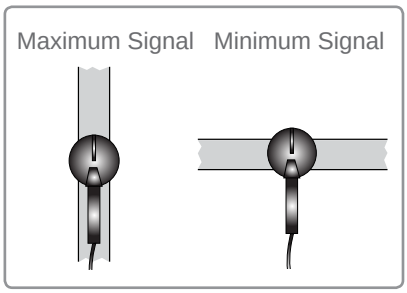
Elcometer P120



The Elcometer P120 Rebar Locator provides a simple means to detect reinforcement bars in concrete, identifying the rebar's location, direction and an indication of the depth of concrete over the rebar.

Supplied together with a 100mm (4") search coil, leather carry case and batteries the Elcometer P120 is available in both metric and imperial versions.

- Fast, accurate and stable - Loud audio tone and clear analogue meter, with no need to re-zero the instrument during use
- High resolution controlled field search head - The strongest signal is in the centre of the search head making it accurate even when working at very close reinforcement bar centres or near metal objects, e.g. close to scaffolding or metal window frames
- Versatile - Supplied with a standard 100mm (4") head it will also accept a 150mm (6") head and a Borehole Probe for locating rebars and locating tendon ducts at great depths
- Rebar Plus rebar locators can quickly and easily distinguish between horizontal and vertical bars due to their highly directional detection field
- Clear Instrument Display - High quality meter shows signal strength and battery state
- Headphone socket - Clearly detect the rebar in noisy environments



Identification and Orientation of the bar

The Elcometer P120 can distinguish between horizontal and vertical bars. After locating the steel reinforcement bars in the concrete, rotate the rebar locator's search coil (probe) until the maximum and minimum signals are found. The maximum signal indicates the bar is running parallel to the search coil's handle, the minimum signal indicates that the bar is running at 90° to the search coil's handle – see diagram.

Technical Specification

Part Number	Description
W120155I	Elcometer 120 Imp Rebar Plus Locator - Metric
W120155J	Elcometer 120 Imp Rebar Plus Locator - Imperial
Packing List	Elcometer 120 Imp Rebar Plus Locator, search head, 4 x LR6 (AA) batteries, leather carry case, operating instructions

Accessories

TW999165G	Probe Lead for Elcometer P120
TW999198F	100mm (4") Directional Search Coil for Elcometer P120
TW999198E	150mm (6") Extra-Depth Directional Search Coil for Elcometer P120

Detection Ranges For Single Reinforcement Bars

Rebar Diameter		Detection Depth		Resolution of Parallel Bars	
mm	inches	mm	inches	mm	inches
8	0.32	120	4.72	60mm pitch at up to 35mm	2.36" pitch at up to 1.37"
16	0.63	140	5.50	75mm pitch at up to 50mm	2.95" pitch at up to 1.97"
32	1.25	160	6.30	150mm pitch at up to 85mm	5.90" pitch at up to 3.35"

Elcometer P130

Wall Tie & Stud Locator



The Elcometer P130 will rapidly and precisely locate mild steel or stainless steel wall tie and also make an excellent stud locator / stud detector.

This small, battery operated gauge has:

- High-impact ABS control unit in tough leather case
- Search coils encapsulated in epoxy resin for unmatched ruggedness
- Built-in loudspeaker for clear audio signal; Standard 3.5mm (0.14") stereo jack socket for headphones if required
- Single control button for on/off and sensitivity/backoff control

Key Features:

- Fast and accurate - the strongest signal is in the middle of the search head making it easy to pin point the wall ties. A clear audio tone helps to identify the quick and precise location without the need to keep looking at the meter
- No need to re-zero - the Elcometer P130 is very stable in all weather conditions.
- Designed with the needs of the operator in mind - easy to use, built to last, supplied with leather case and shoulder strap
- Single Handed Operation - for safety and convenience when working on scaffold or ladders

Technical Specification

Part Number	Description
W130157B9D	Elcometer P130/D Wall-Tie Locator - Mild-Steel
W130157C9E	Elcometer P130/E Wall-Tie Locator – Mild & Stainless Steel with shoulder strap
Packing List	Elcometer P130/D: complete with 100mm (4") Locator Search Coil , Leather Case & Plastic Carry Case, 4 x LR6 (AA) batteries, operating instructions
	Elcometer P130/E: complete with 100mm (4") Locator Search Coil, 150mm (6") Stainless Steel Search Coil, Leather case with shoulder strap, Plastic Carry Case, 4 x LR6 (AA) batteries, operating instructions

Accessories

TW999198D	100mm (4") Locator Search Head
TW999198F	100mm (4") Directional Search Head - for Elcometer P130/D only
TW999198E	150mm (6") Stainless Steel Search Head – for Elcometer P130E only

Rebar & Wall Tie Locator

Elcometer P150



This fast, combined rugged gauge is supplied with three detector heads to determine both rebar and wall tie location and can also be used as an excellent stud locator / stud detector making it an extremely versatile instrument.

Supplied with two mild steel 100mm (4”) search heads and an additional 150mm (6”) search head which allows the gauge to locate phosphor-bronze, copper and some types of stainless steel* wall tie.

The Elcometer P150 can detect mild and stainless steel rebars, bed joint reinforcement, hoops irons, and can locate wiring in plaster walls.

- High-impact ABS control unit in a tough leather case
- Search coils encapsulated in epoxy resin for unmatched ruggedness
- Unit is switchable to detect or ignore stainless steel
- Single control button for on/off and sensitivity/back off control
- Built-in loudspeaker for clear audio signals; Standard 3.5mm stereo jack socket for headphones if required
- Fast and accurate - Strongest signal is in the middle of the search head which makes it easy to pin point wall ties. A clear audio tone assists in the quick and precise location - no need to keep looking at the meter
- No need to re-zero and stable in all weather conditions
- Designed with the operator in mind, easy to use, single handed operation with leather carry case and shoulder strap for safety and convenience

Technical Specification

Part Number	Description
W150157E9E	Elcometer P150 Rebar Locator, Mild-Steel & Stainless-steel Wall-Tie Locator
Packing List	Elcometer P150/E, 100mm (4") Locator Search Coil, 100mm (4") Directional Search Coil, 150mm (6") Stainless Steel Search Coil, Leather Case with shoulder strap & Plastic Carry Case, 4 x LR6 (AA) batteries, operating instructions

Accessories

TW999198D	100mm (4") Locator Search Head for Elcometer P150
TW999198F	100mm (4") Directional Search Head for Elcometer P150
TW999198E	150mm (6") Search Head for Stainless Steel Wall-Ties

Approximate Detection Ranges

Mild Steel / Galvanised Fishtail Wall Ties (100mm/4” Search Head)	130mm (5.11”)
Mild Steel / Galvanised Butterfly Wall Ties (100mm/4” Search Head)	130mm (5.11”)
Stainless Steel Fishtail Wall Ties (with 150mm/6” Search Head)	80mm (3.15”)

*Stainless steel does not give a strong signal. Please either send a drawing or ideally a sample of stainless steel wall tie you need to locate so we can test and advise as necessary.

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. The Elcometer P500 is straight forward to use and very rugged making it a popular choice in the market.

Detecting metal objects to a maximum depth of 1m (39.4”), the Elcometer P500 has a number of key unique features:

- Strong focused search field ensures the accurate location of objects close to metal fencing and vehicles
- Ignores any ghost signals from cigarette packets, drinks cans and other metallic waste materials
- Manufactured from a single moulded design, in high impact ABS plastic, the Elcometer P500 stands up to a tough environment
- 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 Imp 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 Imp Box Locator, 4 x 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”

Deep Cover Metal Detector

Elcometer P520

The Elcometer P520 Metal Detector is very high powered for increased depth detection.

Originally designed to locate water mains, pipes and cables, the Elcometer P520 is also the perfect choice for location work in cluttered areas and at depths where other metal detectors simply do not work.

- Deep-seeking and accurate - can locate a 100mm (4”) metal water main at 1.20m (46”) and unlike traditional metal detectors will locate valves even when the frame and cover are missing
- Unaffected by temperature changes or power lines - the Elcometer P520 water main locator is unaffected by changes in temperature and moisture, and the presence of overhead power lines (where normal tracing can not be used)
- Stable and reliable - the Elcometer P520 does not need constant zeroing or recalibrating
- Clear Audio Signal – loudspeaker with a clear audio tone. In loud environments, simply connect headphones to the socket point
- Internal Battery – no need to find replacement batteries



Technical Specification

Part Number			Description
UK 240V	EUR 220V	USA 110V	
W520162H	W520162I	W520162J	Elcometer P520 Metal Detector – TS62
Overall Length			96cm (38”)
Main Unit Dimensions			23.3 x 18 x 10cm (9.2 x 7 x 4”)
Search Head Diameter			22 cm (8.7”)
Weight			850g (1.87lb)
Power Supply			Internal Rechargeable Battery (supplied with charger unit)
Packing List			Elcometer P520 Metal Detector, Search head, leather carry case, charger, operating instructions

Accessories

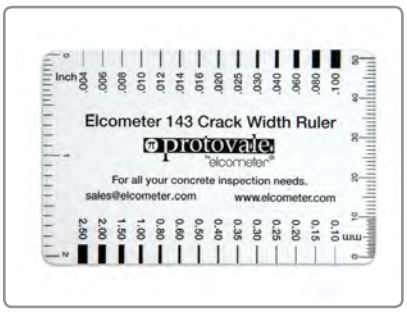
TW999060C	Replacement Mains Charger, UK 240V
TW999060F	Replacement Mains Charger, EUR 220V
TW999060G	Replacement Mains Charger, US 110V
TW520197B	Replacement 8" Search Coil for the Elcometer P520

Approximate Detection Ranges

Typical Object Type	Metric	Imperial
Cast Iron Main - 80mm (3")	100cm	39”
Cast Iron Main - 100mm (4")	118cm	46"
Valve Only - 100mm (4")	83cm	33"
Cast Iron Main - 150mm (6")	127cm	50”
Washout / Fire Hydrant Cover	121cm	47”
Plate - 140mm (5½") Diameter	70cm	27"

Elcometer 143

Crack Width Ruler



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 line. 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 - 2.50 mm / 0.004 - 0.100 inches

Standards Information

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	Reference	Elcometer Model	Page
AATCC			
AATCC Method 8	Washability & Abrasion	5750	19.9
ACI			
ACI 318	Concrete	331	22.4 - 22.13
ANSI			
ANSI INCITS 322	Washability & Abrasion	5135, 5155	19.10 - 19.13
ANSI/AWWA C 203	Porosity	280	11.4 - 11.7
ANSI/AWWA C 213	Porosity	266	11.8 - 11.9
ANSI/AWWA C 213	Porosity	236	11.10 - 11.11
ANSI/AWWA C 214	Porosity	280	11.4 - 11.7
AS			
AS 1580.108.2	Dry Film Thickness	141	8.28
AS 1580.108.2	Dry Film Thickness	121/4	8.27
AS 1580.408.4	Adhesion	107, 1542	10.18 - 10.19
AS 1580.408.4	Dry Film Thickness	121/4	8.27
AS 1580.408.5	Adhesion	106	10.15
AS 2331.1.3	Dry Film Thickness	101, 211	8.22, 8.23
AS 2331.1.4	Dry Film Thickness	415	8.20
AS 2331.1.4	Dry Film Thickness	355 (F,N), 456 (FNF)	8.2 - 8.19
AS 3894.1	Porosity	266	11.8 - 11.9
AS 3894.1	Porosity	236	11.10 - 11.11
AS 3894.1	Porosity	280	11.4 - 11.7
AS 3894.2	Porosity	270	11.2 - 11.3
AS 3894.3-A	Dry Film Thickness	211	8.23
AS 3894.3-B	Dry Film Thickness	355 (F,N), 456 (FNF)	8.2 - 8.19
AS 3894.4	Hardness	3101/2	20.10
AS 3894.4	Hardness	3092	20.5
AS 3894.5	Surface Preparation	125	2.16
AS 3894.5	Surface Preparation	127	2.16
AS 3894.5	Surface Preparation	129	2.17
AS 3894.6-A	Surface Preparation	138	2.25
AS 3894.6-A	Surface Preparation	138/2	2.28
AS 3894.6-C	Surface Preparation	142	2.34
AS 3894.6-D	Surface Preparation	138/2	2.28
AS 3894.9	Adhesion	107, 1542	10.18 - 10.19
AS 3894.9	Dry Film Thickness	121/4	8.27
AS/NZS			
AS/NZS 1580.107.3	Wet Film & Powder	112, 115, 3236, 3238	7.2 - 7.3
AS/NZS 1580.107.3	Wet Film & Powder	3230	7.5, 7.6
AS/NZS 1580.108.1	Dry Film Thickness	211	8.23
AS/NZS 1580.108.1	Dry Film Thickness	415	8.20
AS/NZS 1580.108.1	Dry Film Thickness	355 (F,N), 456 (FNF)	8.2 - 8.19
AS/NZS 1580.204.1	Dispersion & Density	2020, 2041, 2050	15.2 - 15.3
AS/NZS 1580.213.1	Film Application	Leneta	17.16 - 17.20
AS/NZS 1580.214.1	Rotational Viscosity	2250	16.15 - 16.17
AS/NZS 1580.214.2	Viscosity Cups	2354 cup 4 only	16.2
AS/NZS 1580.214.5	Rotational Viscosity	2300	16.11 - 16.14
AS/NZS 1580.402.1	Elasticity & Deformation	1500, 1506	21.2 - 21.3
AS/NZS 1580.403.1	Hardness	3000	20.6 - 20.7
AS/NZS 1580.403.2	Washability & Abrasion	5135, 5155	19.10 - 19.13
AS/NZS 1580.406.1	Elasticity & Deformation	1615	21.6 - 21.10
AS/NZS 1580.408.5	Adhesion	106	10.15
AS/NZS 1580.408.5	Adhesion	506	10.12 - 10.14
AS/NZS 1580.408.5	Adhesion	510	10.2 - 10.10
AS/NZS 1580.459.1	Washability & Abrasion	1720	19.2 - 19.7
AS/NZS 1580.601.1	Appearance	6300	14.18 - 14.19
AS/NZS 1580.601.3	Appearance	6085	14.16 - 14.17
AS/NZS 1580.602.2	Appearance	480, 408	14.4 - 14.15
AS/NZS 4266.2	Washability & Abrasion	5135, 5155	19.10 - 19.13
ASME			
ASME B46	Surface Preparation	7061	2.18 - 2.19
ASTM			
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ASTM B 499	Dry Film Thickness	101	8.22
ASTM B 499	Dry Film Thickness	211	8.23
ASTM B 499	Dry Film Thickness	415	8.20
ASTM B 499	Dry Film Thickness	355 (F), 456 (F)	8.2 - 8.19
ASTM B 648	Hardness	3101	20.10
ASTM C 1353	Washability & Abrasion	5135, 5155	19.10 - 19.13
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ASTM C 217	Washability & Abrasion	5135, 5155	19.10 - 19.13
ASTM C 241	Washability & Abrasion	5135, 5155	19.10 - 19.13
ASTM C 501	Washability & Abrasion	5135, 5155	19.10 - 19.13
ASTM C 523	Appearance	480	14.4 - 14.11
ASTM C 536	Porosity	266	11.8 - 11.9
ASTM C 536	Porosity	236	11.10 - 11.11
ASTM C 537	Porosity	266	11.8 - 11.9
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ASTM C 609	Appearance	6085	14.16.- 14.17
ASTM C 805	Concrete	181, 182	22.2 - 22.3
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ASTM D 1044	Washability & Abrasion	5135, 5155	19.10 - 19.13
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ASTM D 1084-C	Rotational Viscosity	2250	16.15 - 16.17
ASTM D 1084-D	Viscosity Cups	2210	16.8
ASTM D 1131	Rotational Viscosity	2250	16.15 - 16.17
ASTM D 1186-B	Dry Film Thickness	355 (F,N), 456 (FNF)	8.2 - 8.19
ASTM D 1186-B	Dry Film Thickness	415	8.20
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ASTM D 1729	Appearance	6300	14.18 - 14.19
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ASTM D 2197	Washability & Abrasion	5750	19.9
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ASTM D 2240	Hardness	3120	20.11
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ASTM D 2457	Appearance	480, 408	14.4 - 14.15
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ASTM D 2486	Washability & Abrasion	1720, 1720 Tool 2	19.2 - 19.7
ASTM D 2583	Hardness	3101	20.10
ASTM D 2794	Elasticity & Deformation	1615	21.6 - 21.10
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ASTM D 3359-B	Dry Film Thickness	121/4 Adhesion	8.27
ASTM D 3363	Hardness	501, 3080, 3086	20.2 - 20.4
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ASTM D 5162-B	Porosity	266	11.8 - 11.9
ASTM D 5162-B	Porosity	236	11.10 - 11.11
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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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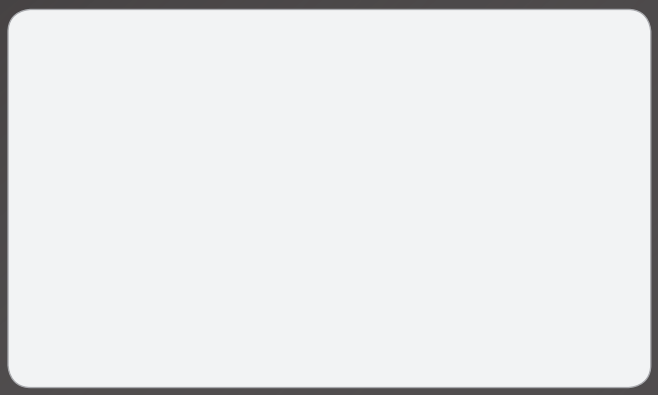
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