

506 PAT Adhesion Tester

elcometer®  
inspection equipment



**Elcometer 506**  
Pull- Off Adhesion Gauge

## Adhesion - Pull Off

### Elcometer 506

**STANDARDS:**

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



Digital and analogue gauges available for both harsh and hazardous environments



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



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

### Pull-Off Adhesion Tester

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

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

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



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**Pull-Off Adhesion Tester****Elcometer 506**

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

**Durable**

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

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### Pull-Off Adhesion Tester

#### 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 is required to improve accuracy, repeatability and reproducibility.

The Elcometer 506 Concrete Adhesion Tester can be supplied as a kit or with individual 50mm accessory items (skirt, dolly, cutter) which can be added to existing Elcometer 506 gauges.

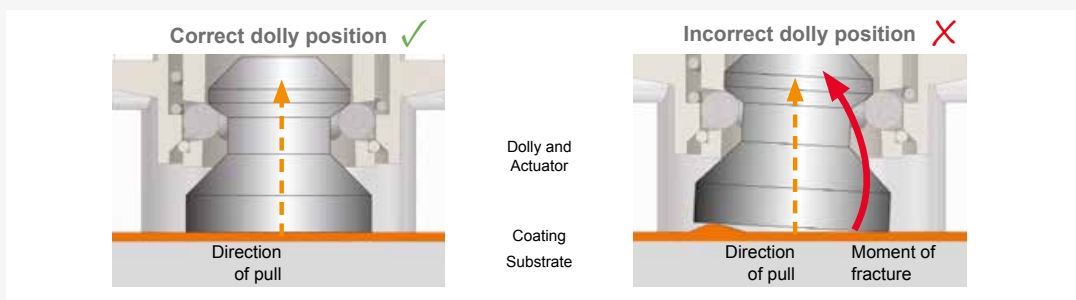
#### Pull-Off Adhesion Tests - Preventing Adhesive and Cohesive Failures

##### Preparing the surface and dolly

1. Select an appropriate test area which is flat and has sufficient test 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.

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**Pull-Off Adhesion Tester**

**Elcometer 506**

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	○
Accuracy	±1% of full scale	
Pressure Rating	26 MPa (3800 psi)	
	<b>14.2mm (0.56") Dolly</b>	<b>20mm (0.76") Dolly</b>
Operating Range	4 to 50 MPa (600 to 7200 psi)	2 to 25 MPa (300 to 3600 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)
Instrument Length	290mm (11.5")	290mm (11.5")
Actuator Height (skirt fitted)	85mm (3.4")	85mm (3.4")
Instrument Weight	1.8kg (4lb)	1.8kg (4lb)
Kit Weight	4kg (8.8lb)	4kg (8.8lb)
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 <sup>†</sup>	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](http://www.elcometer.com)  
 ● Test Certificate supplied as standard. <sup>†</sup> 50mm (2") dollies are supplied in packs of 4.  
 ○ Calibration Certificate supplied as standard. # When using the analogue gauge with 14.2mm (0.56") dollies, multiply the 20mm dolly scale reading by 2.

## Adhesion - Pull Off

### Elcometer AVU



### Adhesion Verification Unit (AVU)

The Elcometer AVU has been designed to provide users with the means to confirm the accuracy of their pull-off adhesion gauge.

Due to its robust design the Elcometer AVU is suitable for use on site or in the laboratory and allows users to verify or self-certify their pull-off adhesion gauges.

A range of dolly adaptors are available for testing the Elcometer 106 and Elcometer 506 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 1.5V AA Cells (Alkaline)	
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 20mm (0.76") dolly adaptor, test or calibration certificate (as appropriate), 2 x AA batteries, carry case and operating instructions	

#### Accessories

T99923935	Elcometer 506 Dolly Adaptor; 20 & 14.2mm (0.76 & 0.56") Skirts
T99923936	Elcometer 506 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.