Elcometer 506

Pull-Off Adhesion Tester

STANDARDS:
ASTM D4541, ASTM D7234,
AS/NZS 1580.408.5, BS 1981-207,
DIN 1046-2, EN 12636, EN 13144,
EN 1348, EN 1542, EN 24624,
ISO 16276-1, ISO 4624, NF T30-606,
NF T30-062

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

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

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

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
Elcometer

Pull-Off Adhesion Tester

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

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

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.

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.
Pull-Off Adhesion Tester

Elcometer 506

Technical Specification

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>F506-20A</td>
<td>Elcometer 506 Analogue Adhesion Tester Kit; 20mm</td>
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<tr>
<td>F506-20AC</td>
<td>Elcometer 506 Analogue Adhesion Tester Kit; 20mm - Certified</td>
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<tr>
<td>F506-20D</td>
<td>Elcometer 506 Digital Adhesion Tester Kit; 20mm</td>
</tr>
<tr>
<td>F506-20DC</td>
<td>Elcometer 506 Digital Adhesion Tester Kit; 20mm - Certified</td>
</tr>
<tr>
<td>F506-50A</td>
<td>Elcometer 506 Analogue Adhesion Tester Kit; 50mm</td>
</tr>
<tr>
<td>F506-50AC</td>
<td>Elcometer 506 Analogue Adhesion Tester Kit; 50mm - Certified</td>
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<tr>
<td>F506-50D</td>
<td>Elcometer 506 Digital Adhesion Tester Kit; 50mm</td>
</tr>
<tr>
<td>F506-50DC</td>
<td>Elcometer 506 Digital Adhesion Tester Kit; 50mm - Certified</td>
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</table>

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: 0.2 MPa (20 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: 0.1 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 LR6 (AA) alkaline dry batteries (digital gauge only)

Battery Life: 2000 hours

Packing List:
- 20mm Kit
  - Elcometer 506 Adhesion Tester with 20mm dollsies (x10), standard skirt for 20mm dollsies, 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 dollsies (x6), standard skirt for 50mm dollsies, 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

<table>
<thead>
<tr>
<th>Dolly Diameter</th>
<th>Pack of 10</th>
<th>Pack of 100</th>
<th>Standard Skirt</th>
<th>Thin Substrate Skirt</th>
<th>Dolly Cutter Handle</th>
<th>Dolly Cutter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2mm (0.56”)</td>
<td>T5060014AL-10</td>
<td>T5060014AL-100</td>
<td>T5061420S</td>
<td>T5060014T</td>
<td>T5061420H</td>
<td>T5060014CT</td>
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<tr>
<td>20mm (0.76”)</td>
<td>T5060020AL-10</td>
<td>T5060020AL-100</td>
<td>T5061420S</td>
<td>T5060020T</td>
<td>T5061420H</td>
<td>T5060020CT</td>
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<tr>
<td>50mm (1.96”)</td>
<td>T5060050AL-4</td>
<td>-</td>
<td>T5060050S</td>
<td>-</td>
<td>T5060050H</td>
<td>T5060050CT</td>
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Part Number Description
- T50623797 Magnetic Anchor Clamp - holds actuator securely during tests on vertical surfaces
- T99912906 Araldite Standard Two Part Epoxy Adhesive, 2 x 15ml Tubes

- Test Certificate supplied as standard.
- Calibration Certificate supplied as standard.
- When using the analogue gauge with 14.2mm (0.56”) dollyies, multiply the 20mm dolly scale reading by 2.
- 50mm (2”) dollyies are supplied in packs of 4.