

Elcometer 1500

Cylindrical Mandrels on a Stand

Operating Instructions

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Thank you for your purchase of this set of Elcometer 1500 Cylindrical Mandrels and Stand. Welcome to Elcometer.

Elcometer are world leaders in the design, manufacture and supply of inspection equipment for coatings and concrete.

Our products cover all aspects of coating inspection, from development through application to post application inspection.

The Elcometer 1500 is a world beating product. With the purchase of this product you now have access to the worldwide service and support network of Elcometer. For more information visit our website at www.elcometer.com

1 ABOUT YOUR TESTER

The Elcometer 1500 Cylindrical Mandrels and Stand is a simple-to-use instrument for determining the elasticity, adhesion and elongation of dried paint on sheet metal.

The instrument includes a set of mandrels of different diameters which allow the point at which coating failure occurs to be determined. The mandrels are stored in a stand which also serves as a holder for a mandrel during the test.

A mandrel is placed in a vee groove on the top of the stand and the metal test panel is bent by hand over the mandrel.

The test panel is then assessed visually to determine the bending characteristics of the coating.

1.1 STANDARDS

The Elcometer 1500 can be used in accordance with the following National and International Standards:

- ASTM D522/B
- DIN EN ISO NF 1519
- BS 3900 E1
- ECCA T7
- JIS K 5900-5-1

1.2 WHAT THE BOX CONTAINS

- Set of 7 mandrels (Elcometer 1500/1 only)
- Set of 13 mandrels (Elcometer 1500/2 only)
- Stand
- Operating instructions

The Elcometer 1500 Cylindrical Mandrels and Stand is packed in a cardboard and foam package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Consult your local Environmental Authority for further guidance.

To maximise the benefits of your new Elcometer 1500 Cylindrical Mandrels please take some time to read these Operating Instructions. Do not hesitate to contact Elcometer or your Elcometer supplier if you have any questions.



Elcometer 1500 Cylindrical Mandrels (model 1500/2)

2 TESTING A SPECIMEN

Use the test procedure described in the standard to which you are testing. If no standard is specified, follow the instructions below.

1. Place the tester on a sturdy table.
2. Select the largest mandrel and place the mandrel into the vee grooves at the top of the stand.
3. Place a test panel over the mandrel with the uncoated side in contact with the mandrel.
4. Using finger pressure, bend the test panel approximately 180° around the mandrel in a single smooth action taking 1 to 2 seconds.



5. Remove the test panel from the mandrel and inspect the coating for damage.

6. If the coating is not damaged, take a new test panel, select the next smallest mandrel in the set¹, and repeat steps 2 to 5 until the smallest mandrel which produces no damage to the coating is determined.
7. If required, calculate the total elongation:

If the coating is 25 µm (1 mil) thick, use Table 1 to determine elongation. Table 1 gives the elongation of a 25 µm (1 mil) thick coating on 0.8 mm (1/32") cold-rolled steel.

Table 1: Elongation

Mandrel diameter		Elongation (e) (%)
(inches)	(mm)	
1	25	3.3
3/4	19	4.4
1/2	12.7	6.75
3/8	9.5	9.0
1/4	6.4	14.0
1/8	3.2	28.0

If the coating thickness exceeds 25 µm (1 mil), use the following formula and Table 2 to determine elongation:

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1. Please note that this bending test can be also a 'Pass/Fail' test for a specific diameter.

$$E = e + tc$$

where:

E = Total elongation, %

e = elongation from Table 1

t = coating thickness, mils, and

c = correction factor from Table 2

Table 2: Correction Factor

Mandrel diameter		Correction factor (c)
(inches)	(mm)	
1	25	0.21
3/4	19	0.26
1/2	12.7	0.38
3/8	9.5	0.5
1/4	6.4	0.71
1/8	3.2	1.4

3 TECHNICAL SPECIFICATION

Test panel maximum dimensions:	100 mm x 150 mm (4" x 6")
Test panel maximum thickness:	0.3 mm (12 mils) - ISO 0.8 mm (32 mils) - ASTM
Dimensions:	178 mm x 136 mm x 145 mm (7" x 5.3" x 5.7")
Weight, including mandrels:	3.3 kg (7.26 lb)
Material of construction:	Stainless steel and anodised aluminium

4 MAINTENANCE

The Elcometer 1500 Cylindrical Mandrels and Stand is designed to give many years reliable service under normal operating and storage conditions.

During use, ensure that you do not try to bend very thick test panels on the smaller mandrels; this can cause the mandrels to become bent.

Avoid contact with highly corrosive substances.

The tester does not contain any user-serviceable components. In the unlikely event of a fault, the Elcometer 1500 should be returned to your local Elcometer supplier or directly to Elcometer.

Details of Elcometer offices around the world are given on the outside cover of these operating instructions. Alternatively visit the Elcometer website, www.elcometer.com

5 RELATED EQUIPMENT

In addition to the Elcometer 1500 Cylindrical Mandrels, Elcometer produces a wide range of other equipment for determining the physical characteristics of surface coatings.

Users of the Elcometer 1500 may also benefit from the following Elcometer products:

- Elcometer 1510 Conical Mandrel Bend Tester
- Elcometer 1615 Variable Impact Tester
- Elcometer 1620 Cupping Tester
- Elcometer 1542 Cross Cut Adhesion Tester

For further information contact Elcometer, your local supplier or visit www.elcometer.com