

A world reference instrument to efficiently assess the elasticity and cupping resistance of various coatings.

With a new highly functional geared design for linear force transmission it is designed to aid user friendly testing.

A sample panel with a minimum coating thickness 0.3 mm, is clamped by an upper wheel and manually cupped by a 20 mm circumference hemispherical indenter onto to a die by a drive wheel.

The depth to cause failure is indicated on the digital display, from 0 - 20 mm, in increments of 0.01 mm.

An illuminated magnifier provides easy visual inspection.

Features

- Precision gearbox provides linear force transmission
- Two handled crank for ease of operation
- 14 crank revolutions = 1 mm ball travel
- Magnetically retained 20 mm Chrome Steel Ball
- LCD display with zero, 20.00 to 2 decimal places.
- Resolution : 0.001 mm, Accuracy +/- 0.005 mm

Determination

The test may be carried out using one of two procedures 'Predetermined depth (Go/No Go)' or 'Minimum depth required to cause failure'. The methods are detailed under the general procedure on the following page.



Physical Testing: Adhesion & Elasticity: Cupping Tester (SH760N)

General test procedures

The following procedures are for guidance only, for a more detailed explanation refer to the method defined in the relevant National Standard.

1. Predetermined depth (Go/No Go)

The following procedure shall be carried out on separate test panels (if the results differ, additional tests shall be made).

- Hold the test panel firmly between the retaining ring and the die with the coating towards the die and with the hemispherical end of the indenter in contact with the test panel (zero position of the indenter).
- Adjust the panel until the central axis of the indenter intersects the panel at least 35 mm from each edge.
- Advance the hemispherical end of the indenter into the test piece at a constant rate of approximately 0.2mm/s until the specified depth is reached i.e. until the indenter has travelled this distance from the zero position.
- Using normal corrected vision or, by agreement, a magnifier, examine the coating of the test panel for cracking and/or detachment from the substrate.
- When removing the test panel, first slacken the indenter hand-wheel to relieve pressure, then unscrew the upper clamping wheel to free the panel.

Note 1. If a lens is used, it is essential to mention this fact in the test report and to avoid misleading comparisons with results obtained using normal corrected vision only.

Note 2. The test results shall not be regarded as valid if the substrate shows signs of cracking.

2. Minimum depth required to cause failure

- Carry out the procedure in Test 1 until, using normal corrected vision (or by agreement, a magnifier).
- A crack is first observed on the surface of the coating and/or the coating begins to become detached from the substrate*.
- Stop the indenter at this point and measure the depth of the indentation to the nearest 0.1 mm, i.e. the distance travelled by the indenter from the zero position.
- Confirm the result by repeating the determination on a fresh panel (if the results differ, further determinations shall be made).

* In order to advance observation of the end point it is permissible to reduce slightly the rate of advance of the indenter when approaching the expected end point determined in a preliminary test).

Standards

BS EN ISO 1520



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Test panels

The recommended test panels are rectangular of not less than 70 mm square (instrument capacity 104 mm wide) made of burnished steel with a thickness of not less than 0.3 mm to a maximum of 1.25 mm.

Testing using a maximum test panel thickness of 1.25 mm and a tensile strength not exceeding 280N / mm² (MPa) a deformation of 7 mm can be achieved.



Deformed samples

Ordering Information

Product Ref	Description
SH760N	Cupping Tester Complete

Owing to continuous development, we reserve the right to introduce improvements and modify specifications without prior notice.

**Our sales team can be contacted on:
info@sheeninstruments.com or +44 (0)208 783 4321**