# Abrasion Scrub Tester

Coated surfaces need to be tested for resistance to abrasion caused by a brush, sponge, or other means. The Wet Abrasion Tester produces a repeatable, controlled condition to simulate everyday use or wear patterns.
The abrasion tester can examine washability and related properties that affect the stain resistance of coatings. Detergent performance testing can also be determined in a reproducible manner.

- Features two brush holders for side by side testing
- Air cooled electric motor for maximum reliability
- Peristaltic fluid pump – no reagent contamination (except for 5002, 5007)
- Five digit preset counter – activates the machine for preset number of strokes, then switches off
- Can be modified to meet DIN, ISO, or ASTM scrub abrasion and washability test methods

Liquid solutions are pumped to the brush heads from the detachable container mounted to the side of the tester. The pump may be switched on or off during the course of testing, and the flow can be adjusted for precise dosing.

## DIN ISO Methods

The Standards EN ISO 11998 and DIN EN 13330 (replaced DIN 53778) describe procedures to evaluate the resistance of coatings against abrasion by cleaning or scrubbing the surface. The coating is applied on a foil and dried under standard conditions. In order to describe the cleanability, defined pollutions are applied onto the surface before starting the test.

**DIN 53 778** (*withdrawn 08/2007): Dispersion Paints
Cleanability: Test area should be free of pollutions
Wash resistance: Evaluation after 1000 scrub cycles
Scrub resistance: Evaluation after 5000 scrub cycles
The test is performed wet using a hog bristle brush and a pump to apply the washing liquid. The evaluation is done visually.

**ISO 11998**
The ISO test method describes a short version of the scrub abrasion test. This test uses \\"3M Scotch Brite 7448\\" pads and the washing liquid is manually applied before starting the test. The test is finished for evaluation after 200 scrub-cycles. The evaluation of the wash/scrub resistance is done by calculating the loss of mass.

**DIN EN 13300**
This standard describes the various testing methods for waterborne coating materials and coating systems for interior walls and ceilings. One quality criterion mentioned is the wet-abrasion resistance tested in accordance to EN ISO 11998. Additionally, a rating scale dependent on the amount of abrasion is used for final classification.


| Standards | |
|---|---|
| **ASTM** | D 2486, D 3450, D 4213, D 4828 |
| **DIN EN** | 53778*, 13 300 |
| **ISO** | 11998 |
| **ANSI** | Z124.1.2 |

## ASTM Methods

The Wet Abrasion Scrub Tester is designed to comply with four ASTM methods.

**ASTM D 2486**
The scrub resistance of interior wall paint is the primary purpose of this method. The paint is applied to a black plastic panel and allowed to cure. The panel is scrubbed with a nylon bristle brush until failure occurs. An abrasive scrub media is used to accelerate the test.

**ASTM D 3450**
This test method determines the ease of removing soilant discoloration from interior coatings. The coating is drawdown on a black plastic panel and allowed to dry for seven days. A specified soilant medium is applied. The coating is scrubbed with an abrasive or non-abrasive media using a cellulosic type sponge for 100 cycles. The soilant removal is assessed by measuring the CIE Y reflectance before and after the test.

**ASTM D 4213**
The purpose of this method is to measure scrub resistance. The primary differences from ASTM D 2486 method are: The scrub resistance is determined by weight loss of the paint film relative to a standard calibration panel. The test panel and calibration panel are scrubbed simultaneously. The scrubbing device is a Scotch-Brite™7448 abrasive pad.

**ASTM D 4828**
This test method determines the relative ease of removing soil and stains from interior coatings. The coating is applied to a black plastic panel and dried for seven days. The soilant can be user defined or the soilant described in ASTM D 3450 can also be used. A user defined liquid or powder cleaner is applied. The panel is scrubbed 100 cycles with a sponge. The soilant removal is assessed using gloss or color measurement.

# Abrasion Scrub Tester

## Ordering Information

| Cat. No. | Description |
|---|---|
| **5000** | Abrasion Tester, DIN, 220V |
| **5004** | Abrasion Tester, DIN, 115V |
| **5002** | Abrasion Tester, ISO, 220V |
| **5007** | Abrasion Tester, ISO, 115V |
| **5005** | Abrasion Tester, ASTM D2486, 220V |
| **5008** | Abrasion Tester, ASTM D2486, 115V |
| **5047** | Abrasion Tester, ASTM D3450, 220V |
| **5046** | Abrasion Tester, ASTM D3450, 115V |
| **5051** | Abrasion Tester, ASTM D4213, 220V |
| **5050** | Abrasion Tester, ASTM D4213, 115V |
| **5055** | Abrasion Tester, ASTM D4828, 220V |
| **5054** | Abrasion Tester, ASTM D4828, 115V |

**Comes complete with:**
Abrasion Tester, 2 abrasive holders and 2 method specific abrasives,
100 scrub test panels, peristaltic fluid pump (excluded for 5002, 5007 models)

## Technical Specifications

| Standard | Scrub Rate (cycles/minute) | Stroke Length | Power Supply |
|---|---|---|---|
| DIN 53778 | 36 - 38 | adjustable: 100 to 300 mm | 220V, 50 Hz |
| DIN 53778 | 36 - 38 | adjustable: 100 to 300 mm | 115V, 60 Hz |
| ISO 11998, DIN EN 13300 | 36 - 38 | adjustable: 100 to 300 mm | 220V, 50 Hz |
| ISO 11998, DIN EN 13300 | 36 - 38 | adjustable: 100 to 300 mm | 115V, 60 Hz |
| ASTM D 2486 | 36 - 38 | adjustable: 100 to 300 mm | 220V, 50 Hz |
| ASTM D 2486 | 36 - 38 | adjustable: 100 to 300 mm | 115V, 60 Hz |
| ASTM D 3450 | 36 - 38 | adjustable: 100 to 300 mm | 220V, 50 Hz |
| ASTM D 3450 | 36 - 38 | adjustable: 100 to 300 mm | 115V, 60 Hz |
| ASTM D 4213 | 36 - 38 | adjustable: 100 to 300 mm | 220V, 50 Hz |
| ASTM D 4213 | 36 - 38 | adjustable: 100 to 300 mm | 115V, 60 Hz |
| ASTM D 4828 | 36 - 38 | adjustable: 100 to 300 mm | 220V, 50 Hz |
| ASTM D 4828 | 36 - 38 | adjustable: 100 to 300 mm | 115V, 60 Hz |

| | |
|---|---|
| **Dimensions** | 660 x 480 x 420 mm (26 x 19 x 16.5 in) |
| **Shipping Weight** | 32 kg (70.5 lbs) |

## Ordering Information

| Cat. No. | Description |
|---|---|
| **5001** | Modification Kit ASTM D2486 |
| **5003** | Modification Kit ISO |
| **5006** | Modification Kit DIN |
| **5048** | Modification Kit ASTM D3450 |
| **5052** | Modification Kit ASTM D4213 |
| **5056** | Modification Kit ASTM D4828 |
| **5010** | DIN Brush |
| **5011** | ASTM D2486 Brush |
| **5012** | ISO Pad |
| **5017** | Brass Shims ASTM D2486 |
| **5016** | White Scrub Panel P122-10N |
| **5015** | Black Scrub Panel P121-10N |
| **8129** | Scrub Medium ASTM D2486 |
| **8130** | Scrub Medium ASTM D3450 |
| **5049** | Sponges ASTM D3450 |
| **5053** | Sponges ASTM D4213 |
| **5057** | Sponges ASTM D4828 |

## Accessories

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|---|
| Carriage assembly for ASTM D 2486, includes 2 brushes |
| Carriage assembly for ISO 11998, includes 2 abrasive pads |
| Carriage assembly for DIN 53778, includes 2 brushes |
| Carriage assembly for ASTM D 3450, includes 2 sponges |
| Carriage assembly for ASTM D 4213, includes 2 abrasive pads |
| Carriage Assembly for ASTM D 4828, includes 2 sponges |
| Meets DIN 53778; Dimensions: 38 x 89 mm (1.5 x 3.5 in) |
| Meets ASTM D 2486; Dimensions: 38 x 89 mm (1.5 x 3.5 in) |
| Meets ISO 11998; Pack of 50 pads |
| 2 pieces required for ASTM D 2486. |
| For ISO and ASTM Methods; Pack of 100 plastic white scrub test panels Dimensions:165 x 432 x 0.25 mm (6.5 in x 17 in x 10 mils) |
| For ASTM Methods; Pack of 100 plastic black scrub test panels Dimensions:165 x 432 x 0.25 mm (6.5 in x 17 in x 10 mils) |
| For ASTM D 2486 |
| For ASTM D 3450 |
| Pack of 12, for ASTM method D 3450 |
| Pack of 12, for ASTM method D 4213 |
| Pack of 12, for ASTM method D 4828 |