

# SHEAR/SCRATCH TESTER

With the Taber® shear/scratch tester, you can evaluate material resistance to shearing, scratching, gouging, marring, scraping and engraving. It can also be used to test the relative homogeneity of materials, the adhesive qualities of protective coatings and the effects of age on similar materials.

The capability to perform shear/scratch resistance is a valuable asset to research & development, quality assurance and value engineering programs.

The shear/scratch tester features a precision ground, Tungsten carbide cutting tool designed to shear a groove between 1.27 and 2.54 mm wide in the test materials and a conical diamond tool designed to determine the resistance to scratching of the sample being tested.

## Operation

The scale beam is pivoted on precision ball bearings which slide over a pivotal shaft projecting from an adjustable gage block. This allows the scale beam to maintain a level position in respect to the specimen and turntable.

The shear test is controlled by the weight of the cutting load on the material under test. Shear resistance is computed by dividing the load on the material by the average width of the cut. The criterion for scratch resistance is the minimum load on the balanced beam necessary to penetrate the surface of the testing material with either of two precision diamond cutting tools.



Model 550

## Features

- A unique instrument used to determine material resistance or susceptibility to shear and scratch
- Materials such as plastics, soft metals and adhesive coatings can be accurately evaluated and tested
- Simple to operate, this portable instrument can test materials up to 6 mm thick by 100 mm square or round.
- Four major components
  - a precision ground cutting tool
  - a balanced, calibrated beam
  - a turntable
  - a constant speed motor

*Cardboard, Packaging, Paper, Plastics, ...*

## Physical specifications

### Dimensions

44.5 x 19 x 15 cm (WxDxH)

### Net Weight

6.8 kg

## Options

### • Sample cutter

Prepare your specimens for the shear/scratch tester, using this bench top cutter. The model 5000 sample cutter will cut precise, 106 mm circular samples with a 6.35 mm center hole. An easy counter-clockwise cutting motion allows you to prepare specimens in a variety of materials. And optional pads allow you to cut materials in thickness from 25.4  $\mu$ m to 6.35 mm.

### • Diamond tools to evaluate a materials resistance to scratching

- Conical diamond tools (139-55 and 139-56) are used for scratching materials of ordinary hardness. These tools are precision lapped to a 90° angle, and are available with a radius point of 76  $\mu$ m (139-55) or 89  $\mu$ m (139-56).
- The Diamond Scratch tool (139-58) is used for scratch testing unusually hard materials. This tool is the converging point from three sides and edges of a perfect cube.
- "Finger-nail" scratching can be simulated using the Tungsten carbide tool (S-20-1). Similar to the S-20, this tool includes a symmetrical radius and is shorter in length, allowing it to be mounted perpendicular to the table.

The cutting tools will wear out. Taber recommends that several spare tools be kept on hand for replacement and standardization purposes.

## Standards

**ASTM C217, EN 438, ISO 4586-2, L-F-00450A, L-T-00345, L-T-751, SS-T-307, SS-T-312, 90322-9E1**

## Performance data

### Size specimens

Flat materials up to 1/4" thick x 4" square or round.

### Speed

Operates at a speed of 5 rpm

### Load

By changing the position of the sliding weight, the load applied on the specimen by the cutting tool can be selected from 0 - 1000 g.

### Scale beam

The engraved graduations represent 10 grams per division. The sliding weight provides an adjustment in load from 0 to 500 grams. An additional calibrated weight is also furnished for attachment to the end of the beam to increase its load capacity to a total of 1000 grams.

### Precision ground Tungsten carbide tool (S20)

Designed to shear a groove between 1.27 to 2.54 mm in width. This tool features a cutting edge lapped to a 25 mm radius with a 30° clearance. The edge is set at a 22° shear angle in relation to the rotation of the table.

### Power supply

230 V, 50/60 Hz

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