



HIGH-TEMPERATURE SHEAR ADHESION TESTER (6-STATION)

High-Temperature Shear Adhesion Tester (6-Station) - ToronSAT™ 3654

Holding Power Tester for Pressure-Sensitive Tapes at Elevated Temperature

The ToronSAT™ 3654 is a high-temperature shear adhesion tester that measures the holding power of pressure-sensitive tapes under a constant shear load. A tape specimen is bonded to a standard panel, a weight loads the bond in shear, and the instrument times how long the tape holds before it slips. A heated chamber runs the test at temperatures up to 200°C.

The ToronSAT™ 3654 carries six independent stations, so six specimens run at once under their own loads. A proximity sensor at each station starts and stops the timer automatically, and the timer spans 0 to 10,000 hours at 1-second steps. The standard 1000 g mass covers common tests, with a 4500 g option for higher loads.

Temperature control to 0.1°C holds the chamber steady through long tests, and a touchscreen sets each station. The ToronSAT™ 3654 (Holding Power Tester for Pressure-Sensitive Tapes at Elevated Temperature) suits tape, label, and adhesive labs that qualify shear performance under heat. The embedded system supports remote maintenance and upgrades.

APPLICATIONS

High-Temperature Shear Adhesion Tester (6-Station) - ToronSAT™ 3654 Applications

The ToronSAT™ 3654 measures the shear holding power of adhesives, with a focus on performance at elevated temperature.

- **Pressure-Sensitive Tapes:** measures the holding power of packaging, masking, and industrial tapes under shear.

- **High-Temperature Tapes:** qualifies tapes that must hold at elevated service temperatures.
- **Adhesive Development:** compares shear resistance across adhesive formulations, including at temperature.
- **Label Adhesives:** checks the holding power of label adhesives under load.
- **Protective and Mounting Tapes:** verifies that mounting and protective tapes hold under sustained shear.
- **Shear Adhesion Failure Studies:** characterizes how holding power falls as temperature rises.
- **Incoming and In-Process QC:** verifies tape shear performance against specification.
- **Quality Control:** confirms holding power batch to batch for consistent performance.



Standards

The ToronSAT™ 3654 is designed to align with internationally recognized standards for shear adhesion and holding power of pressure-sensitive tapes.

- ASTM D3654 - Standard Test Methods for Shear Adhesion of Pressure-Sensitive Tapes
- PSTC 107 - Shear Adhesion of Pressure-Sensitive Tape
- JIS Z0237 - Testing Methods of Pressure-Sensitive Adhesive Tapes and Sheets

FEATURES

High-Temperature Shear Adhesion Tester (6-Station) - ToronSAT™ 3654

Key Features

The ToronSAT™ 3654 pairs a heated six-station frame with automatic proximity-sensor timing.

- **Shear Holding Power:** measures how long a tape resists a constant shear load before slipping.
- **Elevated Temperature to 200°C:** a heated chamber tests holding power at service temperature.
- **Six Independent Stations:** six specimens run at once under their own loads and settings.
- **Automatic Proximity Timing:** a sensor at each station starts and stops the timer on loading and failure.
- **Wide Timer Range:** the timer spans 0 to 10,000 hours at 1-second resolution.
- **Selectable Test Mass:** a 1000 g standard mass with a 4500 g option for higher loads.
- **Precise Temperature Control:** chamber control to 0.1°C holds steady through long tests.
- **Standard Roller:** a 2000 g roller applies specimens to the panel at a consistent pressure.
- **Touchscreen Operation:** a color TFT touchscreen sets and monitors each station.
- **Remote Maintenance:** the embedded system supports remote maintenance and firmware upgrades.

THEORY & METHOD

Theory and Method

Shear adhesion, or holding power, measures how long a pressure-sensitive tape resists a steady pulling force applied along the plane of the bond. A strip of tape is pressed onto a standard panel over a fixed area, and the panel is mounted so the tape hangs vertically. A weight is attached to the free end of the tape, loading the bond in shear.

The weight pulls steadily on the bond, and the adhesive slowly creeps until the tape finally slips off the panel. The time between loading and slip-off is the holding power, reported in hours or minutes. A longer time means a stronger, more shear-resistant adhesive. A proximity sensor at each station starts the timer on loading and stops it the moment the specimen drops.

Temperature has a strong effect, because most adhesives soften and lose holding power as they warm. Testing in a heated chamber up to 200°C shows how a tape performs at service temperature and gives the shear adhesion failure behavior at elevated heat. Six independent stations run separate specimens and loads at once.

TECHNICAL SPECIFICATIONS

High-Temperature Shear Adhesion Tester (6-Station) - ToronSAT™ 3654

Technical Specifications

Parameter	Specification
Temperature Range	Room temperature to 200°C (standard)

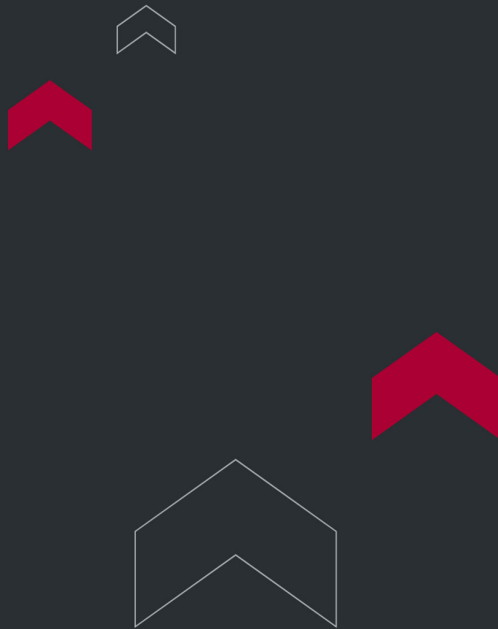
Parameter	Specification
Temperature Accuracy	0.1°C
Test Mass	1000 g (triangle hook included); 4500 g (optional)
Timer Range	0 to 10,000 h
Timer Step	1 s
Test Panel	125 mm (L) × 50 mm (W) × 2.0 mm; optional 120° bend panel
Test Stations	6, independent
Roller Weight	2000 g ± 50 g
Dimensions	696 mm (L) × 510 mm (W) × 557 mm (H)
Voltage	AC 220 V, 50 Hz (110V is also available)
Net Weight	67 kg

Standard Delivery

Item	Description
Main Unit	Six-station heated shear adhesion (holding power) instrument
Roller	2000 g roller for applying specimens
Test Panel	Stainless steel test panel
Test Mass	1000 g shear load with triangle hook
Power Line	Mains power cable

Optional Accessories

Item	Description
Non-Standard Load Mass	Custom shear load masses for specific methods
4500 g Test Mass	Higher shear load for heavier-duty tapes
120° Bend Test Panel	Test panel with a 120° bend for specific tests



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