



TORONTECH

FILM FREE SHRINK TESTER



Film Free Shrink Tester - ToronFST™ F

Heat Shrinkage Tester for Plastic Film

The ToronFST™ F is a film free shrink tester that measures the unrestrained linear thermal shrinkage of plastic films and sheets. A specimen is immersed in a heated fluid medium at a set temperature, and the free shrinkage is measured as the percentage change in its dimensions. The method suits films, rigid PVC sheets, backsheets, and heat-shrinkable tubes.

The ToronFST™ F heats specimens in a temperature-controlled fluid bath, so the film shrinks quickly and evenly for repeatable results. Testing at several set temperatures maps how shrinkage develops with heat, which helps set the right process and sealing temperature. Results report the free shrinkage in the machine and transverse directions.

The ToronFST™ F (Heat Shrinkage Tester for Plastic Film) suits shrink-film, shrink-label, packaging, and materials labs that qualify heat-shrink performance and dimensional stability. Built around the unrestrained linear thermal shrinkage method of ASTM D2732, it gives standards-based free-shrink data for product development and quality control.

APPLICATIONS

Film Free Shrink Tester - ToronFST™ F Applications

The ToronFST™ F measures the free heat shrinkage and dimensional stability of films across packaging and industrial uses.

- **Heat-Shrink Films and Wraps:** measures the free shrinkage of shrink wrap and overwrap films at process temperatures.
- **Shrink Labels and Sleeves:** qualifies the shrink behavior of label and sleeve films for clean application.

- **Rigid PVC Films and Sheets:** measures the shrinkage and dimensional stability of rigid PVC films, including tablet and blister films.
- **Backsheets and Barrier Films:** checks the dimensional stability of backsheets under heat.
- **Heat-Shrinkable Tubes:** measures the shrinkage of heat-shrink tubing.
- **Film Development and Formulation:** maps shrinkage against temperature during film development.
- **Process and Sealing Temperature Setting:** finds the temperature that gives the target shrinkage.
- **Quality Control:** verifies free-shrink performance against specification batch to batch.



Standards

The ToronFST™ F is designed to align with the internationally recognized method for unrestrained linear thermal shrinkage in a fluid medium.

- ASTM D2732 - Standard Test Method for Unrestrained Linear Thermal Shrinkage of Plastic Film and Sheeting

Free-shrink acceptance depends on the material and the application, so the bath temperature and immersion time can be set to a laboratory's chosen protocol.

FEATURES

Film Free Shrink Tester - ToronFST™ F Key Features

The ToronFST™ F measures unrestrained free shrinkage in a heated fluid medium across a range of test temperatures.

- **Unrestrained Free-Shrink Method:** measures how much a film shrinks when heated with nothing holding it back.
- **Heated Fluid-Medium Bath:** a temperature-controlled fluid bath heats specimens quickly and evenly for repeatable results.
- **Multiple Test Temperatures:** testing at a range of set temperatures maps shrinkage against heat.
- **Machine and Transverse Measurement:** measures free shrinkage in both film directions.
- **Percentage Shrinkage Result:** reports the linear shrinkage as a percentage of the original dimension.
- **Dimensional-Stability Assessment:** shows how stable a film's dimensions are under heat.
- **Wide Material Range:** handles films, rigid PVC sheets, backsheets, and heat-shrink tubes.
- **Standards-Based Testing:** follows the unrestrained linear thermal shrinkage method of ASTM D2732.

THEORY & METHOD

Theory and Method

The free shrink method measures how much a heat-shrinkable film contracts when it is heated with nothing holding it back. A marked specimen of known dimensions is immersed in a heated fluid medium, such as a temperature-controlled oil or glycerin bath, at a set temperature. The heat releases the orientation locked into the film during manufacture, and the film shrinks freely.

After a set time, the specimen is removed and its new dimensions are measured. The free shrinkage is reported as the percentage reduction in length in the machine and transverse directions. A fluid medium heats the specimen quickly and evenly, which gives repeatable results and reflects how the film behaves in real shrink applications.

Free shrinkage matters because too much shrinkage can distort a printed pattern or break a seal, while too little can leave a loose label or wrap. Testing at several temperatures maps how shrinkage develops with heat, which helps set the right process temperature. The result also shows a film's dimensional stability under heat.

TECHNICAL SPECIFICATIONS

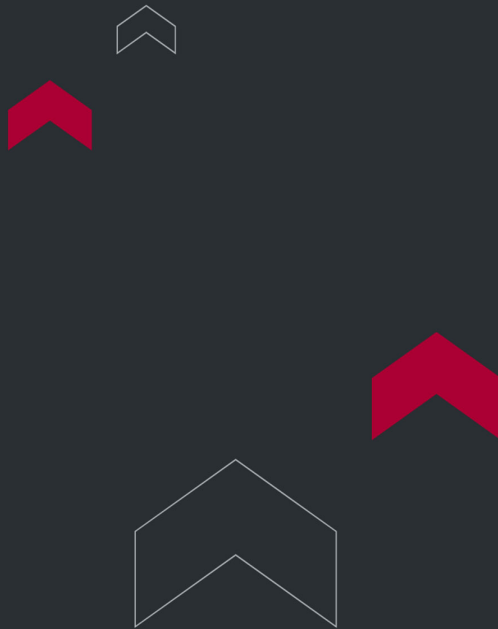
Film Free Shrink Tester - ToronFST™ F Technical Specifications

Parameter	Specification
Measurement	Unrestrained linear thermal shrinkage (free shrink), reported as a percentage
Method	Heated fluid-medium immersion per ASTM D2732
Heating Medium	Temperature-controlled fluid bath (such as oil or glycerin)

Parameter	Specification
Test Directions	Machine direction and transverse direction
Materials	Plastic films, rigid PVC sheets, backsheets, and heat-shrink tubes
Bath Temperature Range	Available on request
Specimen Size	Available on request
Dimensions and Net Weight	Available on request
Voltage	AC 220 V, 50 Hz (110V is also available)

Standard Delivery

Item	Description
Main Unit	Heated fluid-bath free-shrink test instrument
Specimen Holder	Frame or holder for immersing marked specimens
Temperature Control	Bath temperature control for set-temperature testing
Measuring Scale	Scale or gauge for reading post-shrink dimensions



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