TORONTECH

FLAMMABILITY TESTER

Flammability Tester for Building Material – ToronFT™ BMT-F

ToronFT™ BMT-F Flammability Tester is an advanced radiant panel flame spread testing instrument designed to evaluate the ignitability resistance and flammability of building material surfaces, composite materials, or components with a thickness not exceeding 70 mm when placed horizontally under specified thermal radiation conditions. Flammability under radiant heat is a critical fire reaction property for building materials exposed to heat flux from adjacent burning materials during a real building fire scenario.

The ToronFT™ BMT-F is capable of evaluating ceiling and wall lining materials, flooring systems, external cladding products, and air-heated pipe insulation for their surface flammability performance. The complete instrument consists of a radiating cone, ignition device, nozzle, pressure plate mechanism, support frame, temperature recorder, gas system, signal acquisition and processing system, and computer — providing a fully integrated building material flammability testing solution. It complies with ISO 5657, the primary international standard for ignitability of building products exposed to thermal radiation.

APPLICATIONS

Flammability Tester – ToronFT™ BMT-F Applications

The ToronFT™ BMT-F is applicable for surface flammability and ignitability testing of the following building material and product types:

- Ceiling lining materials and wall panel systems for surface flammability classification under radiant heat exposure
- Flooring systems including resilient flooring, carpet, and laminate flooring for flammability characterization under radiant heat
- External cladding materials and rain screen panels for horizontal surface flammability resistance testing

- Air-heated pipe insulation materials requiring flammability qualification under radiant heat conditions
- Composite building panels and sandwich systems with total thickness up to 70 mm for surface ignitability testing
- Research and development of new building materials and surface treatments for flammability optimization


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TorontFT™ BMT-F

Standards

The ToronFT™ BMT-F is designed to comply with the following international standards for building material surface flammability testing:

- ISO 5657: Reaction to fire tests: Ignitability of building products using a radiant heat source
- ASTM E162: Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source
- EN ISO 9239-1: Reaction to fire tests for floor coverings: Burning behaviour using a radiant heat source
- ASTM E1321: Standard Test Method for Determining Material Ignition and Flame Spread Properties

FEATURES

Flammability Tester – ToronFT™ BMT-F Key Features

- Radiating cone ignition source delivers controlled, uniform thermal radiation to horizontally positioned building material specimens for standardized surface flammability testing per ISO 5657
- Complete integrated flammability test system — radiating cone, ignition device, nozzle, pressure plate mechanism, support frame, temperature recorder, gas system, signal acquisition, and computer — providing a fully self-contained building material flammability testing solution
- Precision stainless steel specimen support frame — 25 mm × 25 mm square steel pipe, 1.5 mm wall thickness, 275 mm × 230 mm total size — provides stable, standardized specimen positioning for reproducible surface flammability measurements
- Stainless steel horizontal guard plate (220 mm side length, 4 mm thickness) precisely positioned 260 mm above the base frame on four 16 mm diameter tripod mounts ensures correct radiation geometry and specimen exposure for ISO 5657-compliant testing
- 150 mm diameter circular opening in the guard plate with 45° chamfered upper edge (4 mm chamfer width) provides the standardized radiation aperture required for accurate surface flammability ignitability data

- Computer-based signal acquisition and processing system enables automated data logging, critical heat flux calculation, and test report generation for building material flammability certification documentation
- Supports evaluation of ceiling linings, wall coverings, flooring, external cladding, and pipe insulation — covering the broad range of building material types addressed by ISO 5657
- Complies with ISO 5657 and ASTM E162, providing internationally recognized surface flammability test results accepted by building product certification bodies in North America and globally

THEORY & METHOD

Theory and Method

Surface flammability and radiant-heat ignitability testing exposes horizontally placed building material specimens to controlled thermal radiation from a cone-shaped electric radiant heater positioned above the specimen surface. The ignition device applies a pilot flame to the specimen at defined intervals, and the time to ignition under each specified irradiance level is recorded. This data is used to determine the critical heat flux at the limit of ignitability (CHF) and to characterize the surface flammability behavior of the building material across a range of heat flux conditions.

In the ToronFT™ BMT-F, the specimen is supported on a stainless steel specimen support frame constructed from 25 mm × 25 mm square steel pipe with 1.5 mm wall thickness, with overall dimensions of 275 mm × 230 mm. The horizontal guard plate measures 220 mm on each side with a 4 mm thickness, and is mounted 260 mm directly above the base frame on four 16 mm diameter tripod corners. A circular opening of 150 mm diameter is cut in the center of the guard plate, with the upper edge chamfered at 45° to the horizontal plane and a chamfer width of 4 mm — providing the standardized radiation aperture geometry required by ISO 5657 for accurate and reproducible surface flammability testing.

TECHNICAL SPECIFICATIONS

Flammability Tester – ToronFT™ BMT-F Technical Specifications

Parameter	Specification
Model	ToronFT™ BMT-F
Product Name	Flammability Tester — ToronFT™ BMT-F
Maximum Specimen Thickness	70 mm
Specimen Orientation	Horizontal
Complete Machine Components	Radiating cone, ignition device, nozzle, pressure plate mechanism, support frame, temperature recorder, gas system, signal acquisition and processing, computer
Specimen Support Frame Material	Stainless steel
Support Frame Tube Size	25 mm × 25 mm square steel pipe, 1.5 mm wall thickness
Support Frame Total Size	275 mm × 230 mm
Guard Plate Side Length	220 mm
Guard Plate Thickness	4 mm
Guard Plate Height Above Base Frame	260 mm (fixed on four 16 mm diameter tripods)
Guard Plate Opening Diameter	150 mm (circular, centered)
Guard Plate Chamfer	45° to horizontal plane; 4 mm width
Data System	Computer-based signal acquisition and processing
Compliance Standards	ISO 5657; ASTM E162

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