



TORONTECH

RIGID CELLULAR VERTICAL BURNING TESTER



Rigid Cellular Vertical Burning Tester - ToronFT™ BT-CV

ToronFT™ BT-CV Rigid Cellular Vertical Burning Tester is a precision laboratory instrument designed to evaluate the vertical burning properties of rigid cellular plastics under laboratory conditions. It specifies the vertical burning method used to determine the burning performance and flammability classification of rigid cellular plastic materials — including rigid polyurethane foam, rigid polystyrene foam, and other structural foam materials commonly used in building insulation, construction panels, and industrial applications.

The ToronFT™ BT-CV is a compact, complete burning tester system — comprising a fume hood, chimney, sample holder, and control part within a 0.15 m³ cabinet (L730 mm × W280 mm × H750 mm) — and complies with ASTM D3014-04a, ISO 3582, UL 94 HBF, HF-1, and HF-2 test standards, making it a comprehensive and internationally recognized platform for rigid cellular plastic vertical burning classification in North American and global markets.

APPLICATIONS

Rigid Cellular Vertical Burning Tester - ToronFT™ BT-CV Applications

The ToronFT™ BT-CV is applicable for rigid cellular plastic vertical burning performance testing of:

- Rigid polyurethane (PU) foam boards and panels for building insulation requiring vertical burning tester classification per ASTM D3014 and UL 94
- Rigid polystyrene (EPS, XPS) foam materials for building and industrial insulation requiring vertical burning performance characterization
- Rigid polyisocyanurate (PIR) and phenolic foam insulation panels for roofing, wall, and floor applications
- Structural foam components for transportation, marine, and construction applications requiring vertical burning test data

- Spray polyurethane foam (SPF) and other in-situ applied rigid cellular materials for vertical burning compliance
- Research and development of new rigid cellular plastic formulations — using vertical burning rate data to evaluate and optimize flame retardant performance



Standards

The ToronFT™ BT-CV is designed to comply with the following international standards for rigid cellular plastic vertical burning testing:

- ASTM D3014-04a: Standard Test Method for Flame Height, Time of Burning, and Loss of Mass of Rigid Thermoset Cellular Plastics in a Vertical Position
- ISO 3582: Flexible cellular polymeric materials: Laboratory assessment of horizontal burning characteristics of small specimens subjected to a small flame
- UL 94 HBF: Standard for Tests for Flammability of Plastic Materials: Horizontal Burning Foam
- UL 94 HF-1 and HF-2: Standard for Tests for Flammability of Plastic Materials: Horizontal Foamed Materials
- ASTM D635: Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position

FEATURES

Rigid Cellular Vertical Burning Tester - ToronFT™ BT-CV Key Features

- Compact self-contained rigid cellular vertical burning tester system — fume hood, chimney, sample holder, and control part — all housed in a 0.15 m³ cabinet (L730 mm × W280 mm × H750 mm)
- Stainless steel chimney (64 mm long × 57 mm wide × 305 mm high) with 0.025 mm thick aluminum foil inner lining provides a thermally stable, calibrated combustion environment for reproducible rigid cellular plastic vertical burning tests
- Precision stainless steel sample holder (191 mm long × 13 mm wide, with back hooks) ensures standardized, secure vertical mounting of rigid cellular foam specimens throughout the burning tester test sequence
- Calibrated Bunsen burner with inner diameter 9.5 ± 0.5 mm and barrel length 115 mm delivers the standardized test flame with precise geometry for consistent vertical burning test ignition

- Standardized 15° burner angle from vertical and blue flame height of 25–35 mm provide the defined ignition conditions required by ASTM D3014-04a and related vertical burning standards
- Compatible with propane or natural gas (purity >95%) — providing flexibility in gas supply for laboratories using different fuel sources without compromising vertical burning test flame calibration
- Complies with ASTM D3014-04a, ISO 3582, UL 94 HBF, HF-1, and HF-2, providing rigid cellular plastic vertical burning tester results accepted by certification bodies in North America and globally

THEORY & METHOD

Theory and Method

Rigid cellular plastic vertical burning testing evaluates the flame propagation characteristics of a vertically mounted rigid foam specimen when exposed to a standardized Bunsen burner flame. The vertical orientation subjects the specimen to the most hazardous flame spread scenario — upward, buoyancy-assisted flame propagation — and the test measures flame height, burning time, dripping behavior, and mass loss to characterize the vertical burning performance and flammability of the rigid cellular plastic material.

In the ToronFT™ BT-CV, the rigid cellular plastic specimen is held vertically by the stainless steel sample holder (191 mm long, 13 mm wide, with hooks on the back) inside the chimney (64 mm long × 57 mm wide × 305 mm high, made of stainless steel, with 0.025 mm aluminum foil inner lining). The Bunsen burner — with inner diameter 9.5 ± 0.5 mm and barrel length 115 mm — applies the test flame at a 15° angle from vertical, producing a blue flame 25–35 mm in height, using propane or natural gas with purity greater than 95%. The fume hood and chimney structure manage exhaust gas flow, and the control part manages the automated burning tester sequence.

TECHNICAL SPECIFICATIONS

Rigid Cellular Vertical Burning Tester - ToronFT™ BT-CV Technical Specifications

Parameter	Specification
Product Name	Rigid Cellular Vertical Burning Tester — ToronFT™ BT-CV
Cabinet Size (L×W×H)	730 mm × 280 mm × 750 mm
Cabinet Volume	0.15 m³
Instrument Components	Fume hood, chimney, sample holder, control part
Chimney Dimensions (L×W×H)	64 mm × 57 mm × 305 mm; stainless steel with 0.025 mm aluminum foil inner lining
Sample Holder	191 mm long × 13 mm wide; stainless steel; hooks on back
Bunsen Burner Inner Diameter	9.5 ± 0.5 mm
Bunsen Burner Barrel Length	115 mm
Burning Angle	15° from vertical
Flame Height	Blue flame; 25–35 mm
Gas Source	Propane or natural gas; purity >95%
Compliance Standards	ASTM D3014-04a; ISO 3582; UL 94 HBF; UL 94 HF-1; UL 94 HF-2

For more information, pricing, or to request a quotation, please contact ToronFT. Specifications are subject to change without prior notice.



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