

TEXTILE VERTICAL BURNING TESTER



Textile Vertical Burning Tester — ToronFT™ TVB

ToronFT™ TVB Textile Vertical Burning Tester is a precision combustion testing instrument designed to measure the burning performance of various fabrics and textile products when ignited at the bottom edge in the vertical orientation. By applying a standardized flame from a calibrated igniter to the center of the bottom edge of the vertical specimen for a defined ignition time, the ToronFT™ TVB enables manufacturers and testing laboratories to measure afterburning time, ignition time, and damage length — the three key vertical burning performance metrics required for textile flammability classification and certification.

The textile vertical burning tester is designed for high-accuracy, reproducible test execution — with programmable ignition timing (0–99.99 s/m, arbitrarily settable, accuracy 0.05 s), propane or methane combustion gas compatibility, and a precision-engineered lighter and sample clamp system — making it an essential instrument for textile fire performance qualification in apparel, upholstery, technical textile, and protective clothing applications.

APPLICATIONS

Textile Vertical Burning Tester — ToronFT™ TVB Applications

- Textile and fabric manufacturers: vertical burning performance qualification for apparel, upholstery, drapery, and technical textile products
- Protective clothing manufacturers: flame resistance and afterburning performance testing for occupational safety garments
- Third-party certification and testing laboratories: vertical burning test for textile flammability classification per international standards
- Quality assurance departments: production-lot sampling and incoming inspection for vertical burning compliance

- R&D departments: evaluation of flame retardant treatments, fiber blends, and fabric constructions for improved burning performance



Standards

The ToronFT™ TVB supports vertical burning testing in compliance with internationally recognized textile flammability standards, including:

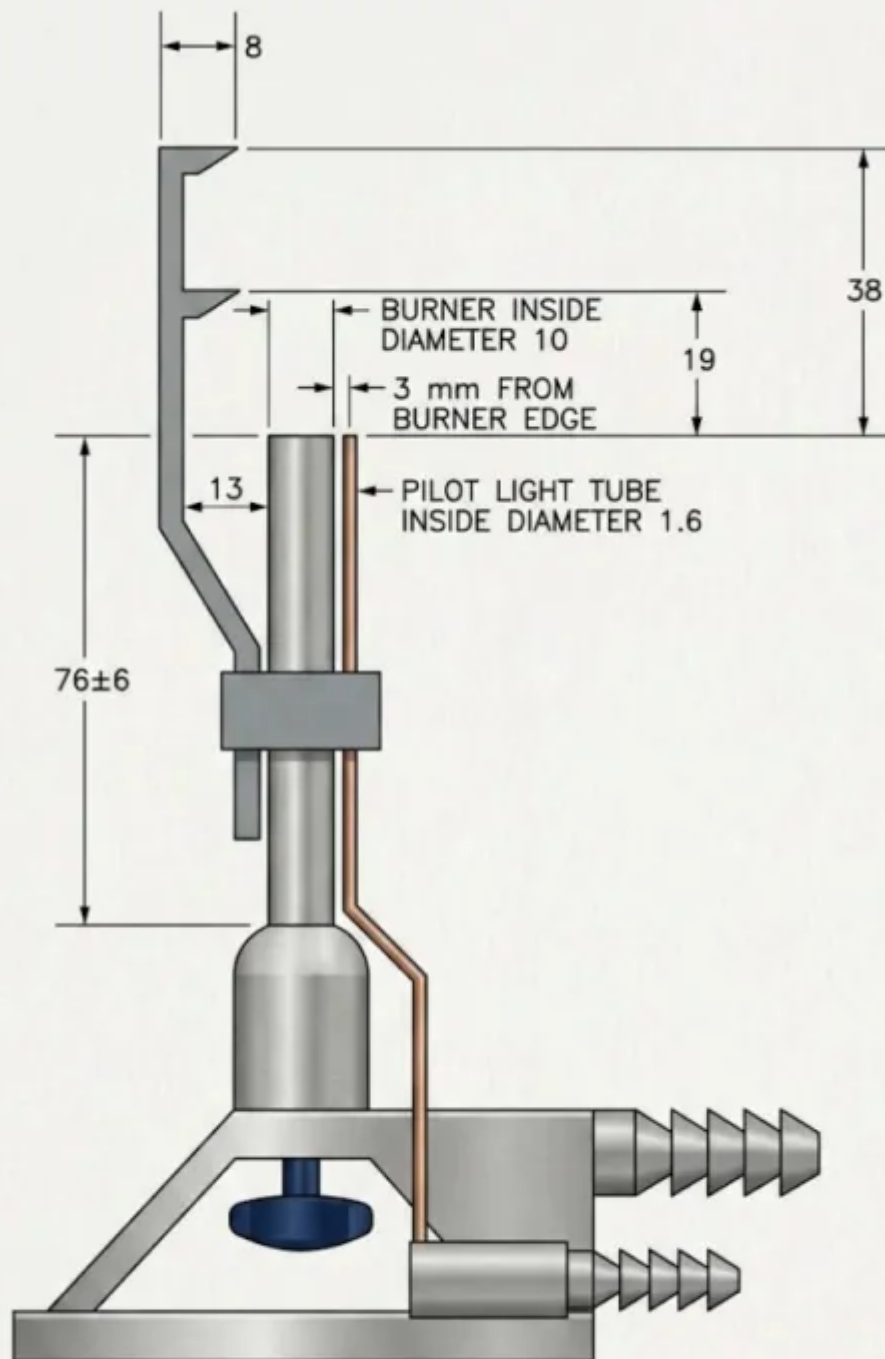
- ISO 6940: This international standard specifies a method for measuring the ease of ignition of vertically oriented textile fabrics and industrial products when exposed to a small, defined flame.
- EN 1101: This European standard determines the burning behavior of curtains and drapes by measuring the ignition threshold of vertically oriented fabric samples when exposed to a small flame.
- EN 1102: A companion to EN 1101, this standard measures the flame spread rate of vertically oriented fabrics used in curtains and drapes to evaluate how quickly fire propagates across the material.
- EN 1103: This standard outlines the specific testing procedure to determine the burning behavior of fabrics used in apparel and garments, ensuring clothing materials meet safety requirements against flammability.

FEATURES

Textile Vertical Burning Tester — ToronFT™ TVB Key Features



Burning torch



Igniter

- Enclosed test chamber: 329 mm (D) × 329 mm (W) × 767 mm (H), steel plate with electrostatic high-temperature baking paint finish — contained, safe combustion environment
- Sample clamp: two U-shaped stainless steel plates (2.0 mm thickness, 422 mm length, 89 mm width); inner frame 356 mm × 51 mm: standardized specimen clamping geometry
- Lighter pipe mouth inner diameter: 11 mm; pipe head angle: 25° from vertical: standardized flame application geometry
- Igniter inlet pressure: 17.2 ± 1.7 kPa — controlled combustion for reproducible flame characteristics
- Programmable ignition timer: 0–99.99 s/m, arbitrarily settable, accuracy 0.05 s — precise ignition duration control for any standard requirement
- Combustion gas compatibility: propane (Condition A) and methane $\geq 97\%$ purity (Condition B) — covering both standard test gas conditions
- Measures afterburning time, ignition time, and damage length — complete vertical burning performance data in one test
- Designed for JIS L1091 standard requirements — also applicable to ISO 6941, ASTM D6413, and related international textile burning standards

THEORY & METHOD

Theory and Method

The vertical burning test evaluates a fabric's resistance to flame propagation by mounting the specimen vertically in the sample clamp and applying the igniter flame to the bottom center edge for the specified ignition time. The ToronFT™ TVB lighter structure positions the pipe mouth (inner diameter 11 mm) at 25° from the vertical, with an inlet pressure of 17.2 ± 1.7 kPa. Propane gas is used for combustion under Condition A, and methane with purity of at least 97% is used for Condition B — matching the gas type requirements of the applicable test standard.

After the igniter is withdrawn, afterburning time (continued flaming), ignition time (time to ignition of the specimen), and char length (damage length) are measured and recorded. The enclosed steel test chamber (329 mm deep × 329 mm wide × 767 mm high), finished in electrostatic high-temperature baking paint, contains the combustion environment and protects the operator from flame exposure. The adjustable ignition timer (0-99.99 s/m, accuracy 0.05 s) allows precise control of the ignition application duration for any standard-specified ignition time.

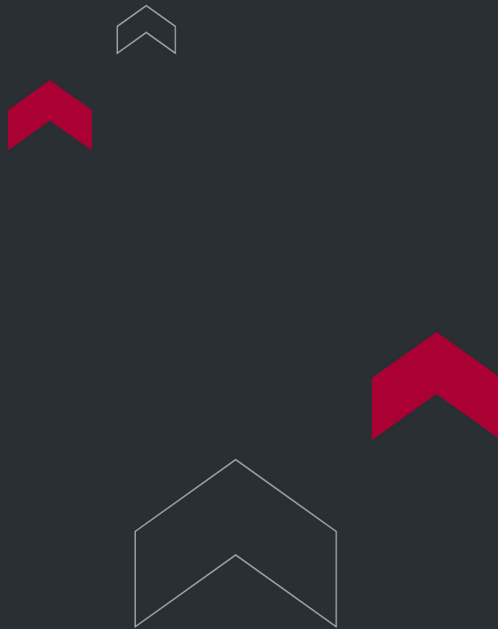
TECHNICAL SPECIFICATIONS

Textile Vertical Burning Tester — ToronFT™ TVB Technical Specifications

Component / Parameter	Specification Details
General Information	
Model	ToronFT™ TVB
Measured Parameters	Afterburning time, ignition time, damage length
Test Chamber & Construction	
Chamber Dimensions	- Internal Dimensions: 329 × 329 × 767 mm (D×W×H) - Overall Dimensions: 308 × 308 × 762 mm
Chamber Material	Steel plate with electrostatic high-temperature baking paint
Observation Door	High-temperature resistant glass
Ventilation Holes	16 on the top, 12 on the sides
Sample Holder	
Construction & Material	2 × U-shaped stainless steel plates (2.0 mm thick)

Component / Parameter	Specification Details
Dimensions	- Overall: 422 mm (L) × 76 mm / 89 mm (W) - Inner frame: 356 mm × 51 mm
Ignition & Burner System	
Igniter Nozzle Specifications	- Inner diameter: 10 mm to 11 mm - Blowtorch nozzle diameter: $\varnothing$ 0.19 mm - Igniter length: 76 mm
Igniter Angle	25° from vertical (standard lighter pipe) 0°/90° adjustable (between axis and sample surface)
Flame Height	- Standard: Inner flame 19 mm, Outer flame 38 mm - Surface Ignition Inner Flame: 25 mm - Bottom Ignition Inner Flame: 40±2 mm
Combustion Gas Source	- Condition A: Propane - Condition B: Methane (purity $\geq$ 97%) - Alternative: Butane gas (Note: Gas to be customer-supplied)
Inlet Pressure	17.2 $\pm$ 1.7 kPa
Control & Timing System	
Control System	Relay + time relay
Key Functions	Flame adjustment, gas cut-off
Ignition Timer	Range: 0 to 99.99 s (arbitrarily settable)
Timer Accuracy	- Ignition timer accuracy: 0.05 s - General system timing accuracy: 0.1 s
Weights & Accessories	
Included Weights	100g, 200g, 300g, and 475g

Component / Parameter	Specification Details
Accessories	• Dryer • Ruler (1 mm graduation) • Medical absorbent cotton
Power & Equipment Details	
Voltage	AC 220V±10%, 50Hz (110V is also available)
Power Consumption	100W
Instrument Weight	35 kg



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