

SINGLE WIRE CABLE VERTICAL BURNING TESTER



Single Wire Cable Vertical Burning Tester - ToronFT™ SWC

ToronFT™ SWC Single Wire Cable Vertical Burning Tester is a precision laboratory instrument designed to evaluate the non-flammability properties of single plastic wires and cables across a wide range of wire and cable types including control, cross-linking, elevator, marine, and mining cables. This Single Wire Cable Vertical Burning Tester provides a standardized, IEC-compliant platform for evaluating the vertical flame propagation resistance of individual wire and cable specimens under defined ignition conditions.

The ToronFT™ SWC complies with IEC 60332-1-1, IEC 60332-1-2, and IEC 60332-1-3 — the primary international standards for single wire and cable vertical burning performance testing — and features a precision 1 kW premixed combustion blowtorch, a rotor flowmeter system, and a calibrated compressed air supply, delivering accurate and reproducible single wire vertical burning test results for product certification in North American and international markets.

APPLICATIONS

Single Wire Cable Vertical Burning Tester - ToronFT™ SWC Applications

The ToronFT™ SWC is applicable for single wire and cable vertical burning testing of:

- Single plastic wires and insulated conductors for vertical burning tester non-flammability compliance per IEC 60332-1
- Control cables, cross-linked (XLPE) cables, and elevator cables requiring IEC 60332-1 single wire and cable vertical burning certification
- Marine cables and shipboard wiring requiring IEC 60332-1 single wire vertical burning flame propagation qualification
- Mining cables and underground infrastructure cables requiring single wire and cable non-flammability verification per IEC 60332-1

- Building wire, power cables, and flexible cords for single wire vertical burning tester compliance with IEC 60332-1-1, -1-2, and -1-3
- Production quality assurance sampling of wire and cable for single wire vertical burning compliance with IEC 60332-1 non-flammability requirements



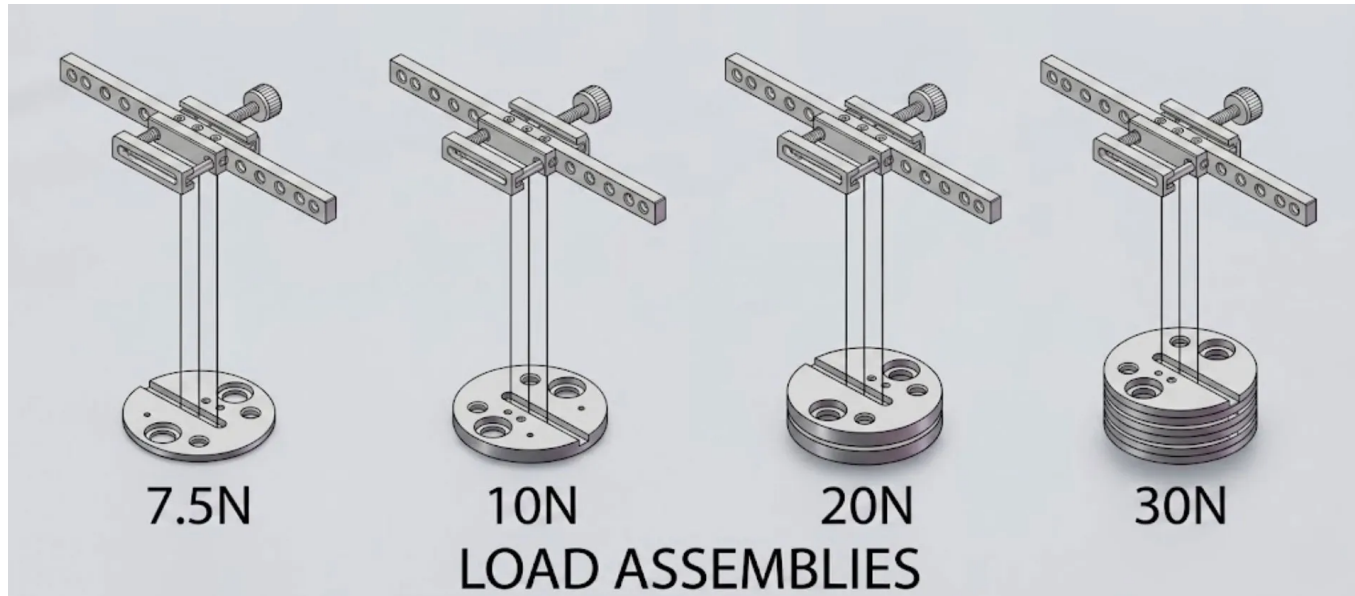
Standards

The ToronFT™ SWC is designed to comply with the following international standards for single wire and cable vertical burning testing:

- IEC 60332-1-1 — Tests on electric and optical fibre cables under fire conditions: Test for vertical flame propagation for a single insulated wire or cable — Apparatus
- IEC 60332-1-2 — Tests on electric and optical fibre cables under fire conditions: Test for vertical flame propagation for a single insulated wire or cable — Procedure for 1 kW pre-mixed flame
- IEC 60332-1-3 — Tests on electric and optical fibre cables under fire conditions: Test for vertical flame propagation for a single insulated wire or cable — Procedure for determination of flaming droplets/particles

FEATURES

Single Wire Cable Vertical Burning Tester - ToronFT™ SWC Key Features



Combustion torch, sample holder



Loading weight device

- Purpose-built Single Wire Cable Vertical Burning Tester compliant with IEC 60332-1-1, -1-2, and -1-3 — providing the standardized test platform required for international wire cable non-flammability certification
- Precision 1 kW premixed combustion blowtorch made of pure copper — manufactured to IEC 60695-11-2 standard — with blue flame core height 46–78 mm and total flame height 148–208 mm for accurate, reproducible single wire vertical burning ignition conditions
- Enclosed test box/fume hood with a volume of 1.0 m³ provides the standardized vertical burning test environment and exhaust containment required by IEC 60332-1
- Dual rotor flowmeters — each with adjustable range from 1.5 to 15 L/min — independently meter compressed air and propane gas for precise 1 kW pre-mixed flame calibration in the single wire and cable burning tester
- Compressed air supply at 0.7 MPa using a 500W air compressor (customer-supplied) provides clean, consistent combustion air for reproducible single wire vertical burning test conditions

- Propane gas (purity $\geq 95\%$, customer-supplied) delivers a stable, high-purity fuel for consistent 1 kW pre-mixed flame performance in the wire cable burning tester
- 0–0.15 MPa pressure gauge provides direct pressure monitoring of the gas supply to the Single Wire Cable Vertical Burning Tester blowtorch
- Precision regulating valve independently controls both gas pressure and flow rate for fine adjustment of the 1 kW pre-mixed flame to IEC 60332-1-2 specifications
- Complies with IEC 60332-1-1, -1-2, and -1-3, providing single wire and cable vertical burning test results recognized by international certification bodies and wire cable manufacturers globally

THEORY & METHOD

Theory and Method

Single wire and cable vertical burning testing evaluates the ability of an insulated wire or cable specimen to resist vertical flame propagation when exposed to a standardized 1 kW pre-mixed gas/air flame applied at the base of a vertically mounted specimen for a defined duration. After the ignition source is removed, the specimen is observed for continued flame propagation — the test result is expressed as the distance of char above the lower edge of the burner, which must not exceed the limit specified by the applicable IEC 60332-1 standard.

In the ToronFT™ SWC, the 1 kW premixed combustion blowtorch is manufactured to the standard of IEC 60695-11-2, with the height of the blue flame core at 46–78 mm and total flame height of 148–208 mm, made of pure copper for durability and thermal stability. The test box/fume hood (volume 1.0 m³) provides the enclosed vertical burning test environment. Compressed air (0.7 MPa, 500W customer-supplied compressor) and propane gas (purity $\geq 95\%$, customer-supplied) are independently metered by separate rotor flowmeters (range adjustable from 1.5 to 15 L/min for each gas), with a precision regulating valve controlling the gas/air mixture and a 0–0.15 MPa pressure gauge for display. This precise gas/air metering ensures the correct 1 kW pre-mixed flame required by IEC 60332-1-2 for standardized single wire and cable vertical burning test results.

TECHNICAL SPECIFICATIONS

Single Wire Cable Vertical Burning Tester - ToronFT™ SWC Technical Specifications

Component / Parameter	Specification Details
General Information	
Product Name	Single Wire Cable Vertical Burning Tester — ToronFT™ SWC
Model	ToronFT™ SWC
Compliance Standards	IEC 60332-1-1; IEC 60332-1-2; IEC 60332-1-3
Test Chamber & Structure	
Chamber / Fume Hood Volume	1.0 m³
External Dimensions	1080 × 650 × 1750 mm
Combustion Chamber Dimensions	1050 × 650 × 1600 mm
Metal Cover	SUS304 Stainless Steel (1200 × 300 × 450 mm)
Enclosure Features	Equipped with an exhaust fan, observation window, and sealed operating gloves
Combustion System	
Blowtorch Type	1 kW premixed combustion nozzle (compliant with IEC 60695-11-2)
Blowtorch Material	Pure copper
Flame Parameters	- Blue Flame Core Height: 46–78 mm - Total Flame Height: 148–208 mm

Component / Parameter	Specification Details
Gas & Air Supply System	
Fuel Gas	Propane (purity ≥95%, customer-supplied)
Air Supply Requirements	Air Compressor: 0.7 MPa / 500 W (customer-supplied)
Pressure Range	0–0.15 MPa (for both air and fuel gas, with 0–0.15 MPa pressure gauge display)
Flow Control & Measurement	- Flowmeters: Independent rotor flowmeters / mass flow meters for air and gas - Flow Range: 1.5–15 L/min (adjustable) per channel
Regulating Valves	Built-in pressure and flow regulation
Sample Requirements	
Sample Length	600 ± 25 mm
Sample Outer Diameter	1–30 mm
Control & Timing System	
Control System	PLC Control
Ignition Method	High-pressure automatic ignition
Ignition Time	0.1–99.99 s (settable)
Flame Delay Time	Automatic recording (resolution: 0.01 s)
Temperature Measurement	
Thermocouple	Type K (0.5 mm)
Temperature Range	Up to 1300°C
Calibration Copper Block	Ø9 mm / 10 g
Display Configuration	Digital thermometer + stopwatch

Component / Parameter	Specification Details
Loading Device	
Standard Weights	5N / 7.5N / 10N / 20N / 30N
Extensions	Supports custom extensions

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



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