



LATERAL FLAME SPREAD TESTER

Lateral Flame Spread Tester - ToronFT™ FLS

Lateral Flame Spread Tester - ToronFT™ FLS is a state-of-the-art testing instrument engineered to evaluate the combustion characteristics of building materials and transportation components.

By precisely simulating fire conditions in a controlled laboratory setting, this instrument describes and measures the properties of materials in the presence of an ignition flame and radiant heat. It is an essential tool for determining how effectively a material resists fire propagation, ensuring safety and compliance for modern infrastructure and transit systems.

APPLICATIONS

Lateral Flame Spread Tester - ToronFT™ FLS Applications

The ToronFT™ FLS is widely utilized across quality control, research and development, and safety certification sectors. Its primary applications include:

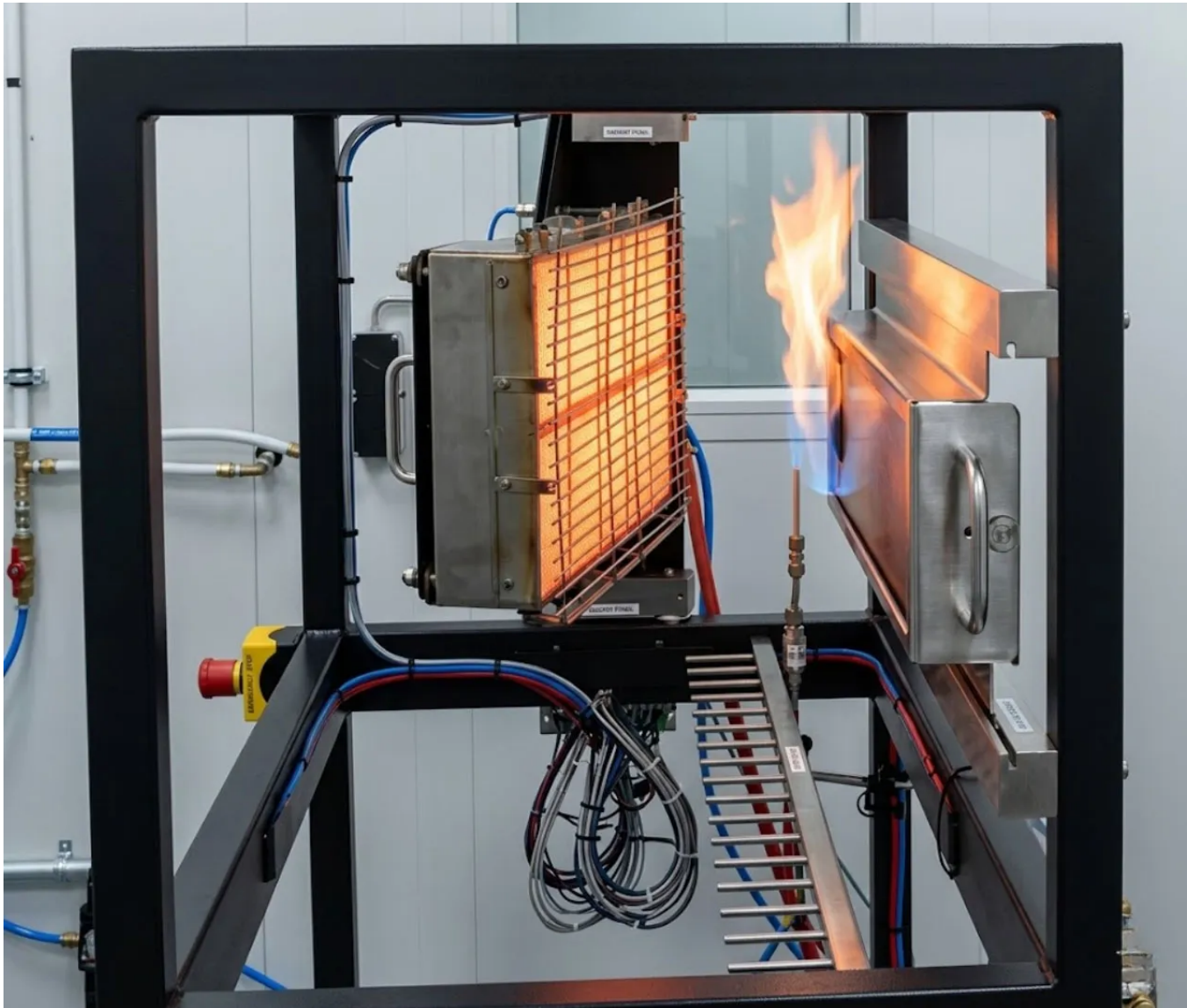
- Testing the surface properties of flat single materials, composite materials, or assemblies.
- Evaluating exposed surface components used in building construction.
- Testing materials used in transportation vehicles, specifically high-speed trains and shipbuilding.
- Evaluating tubular products (achieved through special installation and fixation accessories).



FEATURES

Lateral Flame Spread Tester - ToronFT™ FLS Key Features





Heat flow meter

- Advanced Radiation and Heating System: Features a highly efficient 450 × 300 mm radiation panel capable of generating a maximum radiation intensity of $62 \text{ kW/m}^2 \geq$ and surface temperatures of approximately 750°C .

- Automated and Safe Ignition: Equipped with an automatic ignition system and automatic cut-off protection. The blowtorch and ignition flame are precisely calibrated for consistent testing.
- Precision Gas Control: Utilizes a highly accurate configuration—including a pressure regulator, backfire valve, solenoid valve, and mixer—to keep fuel and air flow rate errors below 1%.
- Intelligent Safety Mechanisms: Features a complete explosion-proof control system. In the event of a power failure or abnormal operation, the system automatically shuts down the gas supply to ensure laboratory safety.
- Versatile Specimen Handling: The sample system includes four clips with 50mm interval graduations, an adjustable angle (120° to -180°), and integrated observation mirrors with a flame scale for easy visual tracking of the flame lateral spread.
- High-Fidelity Measurement: Utilizes an imported, water-cooled heat flow meter capable of measuring 0-100 kW/m². High-speed data acquisition records results every 3 seconds with a timing accuracy of 0.1 seconds.

THEORY & METHOD

Theory and Method

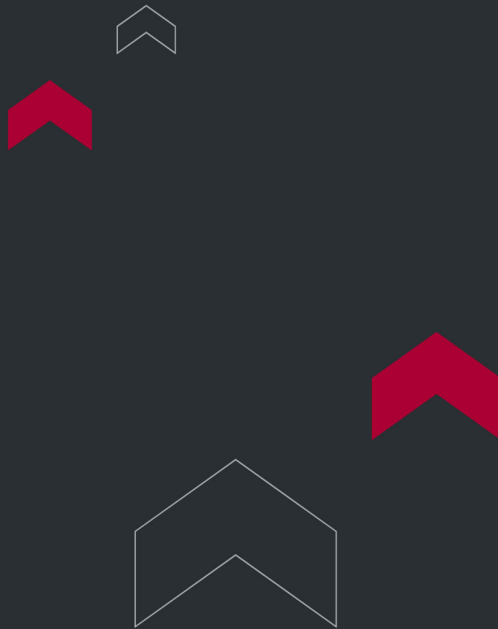
The testing method revolves around exposing a vertically oriented test specimen to a precisely calibrated radiant heat flux gradient alongside an ignition flame. As the material reacts, the instrument records the flame lateral spread distance over time. This data is critical for understanding the relationship between the flame front propagation speed and the applied radiant heat flux. Ultimately, the system accurately determines key fire safety metrics, including the critical extinguishing heat flux (CFE), flame spread rate, and the mean sustained heat of combustion.

TECHNICAL SPECIFICATIONS

Lateral Flame Spread Tester - ToronFT™ FLS Technical Specifications

Category	Parameter	Specification
Radiation System	Radiation Panel Size	450 × 300 mm
	Maximum Radiation Intensity	≥62 kW/m ²
	Surface Temperature	Approximately 750°C
	Heat Flux Gradient	Initial End: 50 kW/m ² End: 1.5 kW/m ²
	Installation Angle	15° ± 3°
Ignition System	Fuel Gas	≥95% Propane
	Ignition Flame Height	230 ± 20 mm
	Blowtorch Flame Length	30 mm
	Ignition Control	Automatic Ignition + Automatic Cut-off Protection
Gas Control System	Fuel Flow Rate	10 - 100 L/min (Error < 1%)
	Air Flow Rate	100 - 1000 L/min (Error < 1%)
	Internal Configuration	Pressure Regulator, Backfire Valve, Solenoid Valve, Mixer
	Safety Interlocks	Automatic Gas Supply Shutdown in case of power failure or abnormal operation
Sample System	Sample Size	Approximately 800 × 155 mm
	Sample Clips	4 (with 50 mm interval graduations)
	Adjustable Angle	120° - 180° (with observation mirror and flame scale)
Testing & Measurement	Heat Flow Meter	0 - 100 kW/m ² (Imported, water-cooled)
	Data Acquisition Frequency	Records once every 3 seconds

Category	Parameter	Specification
Timing Accuracy	0.1 s	
Recorded Test Results	Critical Extinguishing Heat Flux (CFE), flame spread rate, etc.	
Environmental & Facility Requirements	Minimum Room Volume	$\geq 45 \text{ m}^3$
	Ambient Temperature	10 - 30°C
	Airflow Velocity	$\leq 0.2 \text{ m/s}$
	Required Smoke Exhaust Capacity	$\geq 0.5 \text{ m}^3/\text{s}$
Auxiliary Equipment	Control System	Complete explosion-proof control system
	Smoke Exhaust Fan	$\geq 0.5 \text{ m}^3/\text{s}$ (1.5 kW)
	Calibration	Multi-point heat flow calibration board



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