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SOFT FURNITURE IGNITION RESISTANCE TESTER

Soft Furniture Ignition Resistance Tester – ToronFT™ F-IR

ToronFT™ F-IR Soft Furniture Ignition Resistance Tester is a precision laboratory instrument designed to evaluate the ignition resistance properties of upholstered soft furniture — including sofas, chairs, and spring mattresses — using a simulated match flame ignition source. Upholstered furniture ignition resistance is a critical fire safety parameter — residential and commercial upholstered furniture that ignites easily from small, accidental flame sources (such as a dropped match or lighter) can rapidly grow into a life-threatening fire.

The ToronFT™ F-IR uses a controlled match flame simulation via a precisely dimensioned stainless steel burning pipe and a calibrated flow control system to evaluate the ignition resistance of furniture cover fabrics, padding materials, and sofa/mattress assemblies. It complies with ISO 8191-1, ISO 8191-2, and EN 597-1 and 597-2 — the primary international standards for soft furniture and mattress ignition resistance testing.

APPLICATIONS

Soft Furniture Ignition Resistance Tester – ToronFT™ F-IR Applications

The ToronFT™ F-IR is applicable for ignition resistance testing of the following soft furniture and upholstered product types:

- Upholstered sofas and chairs — cover fabrics, filling materials, and composite assemblies — for ignition resistance qualification per ISO 8191 and EN 597
- Spring mattresses and mattress assemblies for ignition resistance compliance testing per ISO 8191-1 and EN 597-1
- Foam-padded soft furniture components requiring ignition resistance characterization with a simulated match flame source
- Upholstered furniture cover fabrics and interliners for ignition resistance qualification independently and in composite assemblies

- Children's furniture and nursery upholstered products requiring ignition resistance safety certification
- Research and development of ignition-resistant upholstery fabrics, padding materials, and sofa/mattress composite constructions

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Standards

The ToronFT™ F-IR is designed to comply with the following international standards for soft furniture and mattress ignition resistance testing:

- ISO 8191-1: Furniture: Assessment of the ignitability of upholstered furniture — Part 1: Ignition source: smouldering cigarette
- ISO 8191-2: Furniture: Assessment of the ignitability of upholstered furniture — Part 2: Ignition source: match flame equivalent
- EN 597-1: Furniture: Assessment of the ignitability of mattresses and upholstered bed bases — Part 1: Ignition source: smouldering cigarette
- EN 597-2: Furniture: Assessment of the ignitability of mattresses and upholstered bed bases — Part 2: Ignition source: match flame equivalent
- ASTM E1590: Standard Test Method for Fire Testing of Mattresses

FEATURES

Soft Furniture Ignition Resistance Tester – ToronFT™ F-IR Key Features

- Simulated match flame ignition source delivered via precision stainless steel burning pipe — replicates the real-world ignition scenario of an accidentally dropped match for standardized furniture and sofa ignition resistance testing per ISO 8191-2 and EN 597-2
- Precisely dimensioned gas delivery hose: length 2.5–3 mm, inner diameter 71 mm, connected to the stainless steel burning pipe — ensuring consistent flame geometry and gas flow conditions for reproducible furniture ignition resistance test results
- Precision flow control system comprising flow meter, fine-tuning valve, switch valve, and pressure regulating valve maintains the gas flow rate at 45 ± 2 ml/min for the exact match flame simulation required by ISO 8191-2 and EN 597-2

- Nominal output pressure of 2.8 kPa ensures correct match flame equivalent combustion characteristics for standardized sofa, upholstery, and mattress ignition resistance testing
- Microcomputer control system automates flame application timing, test sequence management, and data logging for ISO 8191 and EN 597 compliant furniture ignition resistance test documentation
- Suitable for testing the full range of upholstered soft furniture — including sofas, chairs, and spring mattresses — in both composite assembly and individual component configurations for comprehensive ignition resistance characterization
- Complies with ISO 8191-1, ISO 8191-2, EN 597-1, and EN 597-2, providing internationally recognized furniture and sofa ignition resistance test results accepted by certification bodies in North America and Europe

THEORY & METHOD

Theory and Method

Furniture ignition resistance testing evaluates whether upholstered furniture or mattress assemblies will ignite and sustain combustion when exposed to a defined small flame ignition source — simulating the accidental ignition scenario of a dropped match or lighter. The match flame equivalent test applies a calibrated gas flame from a stainless steel burning pipe to the surface of the furniture specimen for a defined duration, and the specimen is subsequently observed for ignition, smoldering, or progressive combustion.

In the ToronFT™ F-IR, the match flame simulation is delivered through the stainless steel burning pipe connected to a precisely calibrated flow control system. The hose connecting the gas supply to the burning pipe has a length of 2.5–3 mm and an inner diameter of 71 mm, ensuring the correct gas flow geometry for match flame simulation. The flow control system — comprising a flow meter, fine-tuning valve, switch valve, and pressure regulating valve — maintains the gas flow rate at 45 ± 2 ml/min and the nominal output pressure at 2.8 kPa. These precisely controlled conditions produce a reproducible match flame equivalent for standardized furniture ignition resistance testing. The microcomputer control system manages the test sequence, flame application timing, and data recording for ISO 8191 and EN 597-compliant ignition

resistance test documentation.

TECHNICAL SPECIFICATIONS

Soft Furniture Ignition Resistance Tester – ToronFT™ F-IR Technical Specifications

Component / Parameter	Specification Details
General Information	
Product Name	Micro-Controlled Soft Furniture Spring Mattress and Sofa Ignition Resistance Tester
Model	ToronFT™ F-IR
Applicable Products	Upholstered sofas, chairs, spring mattresses, upholstered bed bases
Compliance Standards	ISO 8191-1; ISO 8191-2; EN 597-1; EN 597-2
Equipment Composition	Combustion chamber (test chamber), ignition source device (cigarette/match/woodpile), test platform, and computer control system with operating software
Combustion Chamber & Test Platform	
Chamber Dimensions	2.5 × 2.8 × 2.4 m (L × W × H)
Chamber Structure	Steel frame + painted shell
Air Inlet & Airflow	• Air Inlet: 500 × 200 mm (located on both sides) • Airflow Velocity: 0.02–0.2 m/s
Door Dimensions	2.0 × 1.0 m (walk-in door equipped with an observation window)

Component / Parameter	Specification Details
Exhaust System	Top-mounted smoke exhaust system
Test Platform	• Structure: Steel platform with a flat and stable surface • Maximum Sample Size: ≤ 2.0 × 1.8 m (mattress)
Ignition Source System	
1. Simulated Match Flame	• Combustion Tube: Stainless steel burning pipe; Ø8 mm (outer diameter), 200 mm length • Ignition Distance: 20–80 mm (adjustable)
2. Cigarette Smoldering	• Dimensions: Length 55 ±5 mm; Diameter 8 ±0.5 mm • Burning Time: 12 ±3 min per 50 mm
3. Wood Stack Source	Standard configuration includes one set (consumable)
Gas Control & Timing System	
Flow Control System	Includes flow meter, fine-tuning valve, switch valve, and pressure regulating valve
Gas Flow & Pressure	• Nominal Output Pressure: 2.8 kPa • Standard Gas Flow Rate: 45 ± 2 mL/min • Flow Rate Range: 10–100 mL/min
Hose Specifications	Length: 2.5–3 mm; Inner Diameter: 71 mm
Timing & Recording	• Timing Range: 0–99.99 h (adjustable) • Recordable Data: Afterburning time, smoldering time, extinguishing time
Control System & Software	
Hardware Configuration	Microcomputer (PC) + Data Acquisition Card
Operation Method	• Operation Method: Guided software menu • Ignition Method: Manual
Software Capabilities	Automatic setting and recording of test parameters, data storage, curve display, and report output (includes lifetime upgrades)

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

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