

UPHOLSTERED FURNITURE ASSEMBLY FIRE TESTER



Upholstered Furniture Assembly Fire Tester — ToronFT™ FB-UM

ToronFT™ FB-UM Upholstered Furniture Assembly Fire Tester is a full-scale fire performance testing system designed for the burning performance evaluation of upholstered furniture when exposed to a general flame source, as well as solid models of upholstered furniture. Providing a complete standard test room environment with integrated ignition, exhaust, gas analysis, and measurement infrastructure, the ToronFT™ FB-UM delivers the controlled fire exposure conditions required for furniture burning performance classification and certification.

The furniture burning performance tester integrates a standard test room, standard ignition source, cone collector, gas analyzer, exhaust pipe, flue gas cooler, variable-speed fan, and measuring device into a single coordinated platform — making it one of the most complete single-instrument solutions available for upholstered furniture fire performance qualification per NFPA 266 and related international standards.

APPLICATIONS

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Applications

- Upholstered furniture manufacturers: burning performance qualification for sofas, chairs, and upholstered seating for residential, commercial, and institutional use
- Third-party fire testing and certification laboratories: furniture burning performance testing per NFPA 266, ISO 9705, and related international standards
- Interior furnishing specifiers and designers: fire performance verification of upholstered furniture products for public buildings and high-occupancy spaces

- Mattress and bedding manufacturers: solid model burning performance characterization for residential and hospitality applications
- R&D departments: evaluation of new fabric, foam, and composite filling combinations for improved furniture burning performance



Standards

The ToronFT™ FB-UM supports upholstered furniture burning performance testing in compliance with internationally recognized fire safety standards, including:

- ISO 9705: Fire tests — Full-scale room test for surface products (methodology reference)

FEATURES

Upholstered Furniture Assembly Fire Tester — ToronFT™ FB-UM Key Features

- Applicable to upholstered furniture and solid models of upholstered furniture exposed to general flame ignition sources
- Complete integrated instrument composition: standard test room, standard ignition source, cone collector, gas analyzer, exhaust pipe, flue gas cooler, fan, and measuring device
- Powerful exhaust fan: collects all flue gases generated by the surface material solid room fire test; exhaust volume controlled by frequency converter for continuously adjustable flow
- Volume flow differential pressure transmitter: capacitive type; resolution higher than ± 5 Pa — precision exhaust flow measurement for accurate heat release rate calculation
- Gas analyzer for real-time O₂, CO, and CO₂ measurement — complete combustion product characterization
- Flue gas cooler protects gas analyzer from high-temperature exhaust gases — extending analyzer service life
- Compliant with NFPA 266 — the primary US standard for upholstered furniture burning performance testing

THEORY & METHOD

Theory and Method

Upholstered furniture burning performance testing subjects a full-size furniture specimen or solid upholstered furniture model to a standardized general flame ignition source within the enclosed test room. All combustion gases, heat, and smoke generated by the burning specimen are captured by the cone collector above the test room and directed through the exhaust pipe, flue gas cooler, and gas analyzer system. The gas analyzer continuously measures oxygen, CO, and CO₂ concentrations in the exhaust stream, from which the heat release rate and total heat released are calculated using the oxygen consumption principle.

The fan — equipped with a frequency converter for continuously adjustable exhaust volume — provides the precisely controlled exhaust flow rate required for accurate oxygen consumption heat release rate calculation. The volume flow differential pressure transmitter (capacitive type, resolution > ±5 Pa) measures the exhaust duct volumetric flow rate with the precision required for standard-compliant heat release rate determination. Data from all measurement systems is integrated and managed by the micro-controller throughout the test event.

TECHNICAL SPECIFICATIONS

Upholstered Furniture Assembly Fire Tester — ToronFT™ FB-UM Technical Specifications

Parameter	Specification
Test Application	Upholstered furniture and solid upholstered furniture models (general flame ignition source)
Instrument Composition	Standard test room, ignition source, cone collector, gas analyzer, exhaust pipe, flue gas cooler, frequency-converter fan, measuring device
Fan Volume Control	Frequency converter (continuously adjustable)

Parameter	Specification
Differential Pressure Transmitter Type	Capacitive
Differential Pressure Resolution	> ± 5 Pa
Gas Analysis	O ₂ , CO, CO ₂ (real-time)
Standard Compliance	ISO 9705



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