

FIRE HOSE BURST PRESSURE TESTER



Fire Hose Burst Pressure Tester - ToronFT™ FH-HP

ToronFT™ FH-HP is a Fire Hose Burst Pressure Tester designed to measure and verify the performance of steel structure fire-retardant coatings under thermal stress conditions. Specifically, the instrument evaluates the thermal insulation efficiency deviation and thermal insulation efficiency attenuation of steel structure fire-retardant coatings — two of the most important performance indicators for passive fire protection systems used in structural steel construction.

The ToronFT™ FH-HP is built around a horizontal refractory test furnace with internal dimensions of 1,200 mm (length) × 1,050 mm (width) × 450 mm (depth), enabling simultaneous testing of up to three fire hose specimens in a single test run. The complete system integrates a combustion control part, gas circuit, pressure release and pressure measurement system, flue gas emission system, computer control system, temperature measurement system with furnace temperature data acquisition, test component temperature acquisition, and dedicated test software — forming a fully instrumented and computer-controlled fire hose testing platform.

APPLICATIONS

Fire Hose Burst Pressure Tester - ToronFT™ FH-HP Applications

The ToronFT™ FH-HP Fire Hose Burst Pressure Tester is used in fire safety testing, building materials qualification, and passive fire protection compliance across the following application areas:

- Steel structure fire-retardant coating qualification: testing of intumescent and non-intumescent passive fire protection coatings on structural steel substrates
- Building material certification: performance verification of fire-retardant coatings for structural steel in commercial, industrial, and high-rise building construction
- Fire safety research laboratories: thermal insulation efficiency evaluation for new fire-retardant coating formulation development

- Quality control in fire protection product manufacturing: production-batch testing of fire-retardant coating thermal performance consistency
- Fire hose testing: hydraulic pressure performance verification for fire fighter hose assemblies in conjunction with fire coupling equipment
- Building code compliance verification: documentation of fire-retardant coating performance for regulatory submission and third-party certification



FEATURES

Fire Hose Burst Pressure Tester - ToronFT™ FH-HP Key Features

The ToronFT™ FH-HP delivers a comprehensive set of system components and features for instrumented, traceable fire hose hydraulic pressure testing:

1. Comprehensive Integrated System Architecture

The instrument integrates seven functional subsystems in a single platform: a refractory test furnace, combustion control unit, gas circuit with pressure release and measurement, flue gas emission system, computer control system, furnace temperature data acquisition, and test component temperature acquisition — eliminating the need for separate instruments and ensuring all data is captured in a synchronized, traceable test record.

2. Horizontal Refractory Test Furnace

The horizontal test furnace has internal dimensions of 1,200 mm (length) × 1,050 mm (width) × 450 mm (depth), providing a large test volume suitable for testing full-length fire hose specimens and coated structural steel sections under realistic fire exposure conditions.

3. Three-Specimen Simultaneous Testing

Up to three test specimens can be tested simultaneously within the furnace during a single test run, maximizing throughput and ensuring that comparative performance data is collected under identical thermal exposure conditions — improving test result comparability and reducing total testing time.

4. Computer Control System with Dedicated Software

The system is fully computer-controlled with dedicated fire testing software that manages the furnace temperature profile, records all temperature data channels in real time, performs thermal insulation efficiency calculations, and generates test

reports. The software provides full traceability of test parameters and results.

5. Dual Temperature Acquisition Systems

Separate data acquisition channels are used for furnace temperature monitoring and test component temperature monitoring, providing independent, high-resolution temperature records at both the thermal exposure source and the steel substrate beneath the fire-retardant coating throughout the test duration.

6. Flue Gas Emission System

An integrated flue gas emission system safely vents combustion products generated during the fire test, maintaining safe laboratory operating conditions and preventing combustion product buildup within the test environment.

7. Pressure Release and Pressure Measurement System

The gas circuit includes pressure release and pressure measurement components to maintain controlled, safe combustion conditions throughout the test. Precise pressure control supports reproducible and consistent test results across multiple test runs.

THEORY & METHOD

Theory and Method

The ToronFT™ FH-HP evaluates fire-retardant coating performance by exposing steel structure specimens coated with the fire-retardant material to a controlled thermal environment inside the horizontal test furnace. The furnace temperature is raised according to a standardized time-temperature curve, and the temperature on the surface of the steel test components is simultaneously measured and recorded by the test component temperature acquisition system.

Thermal insulation efficiency is calculated from the difference between the furnace temperature and the temperature recorded at the steel substrate beneath the fire-retardant coating. Thermal insulation efficiency deviation measures how consistently the coating performs across the specimen area, while thermal insulation efficiency attenuation measures how the coating's performance changes over the duration of the fire exposure. Both parameters are automatically calculated and recorded by the computer control system and test software, producing a traceable, time-stamped test report.

TECHNICAL SPECIFICATIONS

Fire Hose Burst Pressure Tester - ToronFT™ FH-HP Technical Specifications

Parameter	Specification
Application	Thermal insulation efficiency deviation & attenuation testing of steel structure fire-retardant coatings; fire hose hydraulic pressure testing
Test Furnace Orientation	Horizontal
Test Furnace Internal Dimensions	1,200 mm (L) × 1,050 mm (W) × 450 mm (D)
Number of Specimens (Simultaneous)	3 specimens
System Components	Refractory test furnace, combustion control unit, gas circuit, pressure release & measurement system, flue gas emission system, computer control system, furnace temperature data acquisition, test component temperature acquisition, test software
Control System	Computer-controlled with dedicated test software
Data Acquisition	Furnace temperature + test component temperature (independent channels)



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