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FIRESTOP MATERIAL EXPANSION TESTER

Firestop Material Expansion Tester — ToronFT™ FS-E

ToronFT™ FS-E Firestop Material Expansion Tester is a measurement system designed for the expansion performance evaluation of fireproof sealing materials — including fire-retardant packages, fire-retardant modules, gap sealing materials, cured foam sealing materials, and related products. By providing the standardized steel container geometry required to measure the free expansion volume and constrained expansion pressure of fireproof sealing materials when exposed to heat, the ToronFT™ FS-E delivers the expansion data critical for verifying that sealing materials will effectively seal penetrations in fire-rated assemblies under fire conditions.

The Firestop Material Expansion Tester provides a set of three stainless steel containers (inner diameter 50 mm, height 50 mm) along with the fireproof sealant specimen, enabling simultaneous triplicate testing for improved statistical reliability and efficient batch qualification workflows.

APPLICATIONS

Firestop Material Expansion Tester — ToronFT™ FS-E Applications

- Fireproof sealing material manufacturers: expansion performance qualification of fire-retardant packages, modules, gap seals, and foam sealing products
- Third-party certification and testing laboratories: expansion testing per international building fire protection and penetration sealing standards
- Construction and fire protection product manufacturers: verification that sealing materials achieve the required expansion ratio under fire exposure conditions
- Quality assurance departments: production-lot sampling and incoming inspection of expansion performance consistency

- R&D departments: evaluation of new intumescent formulations and sealing material designs for expansion optimization

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Standards

The ToronFT™ FS-E supports expansion performance testing of fireproof sealing materials in compliance with internationally recognized fire protection and building material standards, including:

- EN 1366-3: Fire resistance tests for service installations — Seals
- ISO 834-1: Fire resistance tests — Elements of building construction — General requirements
- ASTM E814: Standard test method for fire tests of through-penetration fire stops
- UL 1479: Standard for fire tests of through-penetration firestops
- EN 13501-2: Fire classification of construction products and building elements — Classification using data from fire resistance tests

FEATURES

Firestop Material Expansion Tester — ToronFT™ FS-E Key Features

- Standardized steel container geometry: inner diameter 50 mm, height 50 mm — providing reproducible, standard-compliant expansion test conditions
- Three containers per set — enabling simultaneous triplicate testing for improved statistical reliability
- Covers all major fireproof sealing material types: fire-retardant packages, fire-retardant modules, gap sealing materials, and cured foam sealing materials
- Fireproof sealant provided by the customer or obtained from the inspection unit — ensuring production-representative material for each test
- Compact, self-contained test apparatus for efficient laboratory integration
- Designed specifically for expansion performance qualification — the critical fire-active property that determines penetration sealing effectiveness

THEORY & METHOD

Theory and Method

The expansion performance test measures the volumetric expansion ratio and/or expansion pressure of the fireproof sealing material when heated to the temperatures encountered during a fire event. The material specimen is placed inside the standardized steel container (inner diameter 50 mm, height 50 mm) and subjected to a controlled temperature exposure program. As the intumescent components within the sealing material activate, the material expands within the container — the free expansion volume and expansion rate are recorded throughout the heating cycle.

The container geometry constrains the lateral expansion of the specimen, directing expansion in the axial direction and allowing direct measurement of the expansion ratio relative to the original specimen volume. Simultaneous testing of three specimens using the three provided containers yields replicate expansion data, improving measurement reliability and identifying any batch-to-batch variability. The fireproof sealant is prepared by the customer or obtained from the inspection unit, ensuring that production-representative material is used for each test.

TECHNICAL SPECIFICATIONS

Firestop Material Expansion Tester — ToronFT™ FS-E Technical Specifications

Parameter	Specification
Model	ToronFT™ FS-E
Test Application	Expansion performance of fireproof sealing materials
Instrument Composition	Steel container set (3 pieces), fireproof sealant

Parameter	Specification
Steel Container Dimensions	Inner diameter 50 mm, height 50 mm (each)
Number of Containers per Set	3
Applicable Sealing Materials	Fire-retardant packages, modules, gap seals, cured foam seals
Sealant Supply	Provided by customer or obtained from inspection unit

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