TORONTECH

VERTICAL FURNACE FOR BUILDING COMPONENTS

Vertical Furnace for Fire Resistance Test of Building Components — ToronFT™ VF-BC

ToronFT™ VF-BC Vertical Furnace for Fire Resistance Test of Building Components is a large-scale fire resistance test furnace designed for the fire resistance qualification of building components installed at the opening of vertical partition members — including fire doors, fire shutter assemblies, fire-resistant bricks, fire-resistant glass, fire-resistant partition walls, and fire-resistant windows. The ToronFT™ VF-BC provides the high-temperature fire exposure environment and integrated measurement and control systems required for standard-compliant fire resistance testing of full-scale building component specimens.

With internal furnace dimensions of 3 m (L) × 3 m (H) × 1.25 m (D) and a furnace temperature capability of up to 1250°C, the vertical fire resistance test furnace accommodates the largest commercial building components for realistic, full-scale fire resistance qualification. The instrument is manufactured, assembled, installed, and tested in the factory before disassembly for transport, ensuring a rapid, reliable on-site commissioning process.

APPLICATIONS

Vertical Furnace for Fire Resistance Test of Building Components — ToronFT™ VF-BC Applications

- Fire door, fire shutter, and fire window manufacturers: fire resistance classification testing for product listing and building code compliance
- Fire-resistant glass and glazing manufacturers: integrity and thermal insulation performance testing under standard fire exposure

- Fire-resistant partition wall manufacturers: full-scale fire resistance testing of wall assemblies and partition systems
- Third-party fire testing and certification laboratories: fire resistance qualification per ISO 834-1, ASTM E119, and EN 1634-1
- Building materials research institutions: fire resistance characterization of new building products and composite assemblies


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TorontT™ VF-BC
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Standards

The ToronFT™ VF-BC supports fire resistance testing in compliance with internationally recognized building fire protection standards, including:

- ISO 3008: Fire resistance tests — Door and shutter assemblies

FEATURES

Vertical Furnace for Fire Resistance Test of Building Components — ToronFT™ VF-BC Key Features

- Applicable to: fire doors, fire shutter assemblies, fire-resistant bricks, fire-resistant glass, fire-resistant partition walls, and fire-resistant windows — comprehensive building component coverage
- Refractory vertical test furnace with internal dimensions: 3 m (L) × 3 m (H) × 1.25 m (D) — accommodating full-scale building components
- Maximum furnace temperature: 1250°C — reaching and sustaining all standard fire curves including ISO 834 and ASTM E119
- Steel structure frame furnace body with refractory brick wall construction — proven, durable fire test infrastructure
- High-temperature-resistant insulation inner lining: density 80–140 kg/m³, thickness 50 mm — efficient thermal management
- Ten high-speed burners (five per side wall, 5 on each side) — uniform thermal input for consistent standard fire curve tracking
- Integrated systems: gas flow measurement, temperature measurement, pressure measurement and control — complete, automated test management
- Factory-assembled, installed, and tested prior to disassembly — ensuring rapid, reliable on-site commissioning; packed in trailers for transport

THEORY & METHOD

Theory and Method

Fire resistance testing subjects a full-scale specimen of the building component to the standard time-temperature fire curve applied uniformly across the exposed face by the furnace. The specimen's performance is assessed against three criteria: integrity (prevention of flame and hot gas passage), thermal insulation (limitation of temperature rise on the unexposed face), and structural stability where applicable. The test continues until one or more criteria are no longer met, or until the specified fire resistance duration has elapsed.

The ToronFT™ VF-BC refractory test furnace is a vertical furnace with integrated gas flow measurement system, temperature measurement system, and pressure measurement and control system. The furnace wall is built with refractory bricks in the middle of a steel structure frame, lined with high-temperature-resistant insulation material (density 80–140 kg/m³, thickness 50 mm). The outer steel shell is color-wrapped. Ten high-speed burners — five embedded in each of the two furnace side walls — provide the thermal input required to follow the standard fire curve to 1250°C. All components are factory-assembled and tested, then disassembled into trailers for transport and customer-preset reassembly on-site.

TECHNICAL SPECIFICATIONS

Vertical Furnace for Fire Resistance Test of Building Components — ToronFT™ VF-BC Technical Specifications

Parameter	Specification
Model	ToronFT™ VF-BC
Applicable Components	Fire doors, shutters, fire-resistant glass, bricks, partition walls, windows

Parameter	Specification
Furnace Type	Vertical refractory test furnace
Internal Dimensions (L×H×D)	3 m × 3 m × 1.25 m
Maximum Furnace Temperature	1250°C
Furnace Wall Construction	Steel structure frame + refractory brick wall
Inner Lining Insulation	High-temperature resistant; density 80–140 kg/m³; thickness 50 mm
Number of Burners	10 high-speed burners (5 per side wall)
Integrated Measurement Systems	Gas flow, temperature, pressure measurement and control
Assembly / Transport	Factory-assembled and tested; disassembles into trailers for transport
Standard Compliance	ISO 3008

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