

# FireShield™

Fireproofing  
SYSTEMS

Type B



# FireShield Type-B

FIRESHIELD Type-B is a portland cement based spray-applied fire resistive material (SFRM) designed to provide fire resistive ratings for structural steel and concrete in commercial construction. Applied directly to deck, steel beams, columns or concrete surfaces, the outstanding value and proven fire resistive performance of FIRESHIELD Type-B make it an excellent choice for concealed commercial environments. FIRESHIELD Type-B is applied exclusively by FIRESHIELD Type-B licensed and trained contractors. Our technical staff works closely with building team members to meet all fire protection needs.

## Fire Test Performance

FIRESHIELD Type-B has been extensively tested for fire endurance in accordance with ASTM E119. These tests have resulted in ratings of up to 4 hours for:

- Floor Assemblies
- Beams
- Joists
- Columns
- Roof Assemblies
- Walls and Partitions

FIRESHIELD Type-B has also been tested in accordance with ASTM E84 and has the following Surface Burning Characteristics:

Flame Spread.....0  
Smoke Developed .....0

## Thermal Properties

The unique formulation of FIRESHIELD Type-B makes it a very effective thermal insulator. This benefit is important in reducing heat loss, particularly when applied to the underside of a roof deck. The R-value added by FIRESHIELD Type-B may allow a reduction in roof insulation.

Product	Conductivity (k)*	Resistance (R/inch)
FIRESHIELD Type-B	0.30 BTU in/hr ft <sup>2</sup> °F @ 75°F (0.043 W/mK @ 24°C)	3.33

\*When tested in accordance with ASTM C518

## Acoustical Properties

As an efficient sound-absorbing material, FIRESHIELD Type-B adds value to the fire protection application in areas where high-noise levels are anticipated. Typical acoustical performance is as follows:

Product	Thickness	Base	NRC Rating*
FIRESHIELD Type-B	1/2 inch (13 mm)	Deck & Beam	0.75
FIRESHIELD Type-B	1 inch (25 mm)	Solid	0.75

\*When tested in accordance with ASTM C423



## Physical Performance

Characteristic	ASTM Method	Standard Performance*	Tested Performance**
Density	E605	15 pcf (240 kg/m <sup>3</sup> )	16 pcf (256 kg/m <sup>3</sup> )
Combustibility	E136	Noncombustible	Noncombustible
Cohesion/Adhesion	E736	150 psf (7.2 kPa)	360 psf (17.2 kPa)
Deflection	E759	No Cracks or Delaminations	No Cracks or Delaminations
Bond Impact	E760	No Cracks or Delaminations	No Cracks or Delaminations
Compressive Strength	E761	750 psf (35.9 kPa)	2,380 psf (114 kPa)
Air Erosion Resistance	E859	Less than 0.025 g/ft <sup>2</sup> (0.27 g/m <sup>2</sup> )	0.000 g/ft <sup>2</sup> (0.000 g/m <sup>2</sup> )
Corrosion Resistance	E937, Mil. Std. 810	Does Not Promote Corrosion of Steel	Does Not Promote Corrosion of Steel
Sound Absorption	C423		0.75 NRC, 1/2" (13mm) onto deck and beam

\* Standard performance based on General Services Administration AIA/SC/GSA/07811 except for density, which is based on UL. Refer to UL design for density requirement.

\*\* Values represent independent laboratory tests under controlled conditions

PART 1 – GENERAL

1.1 Work Included

1.1.1 Provide all labor, materials, equipment and services necessary for, and incidental to, the complete and proper installation of all spray-applied fire resistive material and related work as shown on the drawings or where specified herein, and in accordance with all applicable requirements of the Contract Documents.

1.1.2 The material and installation shall conform to the applicable building code requirements and the requirements of all authorities having jurisdiction.

1.2 Quality Assurance

1.2.1 Work shall be performed by a firm with expertise in the installation of fire protection or similar materials. This firm shall be licensed or otherwise approved by the spray-applied fire resistive material manufacturer.

1.2.2 Before proceeding with the fire protection work, approval of the proposed material thicknesses and densities shall be obtained from the architect and other applicable authorities having jurisdiction.

1.3 Related Sections

1.3.1 Section 05100 - Structural Steel.

1.3.2 Section 05300 - Metal Decking.

1.3.3 Section 07200 - Insulation.

1.3.4 Section 07270 - Firestopping.

1.3.5 Section 07812 - Intumescent Coatings.

1.3.6 Section 09200 - Lath and Plaster.

1.3.7 Section 09900 - Painting.

1.4 References

A. ASTM E84 - Surface Burning Characteristics of Building Materials.

B. ASTM E119 - Fire Tests of Building Construction and Materials.

C. ASTM E136 - (Noncombustibility) Behavior of Materials in a Vertical Tube Furnace at 750°C.

D. ASTM E605 - Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members.

E. ASTM E736 - Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.

F. ASTM E759 - Effect of Deflection of Sprayed Fire-Resistive Materials Applied to Structural Members.

G. ASTM E760 - Effect of Impact on Bonding of Sprayed Fire-Resistive Materials Applied to Structural Members.

H. ASTM E761 - Compressive Strength of Sprayed Fire-Resistive Materials Applied to Structural Members.

I. ASTM E859 - Air Erosion of Sprayed Fire-Resistive Materials Applied to Structural Members.

J. ASTM E937 - Corrosion of Steel by Sprayed Fire-Resistive Materials Applied to Structural Members.

K. CAN/ULC-S101 - Standard Methods of Fire Tests of Building Construction and Materials.

L. CAN/ULC-S102 Steiner Tunnel Test.

M. CAN4-S114 Standard Test Method for Determination of Noncombustibility in Building Materials.

1.4.1 Underwriters Laboratories, Inc. (UL) Fire Resistance Directory.

1.4.2 Underwriters Laboratories of Canada (ULC) List of Equipment and Materials.

1.4.3 Uniform Building Code Standard No. 7-6 (current edition): Thickness and Density Determination for Spray-Applied Fire Protection.

1.4.4 AWCI Publication: Technical Manual 12-A Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials; an Annotated Guide.

1.5 Submittals

1.5.1 Manufacturer's Data: Submit manufacturer's specifications, including certification as may be required to show material compliance with Contract Documents.

1.5.2 Test Data: Independent laboratory test results shall be submitted for all specified performance criteria.

1.6 Delivery, Storage and Handling

1.7.2 General Contractor shall provide ventilation to allow proper drying of the spray-applied fire resistive material during and subsequent to its application.

1.7.2.1 In enclosed areas ventilation shall not be less than 4 complete air changes per hour.

1.8 Sequencing/Scheduling

1.8.1 All fire protection work on a floor shall be completed before proceeding to the next floor.

1.8.2 The Contractor shall cooperate in the coordination and scheduling of fire protection work to avoid delays in job progress.

PART 2 – PRODUCTS

2.1 Acceptable Manufacturers. The spray-applied fire resistive material shall be manufactured under the FIRESHIELD type-B brand name, by authorized producers.

2.2 Materials

2.2.1 Materials shall be FIRESHIELD type-B, applied to conform to the drawings, specifications and following test criteria:

2.2.1.1 Deflection: When tested in accordance with ASTM E759, the material shall not crack or delaminate when the non-concrete topped galvanized deck to which it is applied is subjected to a one time vertical centerload resulting in a downward deflection of 1/120th of the span.

2.2.1.2 Bond Impact: When tested in accordance with ASTM E760, the material shall not crack or delaminate from the concrete topped galvanized deck to which it is applied.

2.2.1.3 Cohesion/Adhesion (bond strength): When tested in accordance with ASTM E736, the material applied over uncoated or galvanized steel shall have an average bond strength of 150 psf (7.2 kPa).

2.2.1.4 Air Erosion: When tested in accordance with ASTM E859, the material shall not be subject to losses from the finished application greater than 0.025 grams per sq. ft. (0.27 grams per square meter).

2.2.1.5 Compressive Strength: When tested in accordance with ASTM E761, the material shall not deform more than 10 percent when subjected to a crushing force of 750 psf (35.9 kPa).

2.2.1.6 Corrosion Resistance: When tested in accordance with ASTM E937, the material shall not promote corrosion of steel.

2.2.1.7 Noncombustibility: When tested in accordance with ASTM E136, the material shall be noncombustible.

2.2.1.8 Surface Burning Characteristics: When tested in accordance with ASTM E84, the material shall exhibit the following surface burning characteristics:

Flame Spread.....0

Smoke Developed.....0

2.2.1.9 Density: When tested in accordance with ASTM E605, the material shall meet the minimum individual and average density values as listed in the appropriate UL / ULC design or as required by the authority having jurisdiction.

2.2.2 The material shall have been tested and classified in accordance with the procedures of (ASTM E119).

2.2.3 Spray-applied fire resistive materials shall be applied at the approved minimum thickness and density to achieve the following ratings:

Floor assemblies \_\_\_hr.

Roof assemblies \_\_\_hr.

Beams \_\_\_hr.

Girders \_\_\_hr.

Columns \_\_\_hr.

Joists \_\_\_hr.

2.2.4 Potable water shall be used for the application of spray-applied fire resistive materials.

2.2.5 Spray-applied fire resistive materials shall be free of all forms of asbestos, including actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite. Material manufacturer shall provide certification of such upon request.

PART 3 – EXECUTION

3.1 Preparation

3.1.1 All surfaces to receive fire protection shall be free of oil, grease, loose mill scale, dirt, paints/primers or other foreign materials which would impair satisfactory bonding to the surface. Manufacturer shall be contacted for procedures on handling primed/painted steel.

Any cleaning of surfaces to receive spray applied fire resistive material shall be the responsibility of the General Contractor or Steel Erector, as outlined in the structural steel or steel deck section.

3.1.2 Clips, hangers, supports, sleeves and other attachments to the substrate are to be placed by others prior to the application of spray-applied fire resistive materials.

3.1.3 The installation of ducts, piping, conduit or other suspended equipment shall not take place until the application of spray-applied fire resistive material is complete in an area.

3.1.4 The spray-applied fire resistive material shall only be applied to steel deck which has been fabricated and erected in accordance with the criteria set by the Steel Deck Institute.

3.1.5 When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers shall be installed as a walkway to distribute loads.

3.2 Application

3.2.1 Equipment, mixing and application shall be in accordance with the manufacturer's written application instructions.

3.2.2 The application of spray-applied fire resistive material shall not commence until certification has been received by the General Contractor that surfaces to receive spray-applied fire resistive material have been inspected by the applicator and are acceptable to receive spray-applied fire resistive material.

3.2.3 All unsuitable substrates must be identified and made known to the General Contractor and corrected prior to application of the spray-applied fire resistive material.

3.2.4 Spray-applied fire resistive material shall not be applied to steel floor decks prior to the completion of concrete work on that deck.

3.2.5 The application of spray-applied fire resistive material to the underside of roof deck shall not commence until the roofing is completely installed and tight, all penthouses are complete, all mechanical units have been placed, and after construction roof traffic has ceased.

3.2.6 Proper temperature and ventilation shall be maintained as specified in 1.7.1, 1.7.2 and 1.7.2.1.

3.2.7 Provide masking, drop cloths or other suitable coverings to prevent overspray from coming in contact with surfaces not intended to be sprayed.

3.2.8 Adhesive shall be applied as per the appropriate fire resistance design and manufacturer's written recommendations.

3.3 Repairing and Cleaning

3.3.1 All patching of and repair to spray-applied fire resistive material, due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

3.3.2 After the completion of the work in this section, equipment shall be removed and all surfaces not to be sprayed shall be cleaned to the extent previously agreed to by the applicator and General Contractor.

3.4 Inspection and Testing

3.4.1 The spray-applied fire resistive material shall be tested for thickness and density in accordance with one of the following procedures: ASTM E605 - Standard Test Method of Sprayed Fire-Resistive Materials Applied to Structural Members. AWCI - Technical Manual 12-A Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials an Annotated Guide. UBC Standard No. 7-6 - Thickness and Density Determination for Spray-Applied Fire Protection.

# FireShield

## Fireproofing Systems Type-B



**U.S. GREEN BUILDING COUNCIL** A nonprofit organization committed to a prosperous and sustainable future for our nation through cost-efficient and energy-saving green buildings. USGBC works toward its mission of market transformation through its LEED green building certification program, robust educational offerings, a nationwide network of chapters and affiliates, the annual Greenbuild International Conference & Expo, and advocacy in support of public policy that encourages and enables green buildings and communities.



**ASTM International**, originally known as the American Society for Testing and Materials (ASTM), is one of the largest voluntary standards development organizations in the world—a trusted source for technical standards for materials, products, systems, and services. Known for their high technical quality and market relevancy, ASTM International standards have an important role in the information infrastructure that guides design, manufacturing and trade in the global economy.

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**ENERGY STAR** is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices. Results are already adding up. Americans, with the help of ENERGY STAR, saved enough energy in 2009 alone to avoid greenhouse gas emissions equivalent to those from 30 million cars — all while saving nearly \$17 billion on their utility bills.

Corporate Pledge Driver



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