CAFCO® BLAZE-SHIELD® II
Spray-Applied Fire Resistive Material

CAFCO BLAZE-SHIELD II is an inorganic, 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 CAFCO BLAZE-SHIELD II make it an excellent choice for concealed commercial environments.

CAFCO BLAZE-SHIELD II has been tested and is classified as “investigated for exterior use” by Underwriters Laboratories, Inc. allowing it to remain exposed to weather conditions during the construction cycle. In addition, it’s high recycled content, no pre-mixing and reduced labor costs to install make BLAZE-SHIELD II the most cost effective SFRM in the world.

CAFCO BLAZE-SHIELD II is applied exclusively by CAFCO licensed and trained contractors. Our technical staff works closely with building team members to meet all fire protection needs.

CODE COMPLIANCES
CAFCO BLAZE-SHIELD II satisfies the requirements of the following:
- IBC-International Building Code (ICC ESR-1649)
- New York City—MEA
- NBC - National Building Code of Canada
- Veterans Administration (VA): H-08-1
- U.S. Army Corps of Engineers. CEGS-07811
- U.S. Environmental Protection Agency (EPA): Regulation 40
- Construction Specification Canada (CSC) TEK-AID
- Factory Mutual Approved

MAJOR SPECIFICATIONS
CAFCO BLAZE-SHIELD II complies with the requirements of the following specifications:
- General Services Administration (GSA): AIA/SC/GSA: 07811
- Department of the Navy NAVFACENGCOM Guide Specification NFGS 07810, Sprayed-On Fireproofing
- Department of the Navy NAVFACENGCOM Guide Specification NFGS 07811, Applied directly to steel beams, columns or concrete surfaces

FIRE TEST PERFORMANCE
CAFCO BLAZE-SHIELD II has been extensively tested for fire endurance by Underwriters Laboratories, Inc. (UL) and Underwriters Laboratories of Canada (ULC) in accordance with ASTM E119 (UL 263, CAN/ULC-S101).

These tests have resulted in ratings of up to 4 hours for:
- Floor Assemblies
- Beams
- Joists
- Columns
- Roof Assemblies
- Walls and Partitions

CAFCO BLAZE-SHIELD II has also been tested in accordance with ASTM E84 and CAN/ULC-S102 and has the following Surface Burning Characteristics:
- Smoke Developed: 0
- Flame Spread: 0

THERMAL PROPERTIES
The unique formulation of CAFCO BLAZE-SHIELD II 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 CAFCO BLAZE-SHIELD II may allow a reduction in roof insulation.

ACOUSTICAL PROPERTIES
As an efficient sound-absorbing material, CAFCO BLAZE-SHIELD II adds value to the fire protection application in areas where high noise levels are anticipated. Typical acoustical performance is as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Thickness</th>
<th>Base</th>
<th>NRC Rating*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLAZE-SHIELD II</td>
<td>1/2 inch (13 mm)</td>
<td>Deck &amp; Beam</td>
<td>0.75</td>
</tr>
<tr>
<td>BLAZE-SHIELD II</td>
<td>1 inch (25 mm)</td>
<td>Solid</td>
<td>0.75</td>
</tr>
</tbody>
</table>

*When tested in accordance with ASTM C423

Physical Performance

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ASTM Method</th>
<th>Standard Performance*</th>
<th>Tested Performance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>E805</td>
<td>15 pcf (240 kg/m³)</td>
<td>16 pcf (256 kg/m³)</td>
</tr>
<tr>
<td>Combustibility</td>
<td>E136</td>
<td>Noncombustible</td>
<td>Noncombustible</td>
</tr>
<tr>
<td>Cohesion/Adhesion</td>
<td>E136</td>
<td>150 pcf (7.2 kPa)</td>
<td>375 pcf (17.9 kPa)</td>
</tr>
<tr>
<td>Deflection</td>
<td>E759</td>
<td>No Cracks or Delaminations</td>
<td>No Cracks or Delaminations</td>
</tr>
<tr>
<td>Bond Impact</td>
<td>E760</td>
<td>No Cracks or Delaminations</td>
<td>No Cracks or Delaminations</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>E761</td>
<td>750 pcf (35.8 kPa)</td>
<td>2,360 pcf (114 kPa)</td>
</tr>
<tr>
<td>Air Erosion Resistance</td>
<td>E599</td>
<td>Less than 0.025 g/ft² (0.37 g/m²)</td>
<td>0.000 g/ft² (0.000 g/m²)</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>E937, Mil. Std. 810</td>
<td>Does Not Promote Corrosion of Steel</td>
<td>Does Not Promote Corrosion of Steel</td>
</tr>
<tr>
<td>Fungal Resistance</td>
<td>G21</td>
<td>No Growth After 28 Days</td>
<td>Passed</td>
</tr>
</tbody>
</table>

* 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 resistant material and related work as shown on the drawings 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 resistant 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 4.010 – Structural Steel

1.3.2 Section 4.050 – Metal Decking

1.3.3 Section 4.100 – Insulation

1.3.4 Section 4.170 – Finishing Stopping

1.3.5 Section 4.1812 – Interior Coatings

1.3.6 Section 5.000 – Lath and Plaster

1.3.7 Section 5.0900 – Painting

1.4 References

A. ASTM B 69 – Surface Burning Characteristics of Building Materials

B. ASTM E 911 – Fire Tests of Building Construction and Materials

C. ASTM E 516 – Noncombustibility

D. Behavior of Materials in a Vertical Tube Furnace at 700°F

E. ASTM E 695 – Thickness and Density of Spray-Fire-Resistive Materials Applied to Structural Members

F. E718 – Cohesion/Adhesion of Spray-Fire-Resistive Materials Applied to Structural Members

G. ASTM E 719 – Effect of Deflection of Sprayed Fire-Resistive Materials Applied to Structural Members

H. ASTM E 719 – Effect of Impact on Blending of Sprayed Fire-Resistive Materials Applied to Structural Members

I. ASTM E 690 – Air Emission of Spray-Fire-Resistive Materials Applied to Structural Members

J. ASTM E 697 – Combustion Steel by Sprayed Fire-Resistive Materials Applied to Structural Members


L. CAN/ULC S-732 – Stinger Tunnel Test


1.4.1 Underwriters Laboratories, Inc. E&I Fire Resistance Directory

1.4.2 Underwriters Laboratories of Canada (UL) List of Equipment and Materials


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

1.6.1 Deliver materials to the project in manufacturer’s unopened packages, fully identified as to trade name, type and other identifying data. Packaging shall bear the UL and ULC labels for fire and hazard resistant classifications.

1.6.2 Store materials above ground, in a dry location, protected from the weather. Damaged packages found unsuitable for use should be rejected and removed from the project.

1.7 Project Conditions

1.7.1 When the prevailing outdoor temperature at the building is less than 40°F (4°C), a minimum substrate and ambient temperature of 40°F (4°C) shall be maintained prior to, during, and a minimum of 24 hours after application of spray-applied fire resistant material. If necessary for job progress General Contractor shall provide enclosures and heat to maintain proper temperatures and humidity levels.

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.

1.7.3 In extremely warm ventilation shall not be less than 4 cubic 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 resisting material shall be manufactured under the CARFOS® brand name, by authorized producers.

2.2 Materials

2.2.1 Materials shall be identified by the product and designation. Underwriters Laboratories (UL) Listing for the application of fire resistant material in accordance with the UL standard 265 (ASTM E 719) or CAN/ULC S-514.

2.2.2 Spray-applied fire resistive materials shall be applied in 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

2.4 Paintable water shall be used for the application of spray-applied fire resistant materials.

2.5 Spray-applied fire resistive materials shall contain no asbestos.

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, paint/imperious or other foreign materials which would impair satisfactorily bonding to the surface. Manufacturer shall be contacted for procedures for handling painted primed steel. Cleaning of surfaces to receive spray-applied fire resistant material shall be the responsibility of the General Contractor or Steel Erector, as outlined in the structural steel or steel deck section.

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

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

3.4 The spray-applied fire resistant 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.

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

3.6 Application

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

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

3.6.3 All unsuitable substrates shall be identified and marked known to the General Contractor connected prior to the application of spray-applied fire resistant material.

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

3.6.5 The application of spray-applied fire resistant material to the underside of deck shall commence until the roof is completely installed and all, topcement is complete, all mechanical units have been placed, and all construction roof traffic has ceased.

3.6.6 Proper temperature and ventilation shall be maintained as specified in 1-1.1, 17-2 and 1.2.1.

3.6.7 Provide moisture-proofing, drip clothes or other suitable coverings to prevent overspray coming in contact with surfaces not intended to be sprayed.

3.6.8 CARFO/BOND Ideal® adhesive shall be sprayed as per the approved ULAC fire resisting design and manufacturer’s written recommendations.

3.7 Preparing and Cleaning

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

3.7.2 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.

3.8 Inspection and Testing


Product Availability

Isolatek International Spray International Spray Fire-Resistant Materials are available to tradesmen, licensed contractors around the world from strategically located production and distribution facilities in the U.S., Canada, Mexico, Europe and the Pacific Basin.