CAFCO® BLAZE-SHIELD II 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 BLAZE-SHIELD II make it an excellent choice for concealed commercial environments.

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
- SBCCI—Southern Building Code Congress International (Report No. 9423E)
- ICBO—International Conference of Building Officials (Report No. 1244)
- BOCA—Building Officials and Code Administrators International
- New York City—MEA
- NBC—National Building Code of Canada, Sections 2.5, 3.1.5, and 3.1.7

Major Specifications
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
- 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

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

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

- Flame Spread: 0
- Smoke Developed: 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 BLAZE-SHIELD II may allow a reduction in roof insulation.

<table>
<thead>
<tr>
<th>Product</th>
<th>Conductivity (k)*</th>
<th>Resistance (R/inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLAZE-SHIELD II</td>
<td>0.30 BTU/in/hr ft °F @ 75°F (0.043 W/mK @ 24°C)</td>
<td>3.33</td>
</tr>
</tbody>
</table>

*When tested in accordance with ASTM C518

Acoustical Properties
As an efficient sound-absorbing material, 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</td>
<td>Deck &amp; Beam</td>
<td>0.75</td>
</tr>
<tr>
<td>BLAZE-SHIELD II</td>
<td>1 inch</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>E605</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>E736</td>
<td>150 psi (7.2 kPa)</td>
<td>360 psi (17.2 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 psi (35.9 kPa)</td>
<td>2,380 psi (114 kPa)</td>
</tr>
<tr>
<td>Air Erosion Resistance</td>
<td>E858</td>
<td>Less than 0.025 g/ft² (0.27 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>Sound Absorption</td>
<td>C423</td>
<td>0.75 NRC, 1/2“ (13mm) onto deck and beam</td>
<td></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, material, equipment and services necessary for, and incidental to, the complete and proper installation of all sprayed-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.

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

1.3 Quality Assurance

1.3.1 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.

1.3.2 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.

1.4 References

A. ASTM E34 - Surface Burning Characteristics of Building Materials
B. ASTM E119 - Fire Tests of Building Construction and Materials
C. ASTM E119 - (Noncombustibility) Behavior of Materials in a Vertical Tube Furnace at 750ºC
D. ASTM E865 - Thickness and Density of Spray Fire-Resistive Materials Applied to Structural Members
E. ASTM E736 - Cohesive/Adhesion of Spray Fire-Resistive Materials Applied to Structural Members
F. ASTM E279 - Effect of Deflection of Spray Fire-Resistive Materials Applied to Structural Members
G. ASTM E780 - Effect on Impact of Bonding of Spray Fire-Resistive Materials Applied to Structural Members
H. ASTM E761 - Compressive Strength of Spray Fire-Resistive Materials Applied to Structural Members
I. ASTM E869 - Air Erosion of Spray Fire-Resistive Materials Applied to Structural Members
J. ASTM E980 - Cement Slurry of Spray Fire-Resistive Materials Applied to Structural Members
L. CAN/ULC-S102 - Stearic Tunnel Test
M. CAN/ULC-S114 Standard Test Method for Determination of Noncombustibility in Building Materials

1.4.1 Uniform Building Code Standard No. 7-6 (current edition) – Thickness and Density


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 manufacturer’s unopened packages. Fully identify as to trade name, type and other identifying data. Packaging shall bear the UL and ULC labels for fire hazard and fire-resistance classifications.

1.7 Storage 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.

1.8 Project Conditions

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

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

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

1.9 Sequencing/Scheduling

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

1.9.2 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 by the CAFCO brand name, by authorized producers.

2.2 Materials

2.2.1 Materials shall be BLAZE-SHIELD II, UL/ULC designation: Type IB: I applied to conform to the drawings, specifications and following test criteria:

2.2.1.1 Deflection: When tested in accordance with ASTM E790, the material shall not crack or delaminate from the non-concrete topped galvanized deck to which it is applied. Subjected to one time vertical centratail load resulting in a downward deflection of 1/20th of the span.

2.2.1.2 Bond Impact: When tested in accordance with ASTM E790, the substrate shall not crack or delaminate from the concrete topped galvanized deck to which it is applied.

2.2.1.3 Cohesions/Adhesion (bond strength): When tested in accordance with ASTM E790, the material applied immediately on or galvanized steel shall have a minimum tensile bond strength of 150 psf (1.2 kPa).

2.2.1.4 Air Erosion: When tested in accordance with ASTM E869, the material shall not suffer any 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 E736, the material shall not deform more than 10 percent when subjected to a crushing force of 750 psf (05 kPa).

2.2.1.6 Corrosion Resistance: When tested in accordance with ASTM E937, the material shall exhibit the following surface burning characteristics:

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

2.2.1.7 Noncombustibility: When tested in accordance with ASTM E490 or CAN/ULC-S101, the material shall be combustible.

2.2.1.8 Surface Burning Characteristics: When tested in accordance with ASTM E824 or CAN/ULC-S102, 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 E868, 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.

2.2.1.10 The material shall have been tested and classified by Underwriters Laboratories, Inc. (UL) or Underwriters Laboratories of Canada (ULC) in accordance with the procedures of UL 263 (ASTM E119) or CAN/ULC-S101.

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

- Fire assemblies __hr.
- Roof assemblies __hr.
- Beams __hr
- Girders __hr
- Columns __hr
- Joists __hr

2.2.4 Pliable water based seal 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, 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, paintstains or other foreign materials which would impair satisfactory bonding to the surface. Manufacturer shall be contacted for procedures on handling primed/received steel. Any cleaning of surfaces to receive spray-applied fire resistive material shall be the responsibility of the General Contractor or Steel Euctor, as outlined in the structural steel or steel deck section.

3.1.1.1 Class, hangers, supports, sleeves and other attachments to the substrate to be placed by others prior to the application of spray-applied fire resistive material.

3.1.1.2 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.

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

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

3.3 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 architect and are acceptable to receive spray-applied fire resistive material.

3.4 In Asia/Pacific:

CAFCO Bond Seal (Type EBS) adhesive shall be applied as per the appropriate UL/ULC fire resistance design and manufacturer’s written recommendations.

3.5 Repairing and Cleaning

3.5.1 All patching 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.

3.6 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 applicant and General Contractor.

3.7 Inspection and Testing


Product Availability

CAFCO Spray-Applied Fire Resistive Materials are available to trained, licensed contractors around the world from strategically located production and distribution plants in the U.S., Canada, Mexico, Europe and the Pacific Basin.

For more detailed product information, visit our website at www.cafo.com or contact us at technical@isolatek.com

TOTAL PASSIVE FIRE PROTECTION

ISOLATEK INTERNATIONAL is registered with the AIA Continuing Education System (AIA/CES).

For Further Information CAFCO Technical and Sales Representatives are always available to lend assistance. Additional printed materials, including Material Safety Data Sheets, and other product literature, are available upon request. For more information about our CAFCO line of sprayed fire protection, thermal and acoustical treatments, SprayFilm™ Intumescent Coatings, and CAFCO-BOARD™ or for the name of the Sales Representative in your area, please contact:

1.3.7 Section 09900 - Painting.

1.1.1 Provide all labor, materials, equipment and services

1.4.1 Underwriters Laboratories, Inc. (UL) Fire For more information about our CAFCO line of sprayed fire protection, thermal and acoustical treatments, SprayFilm™ Intumescent Coatings, and CAFCO-BOARD™ or for the name of the Sales Representative in your area, please contact:

In the United States: Isolatek International, Soundhole, New Jersey Tel: 800.631.9600 Fax: 973.347.9170

In Mexico & Central America: Cafo Mexico S.A. de C.V., Mexico D.F. Tel: 525.254.6683 Fax: 525.531.7826

In Andean Countries: Cafo Andina S.A., Santiago, Chile Tel: 562.719.0394 Fax: 562.719.0393

In Canada: Cafo Industries, Toronto (Ontario) Tel: 888.873.0003 Fax: 416.679.2933

In Asia/Pacific: Tel: 60.3.5121.3886 Fax: 60.3.5121.4886

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