



UL Evaluation Reports

The UL Evaluation Service (UL ES) provides an Evaluation Report (ER) which presents the findings as to a product's compliance with model building code requirements of the subject of each report.

Code authorities use evaluation reports to provide technical evidence that a material, product, design or method of construction complies with the intent of the model building codes.

UL Evaluation Report ER13348-01, provided to Isolatek International, is based on the same ICC Evaluation Service, Inc, AC23 Requirements and AC10 Requirements for inspection audits as ICC Evaluation Service Reports (ICC-ESR) for fire-resistive materials. The basis of this report is to provide evidence that the products and systems meet code requirements, ensure code compliance, and to simplify the code approval process.

UL has vast testing experience, a strong reputation for technical excellence, thousands of UL product safety certifications within the built environment, intimate knowledge of the product and test standards referenced within the model codes, and full involvement with the model code development processes and ICC approved reference standards.

Our product safety experts perform code evaluation services as an extension of our traditional product safety evaluation activities. The work involves a UL review of the product's construction, test data and installation details and applications.

UL ERs are available to be viewed for free at www.UL.com/ERdirectory, and are searchable by various means, including, code, manufacturer, product type, and CSI number. UL ERs can also be located by model code sections using UL ProductSpec (www.UL.com/ProductSpec). Products covered by an UL ER are marked with the UL Certification Mark, and UL Evaluation Report number.

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UL Evaluation Report

UL ER13348-01

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UL Category Code: ULFE

CSI MasterFormat®

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION

Sub-level 2: 07 80 00 – Fire and Smoke Protection

Sub-level 3: 07 81 00 – Applied Fireproofing

Sub-level 4: 07 81 16 – Cementitious Fireproofing

Sub-level 4: 07 81 23 – Intumescent Fireproofing

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1. SUBJECT:

	Product Trade Name	UL Product Designation
Spray-Applied Fire Resistive Materials	CAFCO® BLAZE-SHIELD® II	Type II
	CAFCO® BLAZE-SHIELD® HP	Type HP
	CAFCO® 300	Type 300
	CAFCO® 300 AC	Type 300AC
	CAFCO® 300 HS	Type 300HS
	CAFCO® 300 ES	Type 300ES
	CAFCO® 300 SB	Type SB
	CAFCO® 400	Type 400
	CAFCO® 400 AC	Type 400AC
	CAFCO® 400 ES	Type 400ES
	CAFCO® 3000	Type 3000
	CAFCO® 3000 ES	Type 3000ES
	CAFCO® FENDOLITE® M-II	Type M-II
	Hand-Applied Fire-Resistive Materials	CAFCO® FIBER-PATCH
CAFCO® FENDOLITE® TG		Type TG
Adhesives/Additives	CAFCO® BOND-SEAL	Type EBS
	CAFCO® PRE-COAT	Type PC
	ISOLATEK® QWIK-SET®	
Intumescent Fire-Resistive Coatings	CAFCO® SprayFilm® WB 3	Type SprayFilm-WB 3, Type WB 3
	CAFCO® SprayFilm® WB 4	Type SprayFilm-WB 4, Type WB 4
	CAFCO® SprayFilm® WB 5	Type SprayFilm-WB 5, Type WB 5



2. SCOPE OF EVALUATION

- 2015, 2012, 2009, 2006 *International Building Code*[®] (IBC)
- ICC-ES Acceptance Criteria for Sprayed Fire-Resistant Materials (SFRMs), Intumescent Fire-Resistant Coatings and Mastic Fire-Resistant Coatings Used to Protect Structural Steel Members (AC23), dated December 2012
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014

The products were evaluated for the following properties:

- Fire Resistance (ANSI/UL 263, ASTM E119)
- Surface Burning Characteristics (ANSI/UL 723, ASTM E84)
- Tensile Bond (ASTM E736)
- Steel Deck Deflection (ASTM E759)
- Impact Resistance (ASTM E760)
- Compressive Strength (ASTM E761)
- Air-stream Resistance (ASTM E859)
- Mold Growth and Humidity Resistance (ASTM G21)
- Environmental Exposures (ANSI/UL 263, ASTM E119)

3. REFERENCED DOCUMENTS

- ANSI/UL 263, 14th Ed. (ASTM E119), Fire Tests of Building Construction and Materials
- ANSI/UL 723, 10th Ed. (ASTM E84), Test for Surface Burning Characteristics of Building Materials
- ASTM E736-00 (2011), Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
- ASTM E759-92 (2011), Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members
- ASTM E760-92 (2011), Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members
- ASTM E761-92 (2011), Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members
- ASTM E859-95, Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members
- ASTM G21-13, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

4. USES

CAFCO[®] BLAZE-SHIELD[®] II, BLAZE-SHIELD[®] HP, 300, 300 AC, 300 HS, 300 ES, 300 SB, 400, 400 AC, 400 ES, 3000, 3000 ES, and FENDOLITE[®] M-II are spray-applied fire resistive materials (SFRMs) intended for use in steel roof and floor assemblies and on structural steel beams, joists, columns, trusses, and walls.

CAFCO[®] FIBER-PATCH is a hand or trowel-applied fire resistive material intended for use for patching the CAFCO[®] BLAZE-SHIELD[®] II, BLAZE-SHIELD[®] HP, 300, 300 AC, 300 HS, 300 ES, 300 SB, 400, 400 AC, 400 ES, 3000, 3000 ES spray-applied materials. FENDOLITE[®] TG is a hand or trowel-applied fire resistive material intended for use in steel roof and floor assemblies and on structural steel beams, joists, columns, and trusses, for patching the FENDOLITE[®] M-II spray-applied material.

CAFCO[®] FENDOLITE[®] M-II and TG have been evaluated for exterior use in accordance with AC23.

CAFCO® BOND-SEAL, CAFCO® PRE-COAT, and ISOLATEK QWIK-SET are additional materials that may be used in conjunction with several of the SFRMs covered in this report, to aid in the application process.

CAFCO® SprayFilm® WB 3, CAFCO® SprayFilm® WB 4, and CAFCO® SprayFilm® WB 5 are intumescent fire resistive materials (IFRMs) that are applied to structural steel beams, columns and floor assemblies for use as fire protection.

5. PRODUCT DESCRIPTION

5.1 Spray-Applied Fire Resistive Materials

The spray-applied and hand-applied fire resistive materials covered in this report are of various densities that are specified in the UL Fire-Resistive Designs listed on the [CHPX.R13348](#) Classification Card.

In general, CAFCO® BLAZESHIELD® II, 300, 300 AC, 300 HS, 300 ES, 300 SB, 3000, and 3000 ES are commercial density products for use in construction applications. The CAFCO® BLAZESHIELD® HP, 400, 400 AC, and 400 ES are medium density SFRMs for use in construction applications. CAFCO® FENDOLITE® M-II and FENDOLITE® TG are high density SFRMs for use in construction applications and are acceptable for use in exterior locations.

CAFCO® FIBER-PATCH may be used to hand patch CAFCO® BLAZESHIELD® II, HP, 300, 300 AC, 300 HS, 300 ES, 300 SB, 3000, 3000 ES, 400, 400 AC, and 400 ES products. CAFCO® FENDOLITE® TG may be used to hand patch FENDOLITE® M-II. Refer to guidelines for patching specified in the [CHPX.R13348](#) Classification Card.

CAFCO® BOND-SEAL is an off-white liquid adhesive/sealant required in specific applications, as identified in the designs listed in the [CHPX.R13348](#) UL Classification Card. If required, it shall be applied to the substrate prior to patching material. It is required on all cellular decks, as well as fluted steel deck that does not contain concrete, as shown in the appropriate UL Fire-Resistive Designs listed on the [CHPX.R13348](#) Classification Card.

CAFCO® PRE-COAT is an adhesive/primer packaged as a grey, dry powder, and is required in specific application, as identified in the designs listed in the [CHPX.R13348](#) UL Classification Card. When required, it shall be applied before application of the following SFRMs: CAFCO® 300, 300 AC, 300 HS, 300 ES, 300 SB, 3000, 3000 ES, 400, 400 AC, or 400 ES.

ISOLATEK QWIK-SET is an off-white set accelerator in powder form that is required for the CAFCO® 300 AC, 300 HS, 300 ES, 3000, 3000ES, 400AC, and 400 ES; it is optional for CAFCO® 300 and 300 SB.

5.2 Intumescent Fire Resistive Materials

The intumescent fire resistive materials covered in this report can be applied in the various thicknesses as specified in the UL Fire-Resistive Designs listed on the [CDWZ.R16640](#) Classification Card.

CAFCO® SprayFilm® WB 3, CAFCO® SprayFilm® WB 4, and CAFCO® SprayFilm® WB 5 are water-based intumescent fire-resistive coatings for installation in construction applications. CAFCO® SprayFilm® WB 3 and SprayFilm® WB 4 provide up to 4-hour fire-resistance ratings, and CAFCO® SprayFilm® WB 5 provides up to and including 3-hour fire-resistance ratings, in accordance with ANSI/UL 263.

The SFRMs and IFRMs covered in this report have a flame spread index of 25 or less and a smoke developed index of 50 or less when tested in accordance with ANSI/UL 723 (ASTM E84).

6. INSTALLATION

6.1 General:

The SFRMs and IFRMs covered in this report must be installed in accordance with this report and the manufacturer's published installation instructions, which must be available to the applicators during installation at the jobsite.

The CAFCO® 300, 300 AC, 300 HS, 300 ES, 300 SB, 3000, 3000 ES, 400, 400 AC, 400 ES, or M-II SFRMs are mixed in a paddle or ribbon type mixer and machine-applied to the surface using varying air pressure and pumping rates to ensure accurate coverage. The products may be hand-patched using the guidelines outlined in the UL [CHPX.R13348](#) Classification Card.

The CAFCO® BLAZE-SHIELD II and HP materials are mixed by conditioning the material through the application equipment and pneumatically conveying it through the hose to the nozzle where mixed with water. The products may be hand-patched using CAFCO® FIBER-PATCH following the guidelines outlined in the UL [CHPX.R13348](#) Classification Card.

CAFCO® FIBER-PATCH and FENDOLITE® TG are hand or trowel applied to the surface until the thickness required to meet the specified fire resistance rating is achieved.

The thickness and densities of each product shall comply with the requirements of the various assemblies and applications as specified in the corresponding designs listed on the [CHPX.R13348](#) Classification Card. The materials shall be applied immediately after mixing, without retempering. The equipment and mixer shall be clean prior to mixing the material.

CAFCO® 300, 300 AC, 300 HS, 300 ES, 300 SB, 3000, 3000ES, 400AC, and 400 ES products may be injected with ISOLATEK QWIK-SET in the field, to aid in product yield and the setting process.

CAFCO® SprayFilm® WB 3, CAFCO® SprayFilm® WB 4, and CAFCO® SprayFilm® WB 5 are machine-applied, brush or trowel applied, after the application of approved primers on the steel surface.

6.2 Preparation of Substrate, Site and Surface Conditions

Prior to application of material, the substrate to receive the fire resistive materials shall be free of any substances or conditions that interfere with adhesion of the material, in accordance with 2015, 2012, 2009 IBC [Section 704.13.3](#). Primers, paints, and encapsulants are allowed, provided they comply with 2015, 2012, 2009 IBC Sections [704.13.3.1](#) and [704.13.3.2](#).

The temperature of the substrate and ambient temperature should be kept at a minimum of 40°F (4.4°C) for SFRMs before, during, and for a minimum of 24 hours after application. For the intumescent materials, the substrate and ambient temperatures should be maintained between 50°F (10°C) and 100°F (38°C) before, during, and for a minimum of 72 hours after application.

CAFCO® BOND-SEAL may be applied as an adhesive prior to the SFRM material, directly to the steel surface, or as a sealer on the surface of the SFRM material itself.

CAFCO® PRE-COAT is applied prior to SFRMs to cover approximately 70% of the steel surface, as required by the relevant designs specified on the [CHPX.R13348](#) Classification Card. Thickness of the PRE-COAT is included in the total final thickness of the SFRM.

If minimum bond strengths are not met at the jobsite, and for wide flange structural steel shape dimensions that do not meet the conditions specified in 2015, 2012, 2009 IBC [Section 704.13.3.2](#) for allowing primers, paints, and encapsulants at the jobsite, a mechanical break is required. Refer to the various UL Fire-Resistive Designs in the [CHPX.R13348](#), as well as the Guide Information Card for UL Category Code BXUV for specific requirements on the required mechanical break to facilitate the spray application of SFRMs.

6.3 Fire Resistive Assemblies

The SFRMs covered in this report shall be installed as specified in one or more of the UL Fire-Resistive Designs listed in the [CHPX.R13348](#) Classification Card, for each of the corresponding SFRMs. The IFRMs in this report shall be installed as specified in one or more of the UL Fire-Resistive Designs listed in the [CDWZ.R16640](#) Classification Card, for each of the corresponding IFRMs. Refer to the table in Section 1 of this report for the UL Product Designation for each Trade Name.

6.4 Thickness Tolerances

6.4.1 Spray-Applied Fire Resistive Materials

The minus tolerance of the SFRM thickness must be no greater than 1/4 inch (6.4 mm), or 25% of a design thickness of less than 1 inch (25.4 mm). When applicable, additional material must be applied to meet this tolerance.

When an individually measured SFRM thickness exceeds the design thickness by 1/4 inch (6.4 mm) or more, the thickness shall be recorded as the design thickness plus 1/4 inch (6.4 mm).

6.4.2 Intumescent Fire Resistive Materials

The minus tolerance of any individual IFRM thickness must be no less than 80% of the thickness specified in the applicable designs. When applicable, additional material must be applied to meet this tolerance.

When an individually measured IFRM thickness exceeds the design thickness by 20% or more, the thickness shall be recorded as the design thickness plus 20%. The average thickness shall not exceed the maximum tested thickness specified in the applicable designs by more than 10%.

6.5 Special Inspections

Special inspections are required for the SFRMs covered in this report, in accordance with 2015 IBC [Section 1705.14](#), 2012 IBC [Section 1705.13](#), 2009 IBC [Section 1704.12](#), or 2006 IBC Section 1704.10.

Special inspections are required for the IFRMs covered in this report, in accordance with 2015 IBC [Section 1705.15](#), 2012 IBC [Section 1705.14](#), 2009 IBC [Section 1704.13](#), or 2006 IBC Section 1704.11.

6.6 Physical Protection

The CAFCO® FENDOLITE® M-II and TG may be applied on exposed structural shapes less than 8 ft (2438 mm) from a floor, landing, or occupied space.

Where SFRMs are applied to a structural member and are subject to impact damage, the structural members shall be protected with FENDOLITE® M-II or TG applied at the required thickness in accordance with the fire-resistive design, or the fire resistive material shall be protected by corner guards or any other substantial jacket of metal or noncombustible material to at least 5 ft (1524 mm) from the finished floor, in accordance with 2015, 2012, 2009 IBC Section 704.9, or 2006 IBC Section 714.4.

7. CONDITIONS OF USE

7.1 General:

The fire-resistive materials described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 2 of this report, subject to the following conditions:

- 7.2 The products must be manufactured, identified, and installed in accordance with this report, the manufacturer's published installation instructions, and the applicable code. If there is a conflict between the manufacturer's installation instructions and this report, the report governs.
- 7.3 All assemblies shall be built in accordance with the applicable published UL designs, or as otherwise described in this report.
- 7.4 The density, thickness, and bond strength of the fire-resistive materials in this report must be measured in accordance with 2015 IBC [Section 1705.14](#), 2012 [Section 1705.13](#), 2009 IBC [Section 1704.12](#), or 2006 IBC Section 1704.10.
- 7.5 The CAFCO® 300 ES and CAFCO® 300 HS SFRMs recognized in this report have been evaluated for use in high-rise buildings up to 420 feet (128) in height in accordance with 2015, 2012, 2009 IBC [Section 403.2.4 and Table 403.2.4](#).
- 7.6 The CAFCO® BLAZESHIELD® HP, 400, 400 AC, 400 ES, 3000, 3000 ES, and FENDOLITE® M-II SFRMs recognized in this report have been evaluated for use in high-rise buildings up to and greater than 420 feet (128 m) in height in accordance with IBC [Section 403.2.4 and Table 403.2.4](#).
- 7.7 See UL's Online Certification Directory under UL File R13348 for Spray-applied Fire-Resistive Materials ([CHPX](#)) evaluated as a part of fire-resistance-rated assemblies in accordance with ANSI/UL 263.
- 7.8 See UL's Online Certification Directory under UL File R116640 for Mastic and Intumescent Coatings ([CDWZ](#)) evaluated as a part of fire-resistance-rated assemblies in accordance with ANSI/UL 263.
- 7.9 The fire resistive materials covered in this Evaluation Report are manufactured by Isolatak International, located at the manufacturing location(s) named below, under the UL LLC Listing/Classification and Follow-Up Service Program, which includes inspections in accordance with the quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC 10.

Plant Location
Huntington, IN
Stanhope, NJ
Houston, TX
San Bernardino, CA
Lawrence, MA

8. SUPPORTING EVIDENCE

- 8.1 Manufacturer's product literature and installation instructions.
- 8.2 Data in accordance with ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014.
- 8.3 Data in accordance with ICC-ES Acceptance Criteria for Sprayed Fire-Resistant Materials (SFRMs), Intumescent Fire-Resistant Coatings and Mastic Fire-Resistant Coatings Used to Protect Structural Steel Members (AC23), dated December 2012.
- 8.4 UL Classification reports in accordance with ANSI/UL 263 (ASTM E119). See UL Product Certification Category, Spray-applied Fire-Resistive Materials ([CHPX](#)).
- 8.5 UL Classification reports in accordance with ANSI/UL 263 (ASTM E119). See UL Product Certification Category, Mastic and Intumescent Coatings ([CDWZ](#)).
- 8.6 UL Classification reports in accordance with ANSI/UL 723 (ASTM E84). See UL Product Certification Category, Cementitious Cement and Plaster Mixtures ([BLPR](#)).

9. IDENTIFICATION

The products described in this evaluation report are identified by a marking bearing the report holder's name, Isolatek International, the plant identification, the UL Listing/Classification Mark, and the evaluation report number UL ER13348-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Listing/Classification Mark certificate.

10. USE OF UL EVALUATION REPORT

- 10.1 The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.
- 10.2 UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 10.3 The current status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via our On-Line Certifications Directory:

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