

# ICC-ES Evaluation Report

ESR-3874

Reissued November 2023


This report also contains:

Subject to renewal November 2024

- CHI Supplement
- CBC Supplement
- FBC Supplement

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<p><b>DIVISION: 07 00 00 — THERMAL AND MOISTURE PROTECTION</b></p> <p><b>Section: 07 81 00 — Applied Fireproofing</b></p>	<p><b>REPORT HOLDER: FLAMEOFF COATINGS, INC.</b></p>	<p><b>EVALUATION SUBJECT: FLAMEOFF FIRE BARRIER PAINT</b></p>	
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## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

2021, 2018, 2015 and 2012 [International Building Code® \(IBC\)](#)

**Properties evaluated:**

- Fire-resistance-rated construction
- Surface burning characteristics

## 2.0 USES

FlameOff Fire Barrier Paint provides protection, with up to a two-hour fire-resistance rating, for interior structural steel columns in accordance with IBC Sections 703.2 and 704. When installed in accordance with this report, the products are suitable for use in buildings of Type I and II construction in accordance with Exception 21 of IBC Section 603.1.

## 3.0 DESCRIPTION

FlameOff Fire Barrier Paint is a water-based intumescent coating that has a shelf life of six months when stored in unopened containers at temperatures not less than 50°F (10°C). When installed in accordance with this report, the FlameOff Fire Barrier Paint has a Class A interior finish classification, as set forth in IBC Section 803.1, when tested in accordance with ASTM E84.

## 4.0 DESIGN, INSTALLATION, AND SPECIAL INSPECTION

### 4.1 Design:

Installation is limited to Conditioned Interior Space.

### 4.2 Structural Steel Surface Conditions:

All structural steel to be coated with FlameOff Fire Barrier Paint must be primed with a layer of an alkyd metal primer or all-purpose acrylic primer, as described in [Figures 1, 2](#) and [3](#). Primed surfaces must be clean, dry, and free of dirt, loose scale, grease, oil, and any contaminant that would inhibit bonding of the FlameOff Fire Barrier Paint to the primer.

### 4.3 Installation Site Conditions:

FlameOff Fire Barrier Paint must be applied when the ambient air temperature is at least 50°F (10°C) and the relative humidity is between 40 and 60 percent. When the substrate and ambient temperatures at the project site are lower than 50°F (10°C), a minimum substrate and ambient temperature of 50°F (10°C) must be reached and then maintained prior to, during, and for a minimum of 72 hours after application.

### 4.4 Intumescent Coating Application:

FlameOff Fire Barrier Paint is spray-applied using a spray pump in accordance with FlameOff Coatings, Inc. published installation instructions. The FlameOff Fire Barrier Paint may also be brush-applied.

**4.4.1 Thickness:** Minimum average required dry-film thicknesses of the intumescent coating applied directly to structural steel columns are listed in [Figures 1](#) and [2](#). Thicknesses must be verified using a calibrated dry-film thickness gauge.

**4.4.2 Minus Tolerance:** The thickness of the intumescent coating must be corrected by applying additional material at any location where the average measured thickness of the material is less than that listed in this report, or where an individual measured thickness reading is less than 80 percent of the thickness specified in this report.

**4.4.3 Positive Tolerance:** An individual measured thickness exceeding the thickness specified in this report by 20 percent or more must be recorded as the thickness specified in the design plus 20 percent. The average dry-film thickness must not exceed by more than 10 percent the maximum thickness listed for the fire-resistance-rated assemblies indicated in this report.

### 4.5 Special Inspection:

Application of FlameOff Fire Barrier Paint as described in this report requires special inspection and tests in accordance with 2021 IBC Section 1705.16 (2018 and 2015 IBC Section 1705.15 or special inspection in accordance with 2012 IBC Section 1705.14), as applicable. The special inspector must verify the cleanliness of the substrate, site conditions, product designation, application procedures, and applied material thickness.

The thickness of the intumescent coating must be determined using the methods prescribed in Technical Manual 12-B, Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire Resistive Materials: An Annotated Guide, published by the Association of the Wall and Ceiling Industries (AWCI). The special inspector must verify that the application complies with the report holder's published instructions and this report.

## 5.0 CONDITIONS OF USE:

The FlameOff Fire Barrier Paint described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the applicable code and the report holder's published installation instructions. If there are differences between this report and the report holder's published installation instructions, the more restrictive governs.
- 5.2 Application must be limited to dry interior locations.
- 5.3 Thickness of the intumescent coating must comply with Section 4.4 and [Figures 1](#), [2](#) or [3](#) of this report.
- 5.4 Special inspection is required as set forth in the applicable code and Section 4.5 of this report.
- 5.5 The FlameOff Fire Barrier Paint described in this report is produced under a quality control program with inspections by ICC-ES.

## 6.0 EVIDENCE SUBMITTED

Data in accordance with the [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 June 2019 (editorially revised March 2021).

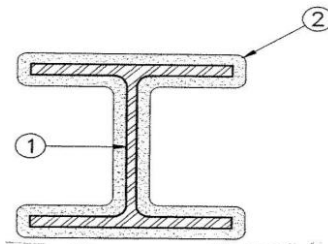
## 7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-3874) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 Containers of the intumescent material bear the company name (FlameOff Coatings, Inc.) and address, product name (FlameOff Fire Barrier Paint), and storage and shelf-life information.

7.3 The report holder’s contact information is the following:

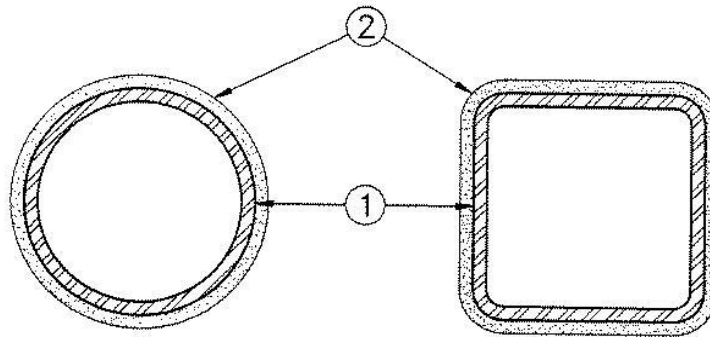
**FLAMEOFF COATINGS, INC.**  
**3915 BERYL ROAD, SUITE 130**  
**RALEIGH, NORTH CAROLINA 27607**  
**(919) 414-9129**  
[www.flameoffcoatings.com](http://www.flameoffcoatings.com)  
[info@flameoffcoatings.com](mailto:info@flameoffcoatings.com)



1. **Steel Column** Wide flange steel columns with the minimum sizes shown in the table below. Columns shall be free of dirt, loose scale and oil before application of coatings. Column shall be primed with metal alkyd primer.
2. **FlameOff Fire Barrier Paint** applied in accordance with manufacturer's instructions to the minimum dry film thicknesses shown below.
3. **Primer** (Not shown) – Alkyd Metal Primer applied at dry film thickness indicated in the table below prior to application of intumescent coating.

Fire-resistance Ratings, hr	Minimum Steel Column Size, in. (mm)	W-Shaped only Minimum Columns, W/D (Hp/A)	Minimum Primer Thickness, mils (mm)	Required Minimum FlameOff Fire Barrier Paint Thickness, mils (mm)
1	W6x12 (W150 x 18)	0.45 (300)	3.7 (0.094)	95 (2.4)
2	W8x15 (W200 x 22)	0.47 (285)	3.7 (0.094)	317 (8.1)

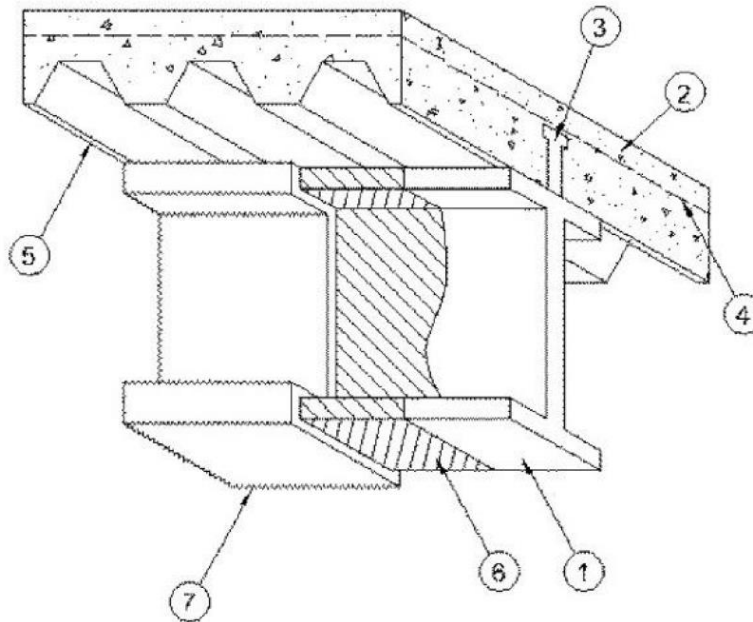
**FIGURE 1—FIRE DESIGN NO. 1: FIRE-RESISTANCE RATINGS FOR STEEL COLUMNS—1 AND 2 HOURS**



1. **Steel Column** – Square, rectangular, or circular tubular steel columns with the minimum size shown in the table below. Steel columns shall be free of dirt, loose scale, and oil before application of coatings. Column shall be primed with metal alkyd primer.
2. **FlameOff Fire Barrier Paint** applied in accordance with manufacturer's instructions to the minimum dry film thickness shown below.
3. **Primer** (Not shown) – Alkyd Metal Primer applied at dry film thickness indicated in table below prior to application of intumescent coating.

Fire-resistance Rating, hr	Minimum Steel Column Size, in. (mm)	Minimum Column A/P (Hp/A)	Minimum Primer Thickness, mils (mm)	Required FlameOff Fire Barrier Paint Minimum Thickness, mils (mm)
1	HSS 3x3x1/4 (76.2x76.2x6.4)	0.23 (170)	3.7 (0.094)	100 (2.5)
2	HSS 4x4x1/4 (101.6x101.6x6.4)	0.24 (165)	3.7 (0.094)	313 (8.0)

FIGURE 2—FIRE DESIGN NO. 2: FIRE-RESISTANCE RATINGS FOR STEEL COLUMNS – 1 and 2 HOUR



1. **Steel Beam** – Wide flange beams with the minimum sizes shown in table below. Beams shall be free of dirt, loose scale and oil before application of coatings.
2. **Lightweight Concrete** – Minimum compressive strength of 4890 lbf/in<sup>2</sup> (33.7 MPa) with minimum average unit weight of 110 lbf/ft<sup>3</sup> (1762 kg/m<sup>3</sup>). The lightweight concrete poured to a depth of 2½ inches (63.5 mm), as measured to the top plane of the steel floor units.
3. **Shear Connector** – Stud with a minimum ¾-inch (19.1 mm) diameter headed type and minimum length of 3½ inches (88.9 mm); welded along the top flange of the steel beam through the steel floor units nominally spaced 6 inches (152.4 mm) on center.
4. **Steel Welded Wire Mesh** – Minimum No 10 SWG uncoated steel welded wire mesh, 6 inches-by-6 inches (152.4 mm x 152.4 mm). During the concrete placement, the welded wire mesh must be lifted to approximately the mid-depth of the concrete topping thickness.
5. **Steel Floor Units** – 2-inch deep (50.8 mm) fluted galvanized steel units with a minimum thickness of 0.039 inches (0.99 mm)-by-36 inches (914.4 mm) wide-by-46¾ inches (1187 mm) long. The steel form units centered over each beam and attached to each beam with one ¾-inch (19.1 mm) diameter puddle weld on each side of each unit joint. Where the steel floor units overlap, each overlap must be screwed together at 18 inches (457.2 mm) from the centerline of each beam. Steel end closures [galvanized steel 1-inch wide-by-2-inch long (25.4 mm by 50.8 mm)] must be welded to each floor unit crest with 1¼-inch wide fillet welds spaced 12 inches (304.8 mm) on center to cover the edges of the floor unit sections.
6. **Primer Coating** – Phenolic alkyd metal primer. Beams shall be primed with phenolic alkyd metal primer to a minimum thickness, as indicated in table below.
7. **Intumescent Coating** – FlameOff Fire Barrier Paint water-based coating applied to the steel beams with phenolic alkyd metal primer to thicknesses, as indicated in table below.
8. **Mineral Wool Insulation (not shown)** – Minimum density of 6.15 lbf/ft<sup>3</sup> (98.5 kg/m<sup>3</sup>) with a nominal thickness of 2 inches (50.8 mm). The top surfaces of the beams where the steel floor unit crests are visible must be filled with mineral wool insulation plugs cut to 6-inch lengths (152.4 mm). All void spaces between the steel beam and steel floor units must be friction-fitted with additional pieces of the mineral wool.

Beam Rating, (hr)	Restrained or Unrestrained Beam Condition	Minimum Steel Beam Size, in. (mm)	W-Shaped only Minimum Beam, W/D (Hp/A)	Primer Minimum dry film thickness, mils (mm)	Required FlameOff Fire Barrier Paint Minimum Thickness, mils (mm)
1	UNRESTRAINED	W8X24 (W200 x 36)	0.70 (191)	3.1 (0.08)	63 (1.61)
1	UNRESTRAINED	W8X28 (W200 x 42)	0.82 (165)	3.1 (0.08)	63 (1.61)
1	RESTRAINED	W8X24 (W200 x 36)	0.70 (191)	3.1 (0.08)	63 (1.61)
1½	RESTRAINED	W8X24 (W200 x 36)	0.70 (191)	3.1 (0.08)	122 (3.09)
1½	RESTRAINED	W8X28 (W200 x 42)	0.82 (165)	3.1 (0.08)	63 (1.61)
2	RESTRAINED	W8X28 (W200 x 42)	0.80 (168)	3.1 (0.08)	110 (2.79)

FIGURE 3—FIRE DESIGN NO. 3: FIRE-RESISTANCE RATINGS FOR STEEL BEAMS – 1, 1 ½, and 2 HOUR

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION  
Section: 07 81 00—Applied Fireproofing

**REPORT HOLDER:**

FLAMEOFF COATINGS, INC.

**EVALUATION SUBJECT:**

FLAMEOFF FIRE BARRIER PAINT

**1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that FlameOff Fire Barrier Paint, described in ICC-ES evaluation report [ESR-3874](#), has also been evaluated for compliance with the Chicago Construction Codes (Title 14 of the Chicago Municipal Code) as noted below.

**Applicable code editions:**

- 2019 *Chicago Building Code* (Title 14B)

**2.0 CONCLUSIONS**

The FlameOff Fire Barrier Paint, described in Sections 2.0 through 7.0 of the evaluation report [ESR-3874](#), complies with Sections 603.1 (Item 21), 703.2, 704 and 803 of Title 14B, and is subject to the conditions of use described in this supplement.

**3.0 CONDITIONS OF USE**

The FlameOff Fire Barrier Paint described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-3874](#).
- The design, installation, conditions of use and identification of the FlameOff Fire Barrier Paint are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-3874](#).
- The design, installation and inspection are in accordance with additional requirements of Chapters 6, 7, 8, and 17 of Title 14B, as applicable.

This supplement expires concurrently with the evaluation report, reissued November 2023.

**DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION**  
**Section: 07 81 00—Applied Fireproofing**

**REPORT HOLDER:****FLAMEOFF COATINGS, INC.****EVALUATION SUBJECT:****FLAMEOFF FIRE BARRIER PAINT****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that FlameOff Fire Barrier Paint, described in ICC-ES evaluation report ESR-3874, has also been evaluated for compliance with the code noted below.

**Applicable code edition:**

2022 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

**2.0 CONCLUSIONS****2.1 CBC:**

The FlameOff Fire Barrier Paint, described in Sections 2.0 through 7.0 of the evaluation report ESR-3874, complies with CBC Sections 603.1 (Exception 21), 703.2, 704 and 803.1, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and additional requirements of CBC Chapters 7, 8 and 17, as applicable.

**2.1.1 OSHPD:**

The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

**2.1.2 DSA:**

The applicable DSA Sections of the CBC are beyond the scope of this supplement.

This supplement expires concurrently with the evaluation report, reissued November 2023.

**DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION**  
**Section: 07 81 00—Applied Fireproofing**

**REPORT HOLDER:****FLAMEOFF COATINGS, INC.****EVALUATION SUBJECT:****FLAMEOFF FIRE BARRIER PAINT****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that FlameOff Fire Barrier Paint, described in ICC-ES evaluation report ESR-3874, has also been evaluated for compliance with the code noted below.

**Applicable code edition:***2020 Florida Building Code—Building***2.0 CONCLUSIONS**

The FlameOff Fire Barrier Paint, described in Sections 2.0 through 7.0 of the evaluation report ESR-3874, complies with the *Florida Building Code—Building*. The design requirements must be determined in accordance with the *Florida Building Code—Building*. The installation requirements, noted in ICC-ES evaluation report ESR-3874 for the 2018 *International Building Code*®, meet the requirements of the *Florida Building Code—Building*.

Use of the FlameOff Fire Barrier Paint for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* has not been evaluated and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality-assurance program is audited by a quality-assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued November 2023.