

ICC-ES Evaluation Report

ESR-3997


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DIVISION: 09 00 00—FINISHES Section: 09 96 43—Fire-Retardant Coatings	REPORT HOLDER: ICP CONSTRUCTION	EVALUATION SUBJECT: FIRESHELL COATINGS: (FI0E, TB, JM-TC, BMS-TC); AND BLAZELOK COATING: TBX	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018, and 2015 [International Building Code® \(IBC\)](#)
- 2024, 2021, 2018, and 2015 [International Residential Code® \(IRC\)](#)

Property evaluated:

- Application without a prescriptive thermal barrier
- Physical properties
- Water vapor transmission

2.0 USES

Fireshell Coatings, designated as FI0E, TB, JM-TC and BMS-TC, and Blazelok TBX Coating are liquid-applied coatings intended to be applied over the surface of spray-applied foam plastic insulation complying with ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377). The coated assembly is intended for use without the application of a code-prescribed thermal barrier when installed as described in this report.

3.0 DESCRIPTION

3.1 General:

Fireshell Coatings and Blazelok TBX Coating are single-component, water-based, liquid-applied intumescent coatings and are available in black, white, and gray. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of one (1) year when stored in factory-sealed containers at temperatures between 45° and 95°F (7.2 and 35°C).

3.2 Vapor Retarder:

At a minimum average dry film thickness of 13 mils [0.013 inch (0.33 mm)] dft, Fireshell and Blazelok TBX Coatings have a vapor permeance of less than 10 perms (5.7×10^{-10} kg/Pa-s-m²) when tested in accordance with ASTM E96 Procedure A (desiccant method), and qualify as a Class III vapor retarder.

4.0 DESIGN AND INSTALLATION

4.1 Installation—General:

Fireshell Coatings and Blazelok TBX Coating must be applied in accordance with the manufacturer's published application instructions and this report. A copy of the instructions must be available on the job site at all times.

Fireshell Coatings and Blazelok TBX Coating must be mechanically mixed prior to application. The coating is applied to the required thickness using spray equipment, a brush or a roller having a medium nap. Surfaces to be coated must be inspected in accordance with the manufacturer's published installation instructions and must be dry, clean, and free of dirt, loose debris and other substances that could interfere with the adhesion of the coating. The coating must not be applied when the ambient or surface temperature is below 50°F (10.0°C) or above 95°F (35° C), and relative humidity of not more than 65%. The manufacturer must be consulted for specific application conditions.

The Fireshell Coatings and Blazelok TBX Coating may be applied over spray-applied foam plastic insulation without covering the coated assembly with the thermal barrier prescribed in IBC Section 2603.4 and 2024 IRC Section R303.4 (2021, 2018 and 2015 IRC Section R316.4).

5.0 CONDITIONS OF USE:

The Fireshell Coatings (FI0E, TB, JM-TC and BMS-TC) and Blazelok TBX Coating described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Application must comply with this report, the manufacturer's published installation instructions, and the applicable code. A copy of the installation instructions must be on the job site during application of the coating. In the event of a conflict between the manufacturer's published installation instructions and this report, this report and the code govern.
- 5.2 The application of additional interior finishes over the Fireshell coatings is limited to interior satin latex paint applied at an average dry film thickness of 3.0 mils [0.003 inch (0.08 mm)]. The use of this interior finish in conjunction with the vapor retardant coating in Item 5.3 is outside the scope of this report.
- 5.3 Application of a vapor retardant coating under the Fireshell® coatings is limited to use of moisture vapor barrier interior latex primer/finish coating consisting of Vinyl Acrylic/Styrene Butadiene having a VOC (less exempt solvents) of no more than 72 g/L (0.60 lb/gal) and a volume solids content of 29 ± 3% applied at an average dry film thickness of 2.25 mils [0.002 inch (0.06 mm)]. The use of this vapor retardant coating in conjunction with the interior finish in Item 5.2 is outside the scope of this report.
- 5.4 Installation in accordance with this report is for the specific assemblies and spray-applied foam plastic insulations described in [Table 1](#). The spray-applied foam plastic insulation must be installed in accordance with the requirements set forth in the specific ICC-ES evaluation report spray foam manufacturer's report noted in [Table 1](#).
- 5.5 For spray-applied foam plastic insulation listed in [Table 1](#) that are not covered in an ICC-ES evaluation report, the spray-applied foam plastic is limited to the test data for the coated assembly described. Evaluation for compliance of the spray foam insulation with other applicable requirements of AC377 and the IBC and IRC are outside the scope of this report and must be approved by the code official.
- 5.6 The coating is manufactured in Andover, Massachusetts, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Reports of testing in accordance with [ICC-ES Acceptance Criteria for Fire-protective Coatings Applied to Spray-applied Foam Plastic Insulation Installed without a Code-prescribed Thermal Barrier \(AC456\)](#), dated October 2015 (Editorially revised July 2024), including room corner fire testing in accordance with NFPA 286.

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-3997) along with the name, registered trademark, or registered logo of the report holder (ICP Construction) must be included in the product label.
- 7.2 In addition, all containers of Fireshell and Blazelok Coatings must be labeled with the manufacturer's address; the product name; the date of manufacture; the shelf life or expiration date and the manufacturer's instructions for application.
- 7.3 The spray-applied foam plastic insulations must be labeled in accordance with the applicable spray foam manufacturer's evaluation report (see Table 1).
- 7.4 The report holder's contact information is the following:

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**TABLE 1—USE OF INSULATION WITHOUT A PRESCRIPTIVE THERMAL BARRIER
(TESTED IN ACCORDANCE WITH NFPA 286)**

INSULATION COMPANY NAME	INSULATION TYPE	MAXIMUM THICKNESS (in.) (Vertical Surfaces)	MAXIMUM THICKNESS (in.) (Overhead Surfaces)	COATING TYPE & THICKNESS ¹ (Applied to all Foam Surfaces)	MINIMUM THEORETICAL APPLICATION RATE OF COATING ²
AMBIT Polyurethane LLC	AmbiTite 201 245fa (See Note 3)	8	12	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
AMBIT Polyurethane LLC	AmbiTite 204 (HFO) (ESR-4427)	8	12	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
BASF Corporation	WALLTITE® LWP (ESR-2642)	5½	7½	Fireshell® F10E or TB 15 mils DFT / 23 mils WFT	1.44 gal / 100 ft ²
BASF Corporation	SPRAYTITE® 178 and 81206 (ESR-5215)	5½	7½	Fireshell® F10E or TB 15 mils DFT / 23 mils WFT	1.44 gal / 100 ft ²
BASF Corporation	SPRAYTITE® 158 (ESR-5215)	5½	9½	Fireshell® F10E or TB 14 mils DFT / 21 mils WFT	1.31 gal / 100 ft ²
BASF Corporation	ENERTITE® NM (See Note 3)	9½	11½	Fireshell® F10E or TB 11 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Carlisle Spray Foam Insulation	SealTite Pro High Yield (See Note 3)	11	13½	Fireshell® Primer 5 mils DFT / 9 mils WFT	0.56 gal / 100 ft ²
				Fireshell® F10E or TB 9 mils DFT / 15 mils WFT	0.94 gal / 100 ft ²
Carlisle Spray Foam Insulation	Foamsulate 50 HY (See Note 3)	11	13½	Fireshell® Primer 5 mils DFT / 9 mils WFT	0.56 gal / 100 ft ²
				Fireshell® F10E or TB 9 mils DFT / 15 mils WFT	0.94 gal / 100 ft ²
Carlisle Spray Foam Insulation	SealTite Pro Open Cell (See Note 3)	7½	9½	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.25 gal / 100 ft ²
Carlisle Spray Foam Insulation	SealTite PRO Closed Cell, or SealTite Pro One Zero (See Note 3)	7¼	9¼	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.25 gal / 100 ft ²
Carlisle Spray Foam Insulation	Foamsulate Closed Cell or Foamsulate HFO (See Note 3)	7¼	9¼	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.25 gal / 100 ft ²
Carlisle Spray Foam Insulation	SealTite PRO OCX open cell (See Note 3)	8½	12½	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Carlisle Spray Foam Insulation	Foamsulate OCX (See Note 3)	8½	12½	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Carlisle Spray Foam Insulation	SealTite PRO N0 Trim 21 open cell (See Note 3)	8½	12½	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Carlisle Spray Foam Insulation	Foamsulate 70 (See Note 3)	8½	12½	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Carlisle Spray Foam Insulation	SealTite Pro HFO (See Note 3)	6	10	Fireshell® F10E or TB 8 mils DFT / 14 mils WFT	0.88 gal / 100 ft ²
Carlisle Spray Foam Insulation	Foamsulate 2.0 HFO (See Note 3)	6	10	Fireshell® F10E or TB 8 mils DFT / 14 mils WFT	0.88 gal / 100 ft ²
CertainTeed Corporation	CertaSpray® Closed-Cell (See Note 3)	5½	9½	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.07 gal / 100 ft ²
CertainTeed Corporation	CertaSpray® X Open Cell (See Note 3)	9½	11½	Fireshell® F10E or TB 11 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Chemical Brothers	Quadfoam NatureSeal OCX (See Note 3)	6½	10	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Chemical Brothers	Quadfoam 2.0 (See Note 3)	8½	12½	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
Dynamo Polyurethane Systems	ECO 2000 (See Note 3)	6	10	Fireshell® F10E or TB 9 mils DFT / 14 mils WFT	0.88 gal / 100 ft ²
Elastochem Specialty Chemicals, Inc.	Insulthane® Extreme (See Note 3)	6	10	Fireshell® F10E or TB 9 mils DFT / 14 mils WFT	0.88 gal / 100 ft ²
Elastochem Specialty Chemicals, Inc.	Proline Plus (See Note 3)	7¼	9¼	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.25 gal / 100 ft ²
Elastochem Specialty Chemicals, Inc.	XLS2000-W (See Note 3)	6	10	Fireshell® F10E or TB 9 mils DFT / 14 mils WFT	0.88 gal / 100 ft ²

**TABLE 1—USE OF INSULATION WITHOUT A PRESCRIPTIVE THERMAL BARRIER
(TESTED IN ACCORDANCE WITH NFPA 286) (Continued)**

INSULATION COMPANY NAME	INSULATION TYPE	MAXIMUM THICKNESS (in.) (Vertical Surfaces)	MAXIMUM THICKNESS (in.) (Overhead Surfaces)	COATING TYPE & THICKNESS ¹ (Applied to all Foam Surfaces)	MINIMUM THEORETICAL APPLICATION RATE OF COATING ²
EnergyOne America	America EOA500 (See Note 3)	11½	11½	Fireshell® F10E or TB 14 mils DFT / 20 mils WFT	1.25 gal / 100 ft²
Gaco Western	GacoGreen 052 and GacoGreen 052N (See Note 3)	5¼	9¼	Fireshell® F10E or TB 17 mils DFT / 26 mils WFT	1.63 gal / 100 ft²
Gaco Western	F1880 CC (See Note 3)	9	11	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Gaco Western	F4500 OC (See Note 3) (See Note 4)	13	21	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft²
Gaco Western	GacoEZSpray F4500 (See Note 3)	13	21	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft²
Henry Company	Permax 2.0X and Permax 2.0X Fast (See Note 3)	7¼	9¼	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.25 gal / 100 ft²
Huntsman Building Solutions	Sealection® NM Open-Cell (ESR-2668)	9¼	11¼	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal/100 ft²
Huntsman Building Solutions	SEALECTION® 500 (ESR-1172)	7½	11½	Fireshell® F10E, TB or Blazelok TBX 11 mils DFT / 17 mils WFT	1.07 gal / 100 ft²
Huntsman Building Solutions	Agribalance® (ESR-2600)	5½	11½	Fireshell® F10E, TB or Blazelok TBX 15 mils DFT / 23 mils WFT	1.44 gal / 100 ft²
Huntsman Building Solutions	HEATLOK SOY® 200 PLUS (See Note 3)	9¼	11¼	Fireshell® F10E, TB or Blazelok TBX 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft²
Huntsman Building Solutions	APX™ (See Note 3)	7½	11½	Fireshell® F10E, TB or Blazelok TBX 11 mils DFT / 17 mils WFT	1.07 gal / 100 ft²
Huntsman Building Solutions	Heatlok® XT-s (ESR-3824)	7½	11½	Fireshell® F10E, TB or Blazelok TBX 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	Heatlok® XT-w (ESR-3883)	7½	11½	Fireshell® F10E, TB or Blazelok TBX 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	Heatlok® HFO (ESR-4073)	7½	11½	Fireshell® F10E, TB or Blazelok TBX 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	Classic Ultra (ESR-1826)	7½	11½	Fireshell® F10E or TB 14 mils DFT / 21 mils WFT	1.31 gal / 100 ft²
Huntsman Building Solutions	ProSeal (ESR-3500)	7½	11¼	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	ProSeal LE (ESR-3500)	7½	11¼	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	Foam-Lok open cell foam (See Note 3)	7½	11¼	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	FL-2000-4G closed cell foam (See Note 3)	7½	11¼	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Huntsman Building Solutions	Heatlock HFO Pro closed cell (See Note 3)	7½	11½	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft²
ICP Construction	HandiFoam HVLP MD 2.0 HFO (See Note 3)	6	10	Fireshell F10E or TB 8 mils DFT / 14 mils	0.88 gal / 100 ft²
Johns Manville	JM Corbond MCS™ (See Note 3)	6	9½	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 20 mils WFT	1.25 gal / 100 ft²
Johns Manville	JM Corbond® oc (See Note 3)	7½	9½	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Johns Manville	JM Corbond® ocx (See Note 3)	7½	9½	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²
Johns Manville	JM Corbond® III (See Note 3)	7½	11½	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft²

**TABLE 1—USE OF INSULATION WITHOUT A PRESCRIPTIVE THERMAL BARRIER
(TESTED IN ACCORDANCE WITH NFPA 286) (Continued)**

INSULATION COMPANY NAME	INSULATION TYPE	MAXIMUM THICKNESS (in.) (Vertical Surfaces)	MAXIMUM THICKNESS (in.) (Overhead Surfaces)	COATING TYPE & THICKNESS ¹ (Applied to all Foam Surfaces)	MINIMUM THEORETICAL APPLICATION RATE OF COATING ²
Natural Polymers	Natural-Thermo 2.0 HFO (See Note 3)	6	10	Fireshell [®] F10E or TB 8 mils DFT / 14 mils	0.88 gal / 100 ft ²
Quadrant	EnviroSeal Platinum Max (See Note 3)	8	10	Fireshell [®] F10E or TB 11 mils DFT / 16 mils WFT	1.00 gal / 100 ft ²
Rhino Linings Corporation	ThermalGuard OC.5R (ESR-2100)	7½	11½	Fireshell [®] F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft ²
Rhino Linings Corporation	ThermalGuard OC.5 (ESR-2100)	7½	11½	Fireshell [®] F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft ²
Rhino Linings Corporation	ThermalGuard CC2 (ESR-2100)	7½	9½	Fireshell [®] F10E or TB 12 mils DFT / 18 mils WFT	1.13 gal / 100 ft ²
SES Foam	Sucraseal [™] 0.5 (See Note 3)	11½	11½	Fireshell [®] F10E or TB 14 mils DFT / 20 mils WFT	1.25 gal / 100 ft ²
SWD Urethane	QS 108 Open Cell (See Note 3)	8	13	Fireshell [®] F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft ²
SWD Urethane	QS 112 Closed Cell (See Note 3)	6	8	Fireshell [®] F10E or TB 11 mils DFT / 17 mils WFT	1.06 gal / 100 ft ²

For SI: 1 inch = 25.4 mm; 1 mil = 0.0254 mm; 1 gallon = 3.38 L; 1 ft² = 0.93 m².

Notes:

¹DFT = Dry Film Thickness; WFT = Wet Film Thickness

²As reported in the coating manufacturer's application instructions. Actual application rate, based upon specific project conditions, must be in accordance with the coating manufacturer's application instructions.

³Recognition is limited to the NFPA 286 test data for the coated assembly described. Evaluation for compliance of the spray foam insulation with the other applicable requirements of ICC-ES AC308 and the IBC and IRC are outside the scope of the report.

⁴Use of gray or black coatings at the noted thickness for this product has not been evaluated. Use of black and gray coatings are limited to a maximum thickness of 11½ inches on vertical surfaces and 13½ inches on overhead surfaces.