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**ESR-3997**

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# ICC-ES Evaluation Report

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**DIVISION: 09 00 00—FINISHES**

**SECTION: 09 96 43—FIRE-RETARDANT COATINGS**

**REPORT HOLDER:**

**TPR<sup>2</sup> CORPORATION**

**EVALUATION SUBJECT:**

**FIRESHELL COATINGS: (FIOE, TB, JM-TC, BMS-TC); AND  
BLAZELOK COATING: TBX**



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**ESR-3997**

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AND BLAZELOK COATING: TBX**

## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2018 and 2015 *International Building Code*® (IBC)
- 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 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 ( $5.7 \times 10^{-10}$  kg/Pa-s-m<sup>2</sup>) 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 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, 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 (0.08 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 (0.06 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 Recognition in 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. For spray-applied foam plastic insulation that is not covered in an ICC-ES evaluation report, the evaluation is limited as noted in Table 1, Footnote 3.
- 5.5 The coating is manufactured in Essex, Connecticut, 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 2018), including room corner fire testing in accordance with NFPA 286.

**7.0 IDENTIFICATION**

- 7.1 All containers of Fireshell and Blazelok Coatings must be labeled with the manufacturer's name (TPR<sup>2</sup> Corporation) and address; the product name; the date of manufacture, the shelf life or expiration date; the manufacturer's instructions for application, and the evaluation report number (ESR-3997).
- 7.2 The spray-applied foam plastic insulations must be labeled in accordance with the applicable spray foam manufacturer's evaluation report (see Table 1).
- 7.3 The report holder's contact information is the following:

**TPR<sup>2</sup> CORPORATION**  
**POST OFFICE BOX 825**  
**SAUNDERSTOWN, RHODE ISLAND 02874**  
**(860) 767-8772**  
[www.tpr2.com](http://www.tpr2.com)  
[mail@tpr2.com](mailto:mail@tpr2.com)

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

INSULATION TYPE	MAXIMUM THICKNESS (in.) (Vertical Surfaces)	MAXIMUM THICKNESS (in.) (Overhead Surfaces)	COATING TYPE & THICKNESS <sup>1</sup> (Applied to all Foam Surfaces)	MINIMUM THEORETICAL APPLICATION RATE OF COATING <sup>2</sup>
BASF WALLTITE® (ESR-2642)	5½	7½	Fireshell® F10E or TB 15 mils DFT / 23 mils WFT	1.23 gal / 100 ft <sup>2</sup>
BASF WALLTITE® 178 and 81206 (ESR-2642)	5½	7½	Fireshell® F10E or TB 15 mils DFT / 23 mils WFT	1.23 gal / 100 ft <sup>2</sup>
BASF SPRAYTITE® 158 and 81205 (ESR-2642)	5½	9½	Fireshell® F10E or TB 14 mils DFT / 21 mils WFT	1.16 gal / 100 ft <sup>2</sup>
BASF ENERTITE® NM (ESR-3102)	9½	11½	Fireshell® F10E or TB 11 mils DFT / 18 mils WFT	1.18 gal / 100 ft <sup>2</sup>
Sealection® NM Open-Cell (ESR-2668)	9¼	11¼	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.15 gal/100 ft <sup>2</sup>
CertainTeed CertaSpray® Closed-Cell (ESR-3758)	5½	9½	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.10 gal / 100 ft <sup>2</sup>
CertainTeed CertaSpray® X Open Cell (See Note 3)	9½	11½	Fireshell® F10E or TB 11 mils DFT / 18 mils WFT	1.12 gal / 100 ft <sup>2</sup>
Chemical Brothers Quadfoam 500 (See Note 3)	11	13½	Fireshell® Primer 5 mils DFT / 9 mils WFT Fireshell® F10E or TB 9 mils DFT / 15 mils WFT	0.53 gal / 100 ft <sup>2</sup>  1 gal / 100 ft <sup>2</sup>
Chemical Brothers Quadfoam NatureSeal OCX (See Note 3)	6½	10	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.15 gal / 100 ft <sup>2</sup>
Chemical Brothers Quadfoam 2.0 (See Note 3)	8½	12½	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.08 gal / 100 ft <sup>2</sup>
Covestro EocBay™ Closed Cell (See Note 3)	7¼	9¼	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.24 gal / 100 ft <sup>2</sup>

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

Covestro Bayseal™ OC (See Note 3)	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.24 gal / 100 ft <sup>2</sup>
Accella Bayseal™ Closed Cell (ESR-2072)	7 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.24 gal / 100 ft <sup>2</sup>
Demilec SEALECTION® 500 (ESR-1172)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Blazelok TBX 11 mils DFT / 17 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Demilec Agribalance® (ESR-2600)	5 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Blazelok TBX 15 mils DFT / 23 mils WFT	1.23 gal / 100 ft <sup>2</sup>
Demilec HEATLOK SOY® 200 PLUS (ESR-3210)	9 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E, TB or Blazelok TBX 11 mils DFT / 17 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Demilec APX™ (ESR-3470)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Blazelok TBX 11 mils DFT / 17 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Demilec Heatlok® XT-s (ESR-3824)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Blazelok TBX 12 mils DFT / 18 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Demilec Heatlok® XT-w (ESR-3883)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Blazelok TBX 12 mils DFT / 18 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Demilec Heatlok® HFO (ESR-4073)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E, TB or Blazelok TBX 12 mils DFT / 18 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Elastochem Proline Plus (See Note 3)	7 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.24 gal / 100 ft <sup>2</sup>
EnergyOne America EOA500 (ESR-3686)	11 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E or TB 14 mils DFT / 20 mils WFT	1.25 gal / 100 ft <sup>2</sup>
Gaco Western GacoGreen 052 and GacoGreen 052N (See Note 3)	5 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E or TB 14 mils DFT / 26 mils WFT	1.6 gal / 100 ft <sup>2</sup>
Gaco Western GacoOnePass F1850 (See Note 3)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Gaco Western F1880 CC (See Note 3)	9	11	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.23 gal / 100 ft <sup>2</sup>
Gaco Western F4500 OC (See Note 3)(See Note 4)	13	21	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.16 gal / 100 ft <sup>2</sup>
Henry Company Permax 2.0X and Permax 2.0X Fast (ESR-3647)	7 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E, TB or Fireshell® BMS-TC 12 mils DFT / 20 mils WFT	1.24 gal / 100 ft <sup>2</sup>
Icynene Classic Max (ESR-1826)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E or TB 14 mils DFT / 21 mils WFT	1.1 gal / 100 ft <sup>2</sup>
Icynene ProSeal (ESR-3500)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Icynene ProSeal LE (ESR-3500)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.2 gal / 100 ft <sup>2</sup>
Johns Manville JM Corbond MCST™ (ESR-3159)	6	9 <sup>1</sup> / <sub>2</sub>	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 20 mils WFT	1.1 gal / 100 ft <sup>2</sup>
Johns Manville JM Corbond® oc (ESR-3776)	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.23 gal / 100 ft <sup>2</sup>
Johns Manville JM Corbond® ocx (See Note 3)	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.23 gal / 100 ft <sup>2</sup>
Johns Manville JM Corbond® III (See Note 3)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® JMTC, Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.23 gal / 100 ft <sup>2</sup>

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

LaPolla Industries Foam-Lok open cell foam (See Note 3)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E or TB 13 mils DFT / 20 mils WFT	1.24 gal / 100 ft <sup>2</sup>
LaPolla Industries FL-2000-4G closed cell foam (See Note 3)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.23 gal / 100 ft <sup>2</sup>
Rhino Linings ThermalGuard OC.5R (ESR-2100)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.16 gal / 100 ft <sup>2</sup>
Rhino Linings ThermalGuard OC.5 (ESR-2100)	7 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.16 gal / 100 ft <sup>2</sup>
Rhino Linings ThermalGuard CC2 (ESR-2100)	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E or TB 12 mils DFT / 18 mils WFT	1.23 gal / 100 ft <sup>2</sup>
SES Foam Sucraseal™ 0.5 (ESR-3375)	11 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	Fireshell® F10E or TB 14 mils DFT / 20 mils WFT	1.25 gal / 100 ft <sup>2</sup>
SWD QS 108 Open Cell (See Note 3)	8	13	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.16 gal / 100 ft <sup>2</sup>
SWD QS 112 Closed Cell (See Note 3)	6	8	Fireshell® F10E or TB 11 mils DFT / 17 mils WFT	1.16 gal / 100 ft <sup>2</sup>

For SI: 1 inch = 25.4 mm; 1 mil = 0.0254 mm; 1 gallon = 3.38 L; 1 ft<sup>2</sup> = 0.93 m<sup>2</sup>.

**Notes:**

<sup>1</sup>DFT = Dry Film Thickness; WFT = Wet Film Thickness

<sup>2</sup>As 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.

<sup>3</sup>Recognition 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 AC377 and the IBC and IRC are outside the scope of the report.

<sup>4</sup>Use 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 11<sup>1</sup>/<sub>2</sub> inches on vertical surfaces and 13<sup>1</sup>/<sub>2</sub> inches on overhead surfaces.