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FS-IB™ IGNITION BARRIER

CSI Section:
09 96 43 Fire-Retardant Coatings

1.0 RECOGNITION

Flame Seal FS-IB™ has been evaluated for use as part of an alternative ignition barrier assembly when used as a coating over the spray foam plastic products. The composition and fire resistance properties of the Flame Seal FS-IB™ were evaluated for compliance with the following codes:

- 2018, 2015 and 2012 International Building Code® (IBC)
- 2018, 2015 and 2012 International Residential Code® (IRC)

2.0 LIMITATIONS

Use of Flame Seal FS-IB™ recognized in this report is subject to the following limitations:

2.1 The application of any additional interior finish over the fire-protective coating is beyond the scope of this report.

2.2 Approval of Flame Seal FS-IB™ for use with any insulation product listed herein is conditional upon that insulation products' current approval for use with Flame Seal FS-IB™. Users must independently verify the current validity of any evaluation report referenced herein.

2.3 Flame Seal FS IB™ is limited to use as an alternative ignition barrier assembly when applied to the spray foam plastics indicated in Table 1 of this report.

2.4 Where alternative thermal barrier assemblies are required, Flame Control Coating's Flame Control 60-60A as referenced in Table 2 of this report and ER-596 is required.

2.5 Flame Seal FS-IB™ is produced by Flame Seal Products, Inc. in in Houston, Texas.

3.0 PRODUCT USE

3.1 General: Flame Seal FS-IB™ when applied to the spray applied polyurethane foam insulations listed in Table 1 of this report may be installed in an attic or crawl space without a prescriptive ignition barrier in accordance with Sections 2603.4.1.6 of the 2018, 2015, and 2012 IBC and Sections R316.5.3 and R316.5.4 of the 2018, 2015, and 2012 IRC when all the following conditions are met:

- Entry to the attic or crawl space is only to repair, maintain, and service utilities and no storage is permitted.
- There are no interconnected attic or crawl space areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Attic ventilation is provided when required by Section 1202.2 of the 2018 IBC, Section 1203.2 of the 2015 or 2012 IBC, or Section R806 of the 2018, 2015, or 2012 IRC, as applicable, except when air impermeable insulation is permitted in unvented attics in accordance with Section R806.5 of the 2018, 2015 and 2012 IRC.
- Under-floor (crawl space) ventilation is provided when required by Section 1202.4 of the 2018 IBC, Section 1203.4 of the 2015 IBC, Section 1203.3 of the 2012 IBC, or Section R408.1 of the 2018, 2015, or 2012 IRC, as applicable.
- The foam plastic insulation is limited to the maximum thickness and density tested, shown in Table 1 of this report.
- Combustion air is provided in accordance with Section 701.1 of the Uniform Mechanical Code, or Section 701 of the 2018, 2015, or 2012 IMC, as applicable.

3.2 Application: Flame Seal FS-IB™ shall be applied in accordance with Flame Seal Products, Inc.'s installation instructions, the spray foam plastic manufacturer's installation instructions, this evaluation report and the applicable codes listed in Section 1.0 of this report. Where conflicts occur, the more restrictive governs. The manufacturer's published installation instructions and this report shall be available at the jobsite for quality control purposes.

Flame Seal FS-IB™ shall be applied to foam plastic insulation at the installed thickness shown in Table 1 of this report. Before application of Flame Seal FS-IB™, the foam plastic insulation shall be allowed to cool and cure a minimum of one hour or as required by the foam plastic manufacturer. The surface of the foam plastic shall be free of dirt, debris, and other contaminants and shall be firm and dry before application.

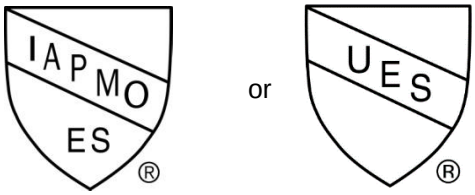
Flame Seal FS-IB™ shall be thoroughly mixed using a high-speed drill mixer before application. The coating shall be applied by airless sprayer, brush, or roller in a single coat to the spray foam insulation in a uniform manner. Application shall occur at temperatures ranging from 50 ºF to 90 ºF (10 ºC to 32 ºC) unless special instructions are provided by the manufacturer for applications at colder temperatures. For applications in relative humidity at the time of application greater than 65 percent, fans shall be used to circulate the air for proper curing.

4.0 PRODUCT DESCRIPTION

Flame Seal FS-IB™ intumescent coating is water-based and supplied in 5-gallon (18.9 L) containers weighing 62 pounds (28.1 kg) and 55-gallon (208 L) drums weighing 682 pounds (309 kg) and is available in the colors of white and platinum gray. The coating material has a maximum shelf life of 6 months when stored in factory sealed containers. The material shall be protected from freezing and is recommended to be stored at temperatures between 40 deg. F and 80 deg. F (4.4 to 26.7 deg. C). Flame Seal FS-IB™ is dry-to-the-touch in 1 to 2 hours and shall be allowed to dry for 2 to 4 hours before recoating.

5.0 IDENTIFICATION

Containers of Flame Seal FS-IB™ are identified by the Flame Seal Products, Inc. name and address, the product name (Flame Seal FS-IB™), date of manufacture, product shelf life, conditions for storage and the evaluation report number (ER-600). Identification shall also include the IAPMO Uniform Evaluation Service Mark of Conformity. Either Mark of Conformity may be used as follows:



IAPMO UES ER-600

6.0 SUBSTANTIATING DATA

The following data was provided to substantiate recognition of Flame Seal FS-IB™ as an ignition barrier for use with foam plastic insulation. Test results are from laboratories in compliance with ISO/IEC 17025:

6.1 Data in accordance with Appendix X of the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, AC377, approved April 2016, editorially revised April 2018.

6.2 Testing in accordance with NFPA 286.

6.3 Manufacturer's descriptive literature and installation instructions.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Flame Seal FS-IB™ intumescent coatings for conformance to the codes shown in Section 1.0 of this report and documents the product's certification. Flame Seal FS-IB™ is produced at locations noted in Section 2.5 of this report under a quality control program with periodic inspections under the supervision of IAPMO UES.

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For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

TABLE 1 – ALTERNATIVE IGNITION BARRIER ASSEMBLIES

Polyurethane Foam Plastic Insulation	Spray Foam Evaluation Report No.	Ignition Barrier Product Name[1]	Maximum Thickness (in) Walls, Vertical Surfaces & Attic Floors	Maximum Thickness (in) Ceilings, Underside of Roof Sheathing/Rafters & Floors	Application of FS-IB™ Coating			
					Minimum Installed Thickness (mils)		Theoretical Application Rate	
					Wet Film	Dry Film	gallons 100sqft	square feet gallon
BASF Corporation Enertite G	ESR-3102	FS-IB™	12	16	7	4	0.40	250
BASF Corporation Enertite NM	ESR-3102	FS-IB™	12	16	7	4	0.40	250
Carlisle Foamsulate	ER-351	FS-IB™	6	10	4	3	0.25	400
Carlisle Foamsulate 50 HY	ER-540	FS-IB™	6	10	4	3	0.25	400
Carlisle Sealtite Pro No Mix	ER-616	FS-IB™	6	10	4	3	0.25	400
Carlisle Sealtite Pro High Yield	ER-623	FS-IB™	6	10	4	3	0.25	400
Carlisle Sealtite Pro Open Cell	ER-624	FS-IB™	6	10	4	3	0.25	400
Creative Polymer Solutions Air Lok 45	ER-554	FS-IB™	10	15	6	3	0.37	267
Creative Polymer Solutions Accufoam OC	ER-699	FS-IB™	10	15	6	3	0.37	267
Demilec Sealection 500	ESR-1172	FS-IB™	8	14	6	3	0.37	267
Icynene Classic	ESR-1826	FS-IB™	8	14	6	4	0.37	267
Icynene Classic Ultra	ESR-1826	FS-IB™	8	14	6	4	0.37	267
Icynene Classic Ultra Select	ESR-1826	FS-IB™	8	14	6	4	0.37	267
Icynene OC No Mix	CCRR-1123	FS-IB™	9.5	15	6	3	0.37	267
LaPolla Foam-Lok FL 450	ESR-4242	FS-IB™	8	14	6	4	0.37	267
Lapolla Industries Foam-Lok FL 500	ESR-2847	FS-IB™	9.5	15	6	3	0.37	267
SES Polyurethane Systems Easy Seal .5 Open Cell	ER-492	FS-IB™	12	18	4	3	0.25	400
Sustainable Polymers .50 OC	ER-513	FS-IB™	6	10	4	3	0.25	400
SWD Urethane Quik-Shield 106	CCRR-1011	FS-IB™	8	14	6	3	0.37	267
SWD Urethane Quik-Shield 108	CCRR-1051	FS-IB™	8	14	6	3	0.37	267
Victory Polymers Corp. VPC-Onestroke	ER-599	FS-IB™	10	15	6	3	0.37	267
Victory Polymers Corp. VPC-50 OC	ER-674	FS-IB™	6	10	4	3	0.25	400
XtremeSeal 0.5	ER-538	FS-IB™	12	18	4	3	0.25	400

For **SI:** 1 mil = 0.0254 mm, 1 inch = 25.4 mm, 1 gal = 3.79 L

TABLE 2 - FOAM PLASTIC PRODUCTS APPROVED FOR USE WITH FLAME CONTROL 60-60A AS ALTERNATIVE THERMAL BARRIER ASSEMBLIES[4]

Manufacturer's Name	Product Name	Product Density	Evaluation Report[1, 2]	Application of Flame Control 60-60A			Maximum Thickness of Spray Foam (inches)	
				Minimum Installed Thickness (mils)		Theoretical Application Rate (gallons/100 square feet)[3]		
				Wet Film	Dry Film		Vertical	Overhead
BASF	Spraytite 158	2.0 pcf	CCRR-1031 and ESR-2642	20	13	1.3	7.5	11.5
BASF	Spraytite SP	2.0 pcf	CCRR-1031 and ESR-2642	20	13	1.3	7.5	11.5
Carlisle	Foamsulate 50	0.5 pcf	ER-351	14	9	0.87	6	10
Carlisle	Foamsulate OCX	0.5 pcf	ER-394	20	13	1.3	7.5	11.5
Carlisle	Foamsulate 50 HY	0.5 pcf	ER-540	14	9	0.87	6	10
Carlisle	Sealtite PRO OCX	0.5 pcf	ER-615	20	13	1.3	7.5	11.5
Carlisle	Sealtite PRO No Mix	0.5 pcf	ER-616	14	9	0.87	6	10
Carlisle	Sealtite PRO Closed Cell	2.0 pcf	ER-621	14	9	0.87	6	10
Carlisle	SealTte Pro High Yield	0.5	ER-623	14	9	0.87	6	10
Carlisle	SealTite PRO OC	0.5 pcf	ER-624	14	9	0.87	6	10
Carlisle	Foamsulate Closed Cell	2.0	ER-626	14	9	0.87	6	10
Carlisle	Sealtite PRO One Zero	2.0	ER-640	14	9	0.87	6	10
Carlisle	Foamsulate HFO	2.0	ER-650	14	9	0.87	6	10
Demilec	Heatlok HFO Pro Closed Cell	2.0	ER-565	18	12	1.12	5.5	9.5

Demilec	Heatlok HFO High Lift	2.0	ESR-4073	18	12	1.12	5.5	9.5
Johns Manville	JM Corbond OCX spf	0.5	ER-372	20	13	1.3	7.5	11.5
Johns Manville	JM Gen IV	2.0	ER-700	14	9	0.87	6	10
Rhino Linings	Thermal Guard CC2 ECO	2.0	ESL-1121	14	9	0.87	5.5	9.5
Rhino Linings	Thermal Guard OC.5 B-D	0.5	ESR-2100	14	9	0.87	6	10
SWD	108	0.4	CCRR-1051	14	9	0.87	8	12
SWD	Quik-Shield 108 OC YM	0.4	CCRR-1051	14	9	0.87	8	12
SWD	Quik-Shield 112	2.0 pcf	CCRR-1011	20	13	1.3	9.5	9.5
SWD	Quik-Shield 118	2.0	CCRR-1093	20	13	1.3	7.5	11.5
Sustainable Polymers	.50 OCX	0.5	ER-512	20	13	1.3	7.5	11.5
Sustainable Polymers	.50 OC	0.5	ER-513	14	9	0.87	6	10
Thermoseal	2000/2000W	2.0	ER-581	14	9	0.87	6	10
Victory Polymers	VPC-50 OC	0.5	ER-674	14	9	0.87	6	10

For SI: 1mil = 0.0254 mm, 1 inch = 25.4 mm, 1 pcf = 16.02 kg/m^3

Notes:

1. Approval of Flame Control 60-60A for use with any insulation product listed herein is conditional upon that insulation product's current approval for use with Flame Control 60-60A. Users must independently verify the current validity of any evaluation report referenced herein.
2. ER – Evaluation Reports from IAPMO Uniform Evaluation Service
   CCRR – Code Compliance Research Reports from Intertek
   ESR – Evaluation Service Reports from ICC-ES
   ESL – Evaluation Service Listing from ICC-ES
3. Theoretical coating application rates are based strictly on minimum wet film thickness requirements and shall be increased for site-specific conditions such as foam plastic surface texture, overspray loss, container and other residues, application technique and environmental conditions.
4. Application of the Flame Control 60-60A coating shall be in accordance with the requirements in ER-596.