14 December 2020

Matt Brubaker
Indigo Contracting NW
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Portland, OR 97201
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RE: Project: Vancouver Avenue Apartments – Phase 1 Parking Canopies
Location: Portland, OR
Architect: Smith Dalia
Isolatek Engineering Judgment: 07NF20254, dated 10 September 2020

Dear Mr. Brubaker:

We have received and reviewed the Engineering Judgment documentation, 07NF20254, prepared by Nicholas Federici, Isolatek International Engineering Staff, dated 10 September 2020, regarding the use of CAFCO SprayFilm WB 4 Intumescent Fire Resistive Material (IFRM) on structural steel members at the above referenced project, along with all pertinent data. It is desired that the appropriate thickness of CAFCO SprayFilm WB 4 be determined so that the required hourly fire-resistance rating of the structural steel members is provided in accordance with ASTM E119/UL 263, "Standard Test Methods for Fire Tests of Building Construction and Materials," as well as the 2014 Oregon Construction Specialty Code.

UL has not tested for this application. As a result, an Alternative Method per Section 703.3 of the 2014 Oregon Construction Specialty Code is required in the form of an Engineering Judgment to address the firestopping of this condition. Section 703.3 states, "The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263. The required **fire resistance** of a building element, component or assembly shall be permitted to be established by any of the following methods or procedures: 1. Fire-resistance designs documented in sources; 2. Prescriptive designs of fire-resistance-rated building elements, components or assemblies as prescribed in Section 721; 3. Calculations in accordance with Section 722; 4. Engineering analysis based on a comparison of building element, component or assemblies designs having *fire-resistance ratings* as determined by the test procedures set forth in ASTM E119 or UL 263; 5. Alternative protection methods as allowed by Section 104.11."

It is standard industry practice to determine thickness based on calculated A/P and W/D rations. These ratios are determined by dividing the weight, W, of the steel section in lbs./ft. (or the cross-sectional area, A, of the steel member) by the heated perimeter, D (or P), of protection at the interface of the protection material through which heat is be transferred to the steel, in inches. A/P ratio equation for steel members is provided in the Underwriters Laboratories, Inc. (UL) Directory. It is also standard industry practice to utilize column designs (X- or Y-Series UL designs) as a basis for determining thickness

for miscellaneous shapes as these are more conservative due to the four-sided exposure, as opposed to a three-sided exposure. In addition, column tests do not account for the heat sink properties of a concrete floor. Thicknesses shown in the following table were determined based on the derived W/D ratio of the wide-flange steel beam, HSS steel member, and the miscellaneous shape (i.e., rebar, flat plates, and channels) and the corresponding column design thickness from UL Design.

Steel Size	W/D or A/P	Thickness	Rating	UL Design Basis
W8 x 10 – Roof Beam	0.37	263 mils	1.5-hours	X649*
W8 x 21 – Roof Beam	0.67	213 mils	2-hours	X649*
HSS 5 x 5 x ½ - Column	0.45	207 mils	2-hours	X650 – Y614
C15 x 13.9 – Standard 'C'-channel	0.80	121 mils	2-hours	X649

Note: *X649 column thicknesses are based on beam (3-sided) W/D ratios for the given steel members

Limiting temperatures for beam evaluations are for a limiting average steel temperature of 1100°F, or a limiting individual steel temperature of 1200°F at any single measured point. Based on alternative methods of testing in accordance with ASTM E119, item #26 Conditions of Acceptance, the column thicknesses will provide limiting average steel temperatures of 1000°F, or a limiting individual steel temperature of 1200°F at any single measured point. These temperatures are more stringent than those required for beam evaluations.

Pursuant to our review of the evaluation presented, we find the report provides substantial justification to support the conclusions drawn that the required fire-resistance rating in accordance with ASTM E119 would be obtained, provided that the CAFCO SprayFilm WB 4 is installed in accordance with manufacturer's written application installation instructions and methods.

This review is limited to those specific assemblies depicted and only for use as part of the above referenced project and cannot be extended to other assemblies or projects. The rating of the fireproofing system is dependent on the performance of the surrounding structure under fire exposure. The contractor is responsible for the compliant installation of the referenced engineering judgment.

Prepared by: John D. Campbell, P.E.

JOHN D CAMPBELL Digitally signed by JOHN D CAMPBELL
Date: 2020.12.14 20:38:00 -06'00'

UL Product iQ™

BXUV.X649 - FIRE-RESISTANCE RATINGS - ANSI/UL 263

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

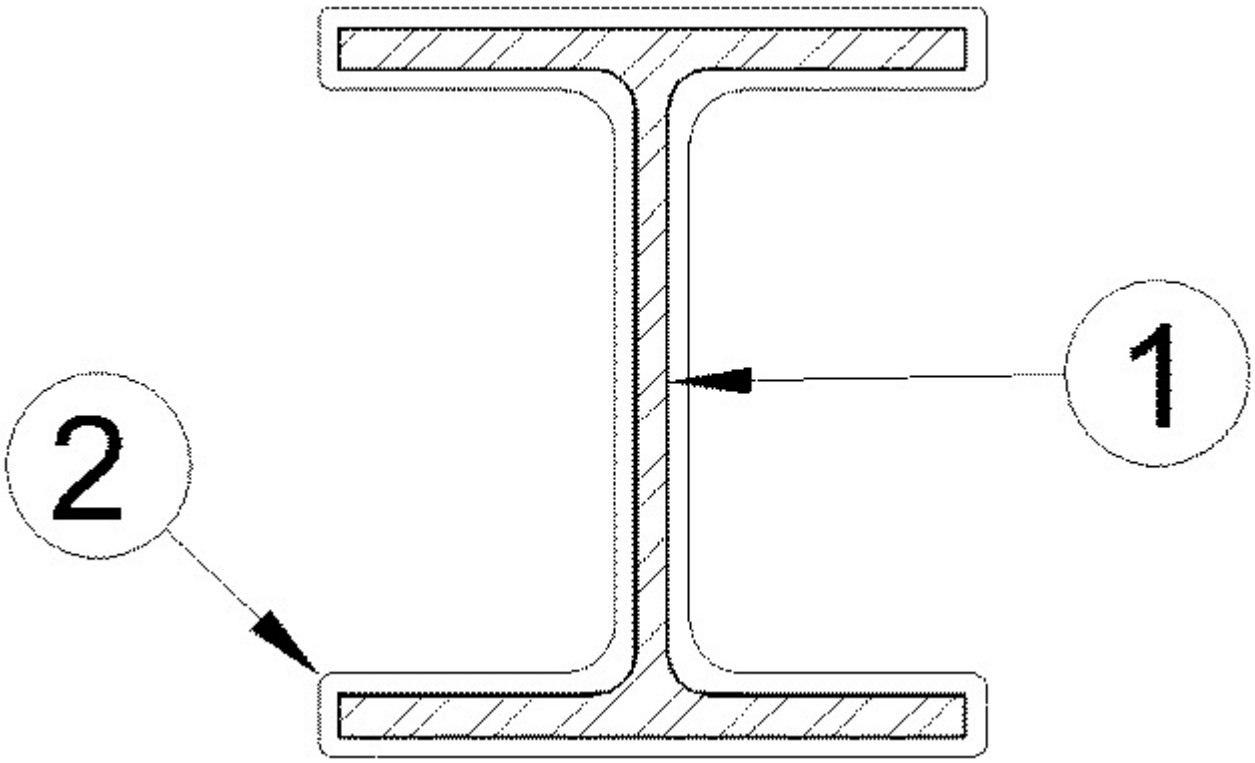
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. X649

October 04, 2016

Ratings - 1, 1-1/2, 2, 3 and 4 Hr. (See Item 2)

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. **Steel Column —** Wide flange steel columns with the minimum sizes shown in the tables below. Columns shall be free of dirt, loose scale and oil. Columns shall be primed with a phenolic modified alkyd resin primer, a metal alkyd primer, an acrylic primer or an epoxy primer at a nominal thickness of 2 mil.

2. **Mastic and Intumescent Coatings* —** Coating spray, brush or trowel applied directly from containers to desired thickness. See tables below for appropriate final dry thickness and applicable rating.

Steel Size	W/D	1 Hr Min Thickness, In.	1-1/2 Hr Min Thickness, In.	2 Hr Min Thickness, In.	3 Hr Min Thickness, In.	4 Hr Min Thickness, In.
W8 x 10	0.33	0.145	0.266	NR	NR	NR
W12 x 14	0.36	0.133	0.263	NR	NR	NR
W12 x 16	0.41	0.117	0.230	NR	NR	NR
W6 x 12	0.44	0.109	0.215	0.338	NR	NR
W8 x 15	0.48	0.100	0.197	0.310	NR	NR
W10 x 22	0.52	0.092	0.182	0.286	NR	NR
W4 x 13	0.55	0.087	0.172	0.271	NR	NR
W6 X 16	0.58	0.083	0.163	0.257	0.504	NR
W8 x 24	0.59	0.075	0.130	0.213	0.504	NR
W14 x 34	0.63	0.075	0.130	0.213	0.489	NR
W8 x 28	0.68	0.070	0.130	0.213	0.453	NR
W8 x 35	0.74	0.065	0.128	0.201	0.416	NR
W10 x 39	0.78	0.061	0.121	0.191	0.395	NR
W10 x 49	0.84	0.057	0.113	0.177	0.367	NR
W10 x 45	0.89	0.054	0.106	0.167	0.346	NR

W16 x 57	0.95	0.050	0.099	0.157	0.324	NR
W8 x 48	1.00	0.048	0.095	0.149	0.308	NR
W14 x 90	1.07	0.045	0.088	0.139	0.288	NR
W10 x 68	1.14	0.042	0.083	0.131	0.270	NR
W18 x 97	1.21	0.040	0.078	0.123	0.255	NR
W10 x 77	1.28	0.038	0.074	0.116	0.241	NR
W16 x 100	1.36	0.036	0.069	0.109	0.227	NR
W10 x 88	1.45	0.034	0.065	0.103	0.213	NR
W14 x 132	1.54	0.032	0.061	0.097	0.200	NR
W12 x 120	1.64	0.030	0.058	0.091	0.188	NR
W33 x 221	1.72	0.028	0.058	0.088	0.188	0.433
W14 x 159	1.77	0.028	0.056	0.085	0.187	0.423
W14 x 176	1.95	0.025	0.051	0.077	0.178	0.384
W14 x 193	2.12	0.023	0.047	0.071	0.164	0.353
W14 x 211	2.30	0.023	0.043	0.066	0.151	0.326
W14 x 233	2.52	0.023	0.040	0.060	0.138	0.297
W14 x 257	2.75	0.023	0.036	0.055	0.126	0.272
W14 x 283	3.00	0.023	0.033	0.050	0.116	0.194

NR = No Rating

As an alternate to the above table, the required thickness of coating (in inches) to be applied to all surfaces of wide flange steel columns for 1 hour ratings, in the W/D range of 0.33 to 1.14, may be determined from the following equation:

T = 0.04785/(W/D)

Where T = Thickness of coating in the range of 0.042 to 0.145 in., W = Weight of steel column in pounds per linear foot, D = Heated perimeter of steel column section in inches.

As an alternate to the above table, the required thickness of coating (in inches) to be applied to all surfaces of wide flange steel columns for 1-1/2 hour ratings, in the W/D range of 0.33 to 1.64, may be determined from the following equation:

T = 0.0945/(W/D)

Where T = Thickness of coating in the range of 0.058 to 0.266 in., W = Weight of steel column in pounds per linear foot, D = Heated perimeter of steel column section in inches.

As an alternate to the above table, the required thickness of coating (in inches) to be applied to all surfaces of wide flange steel columns for 2 hour ratings, in the W/D range of 0.44 to 1.64, may be determined from the following equation:

T = 0.1489/(W/D)

Where T = Thickness of coating in the range of 0.091 to 0.338 in., W = Weight of steel column in pounds per linear foot, D = Heated perimeter of steel column section in inches.

As an alternate to the above table, the required thickness of coating (in inches) to be applied to all surfaces of wide flange steel columns for 3 hour ratings, in the W/D range of 0.58 to 1.64, may be determined from the following equation:

T = 0.3082/(W/D)

Where T = Thickness of coating in the range of 0.188 to 0.504 in., W = Weight of steel column in pounds per linear foot, D = Heated perimeter of steel column section in inches.

As an alternate to the above table, the required thickness of coating (in inches) to be applied to all surfaces of wide flange steel columns for 4 hour ratings, in the W/D range of 1.72 to 3.00, may be determined from the following equation:

T = 0.749/(W/D)

Where T = Thickness of coating in the range of 0.433 to 0.194 in., W = Weight of steel column in pounds per linear foot, D = Heated perimeter of steel column section in inches.

As an alternate to the above, the following table listing metric units may be used.

Steel Size	M/D	Hp/A	1 Hr Min Thickness, mm	1-1/2 Hr Min Thickness, mm	2 Hr Min Thickness, mm	3 Hr Min Thickness, mm	4 Hr Min Thickness, mm
W8 x 10	19.1	412	3.68	6.76	NR	NR	NR
W12 x 14	21.2	371	3.38	6.67	NR	NR	NR
W12 x 16	24.0	327	2.96	5.85	NR	NR	NR
W6 x 12	25.9	303	2.76	5.46	8.60	NR	NR
W8 x 15	28.1	280	2.53	5.00	7.88	NR	NR
W10 x 22	30.4	258	2.34	4.62	7.27	NR	NR
W4 x 13	32.4	242	2.21	4.36	6.88	NR	NR
W6 X 16	33.9	232	2.10	4.14	6.52	12.80	NR
W8 x 24	34.6	227	1.91	3.31	5.42	12.80	NR
W14 x 34	37.1	213	1.91	3.31	5.42	12.43	NR
W8 x 28	40.0	197	1.79	3.31	5.42	11.51	NR
W8 x 35	43.6	181	1.64	3.24	5.11	10.58	NR
W10 x 39	45.4	172	1.56	3.08	4.85	10.04	NR
W10 x 49	49.1	159	1.45	2.86	4.50	9.32	NR
W10 x 45	51.9	151	1.37	2.70	4.25	8.80	NR
W16 x 57	55.9	141	1.28	2.53	3.98	8.24	NR
W8 x 48	58.6	134	1.22	2.40	3.78	7.83	NR
W14 x 90	62.6	125	1.14	2.24	3.53	7.32	NR
W10 x 68	66.9	118	1.07	2.11	3.32	6.87	NR
W18 x 97	71.0	111	1.02	1.98	3.13	6.47	NR
W10 x 77	75.2	105	0.97	1.88	2.95	6.12	NR
W16 x 100	79.4	99	0.91	1.76	2.78	5.76	NR
W10 x 88	84.9	92	0.85	1.66	2.61	5.40	NR
W14 x 132	90.0	87	0.80	1.56	2.46	5.08	NR
W12 x 120	96.2	82	0.75	1.46	2.31	4.77	NR

W33 x 221	100.9	78	0.71	1.47	2.24	4.78	11.0
W14 x 159	103.9	76	0.70	1.43	2.16	4.74	10.7
W14 x 176	114.4	69	0.63	1.30	1.96	4.52	9.75
W14 x 193	124.4	63	0.59	1.19	1.81	4.16	8.97
W14 x 211	135.0	58	0.59	1.10	1.66	3.83	8.28
W14 x 233	147.9	53	0.59	1.00	1.52	3.50	7.54
W14 x 257	161.4	49	0.59	0.92	1.39	3.21	6.91
W14 x 283	176.0	45	0.59	0.84	1.28	2.94	4.92

NR = No Rating

As an alternate to the above table, the required thickness of coating (in mm) to be applied to all surfaces of wide flange steel columns for 1 hour ratings, in the M/D range of 19.1 to 66.9, may be determined from the following equation:

T = 71.6/(M/D)

Where T = Thickness of coating in the range of 1.07 to 3.68 mm, M = Weight of steel column in kilograms per linear meter, D = Heated perimeter of steel column section in meters.

As an alternate to the above table, the required thickness of coating (in mm) to be applied to all surfaces of wide flange steel columns for 1-1/2 hour ratings, in the M/D range of 19.1 to 96.2, may be determined from the following equation:

T = 141.3/(M/D)

Where T = Thickness of coating in the range of 1.46 to 6.76 mm, M = Weight of steel column in kilograms per linear meter, D = Heated perimeter of steel column section in meters.

As an alternate to the above table, the required thickness of coating (in mm) to be applied to all surfaces of wide flange steel columns for 2 hour ratings, in the M/D range of 25.9 to 96.2, may be determined from the following equation:

T = 222.7/(M/D)

Where T = Thickness of coating in the range of 2.31 to 8.60 mm, M = Weight of steel column in kilograms per linear meter, D = Heated perimeter of steel column section in meters.

As an alternate to the above table, the required thickness of coating (in mm) to be applied to all surfaces of wide flange steel columns for 3 hour ratings, in the M/D range of 33.9 to 96.2, may be determined from the following equation:

T = 461.0/(M/D)

Where T = Thickness of coating in the range of 4.77 to 12.80 mm, M = Weight of steel column in kilograms per linear meter, D = Heated perimeter of steel column section in meters.

As an alternate to the above table, the required thickness of coating (in mm) to be applied to all surfaces of wide flange steel columns for 4 hour ratings, in the M/D range of 100.9 to 176.0, may be determined from the following equation:

T =1116.4/(M/D)

Where T = Thickness of coating in the range of 4.92 to 11.0 mm, M = Weight of steel column in kilograms per linear meter, D = Heated perimeter of steel column section in meters.

BERLIN CO LTD — Type WB 3, Investigated for Interior General Purpose. Type WB 4, Investigated for Interior General Purpose. Type WB 4, Investigated for Exterior Use with top coat as described in Item 3

GREENTECH THERMAL INSULATION PRODUCTS MFG CO L L C — Type WB 3, Investigated for Interior General Purpose. Type WB 4, Investigated for Interior General Purpose. Type WB 4, Investigated for Exterior Use with top coat as described in Item 3

ISOLATEK INTERNATIONAL — Type SprayFilm-WB 3 and Type WB 3, Investigated for Interior General Purpose. Type SprayFilm-WB 4 and Type WB 4, Investigated for Interior General Purpose. Type SprayFilm-WB 4 and Type WB 4, Investigated for Exterior Use with top coat as described in Item 3

NEWKEM PRODUCTS CORP — Type WB 3, Investigated for Interior General Purpose. Type WB 4, Investigated for Interior General Purpose. Type WB 4, Investigated for Exterior Use with top coat as described in Item 3

3. **Top Coat —** Type SprayFilm — TOPSEAL and Type TOPSEAL required for Exterior Use, applied at a minimum dry thickness of 14 mils (0.34 mm) over the intumescent material.

See Classification information in the **Mastic and Intumescent Coating** (CDWZ) category, Isolatek International, for mixing requirements.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Last Updated on 2016-10-04

UL Product iQ™

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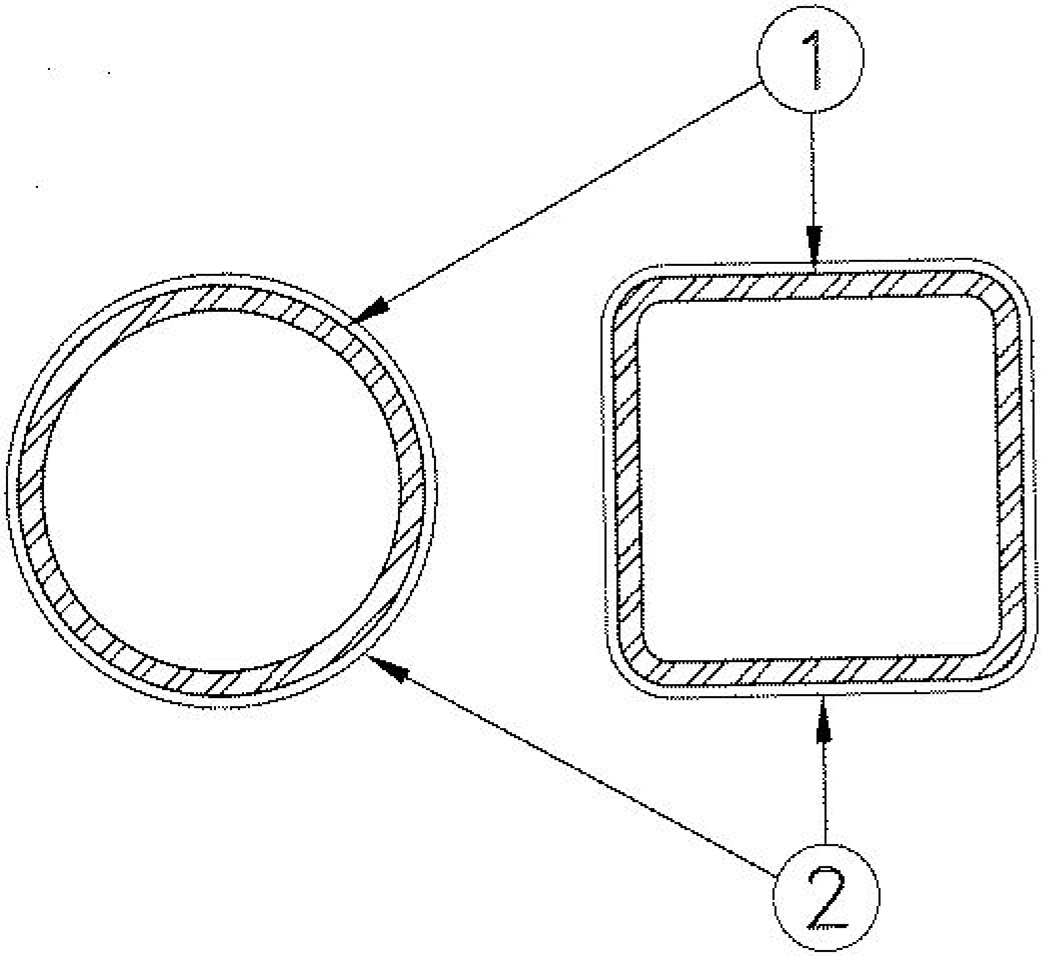

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UL Product iQ™

BXUV.Y614 - FIRE-RESISTANCE RATINGS - ANSI/UL 263

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

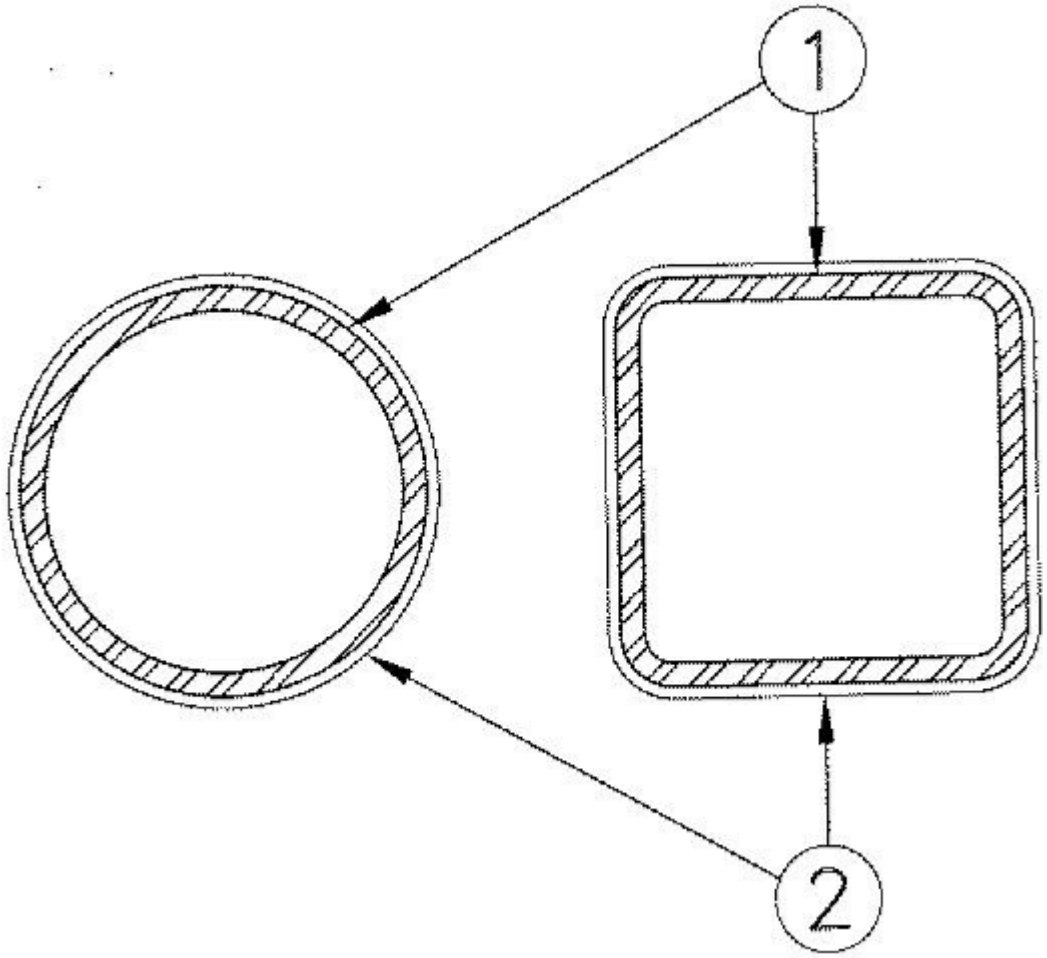
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. Y614

September 22, 2016

Ratings — 1, 1-1/2, 2 and 3 Hr. (See Item 2)

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. **Steel Column —** Steel tube (ST) or steel pipe (SP) with the minimum sizes shown in the table below. Columns shall be free of dirt, loose scale and oil. Columns shall be primed with a phenolic modified alkyd resin primer, a metal alkyd primer, an acrylic primer or an epoxy primer at a nominal thickness of 2 mil.

2. **Mastic and Intumescent Coatings* —** Coating spray, brush or trowel applied directly from containers to desired thickness. See table below for appropriate final dry thickness and applicable rating.

FOR STEEL PIPE

Steel Size	A/P	Hp/A	1 Hr		1-1/2 Hr		2 Hr	
			in.	mm	in.	mm	in.	mm
SP 4.5 x 0.313	0.29	135	0.117	2.99	—	—	—	—
SP 8 x 0.875	0.79	49	0.097	2.46	0.097	2.46	0.120	3.05
SP 8.625 x 0.5	0.47	85	0.097	2.46	0.138	3.50	0.202	5.14

FOR SQUARE AND RECTANGULAR STEEL TUBE

Steel Size	A/P	Hp/A	1 Hr		1-1/2 Hr		2 Hr		3 Hr	
			in.	mm	in.	mm	in.	mm	in.	mm
ST3.5x3.5x3/16	0.18	224	0.165	4.18	0.307	7.80	0.536	13.62	—	—
ST5x3x1/4	0.23	169	0.104	2.65	0.252	6.39	0.400	10.15	—	—
ST5x3x5/16	0.29	135	0.084	2.13	0.218	5.54	0.353	8.96	—	—
ST8x6x3/8	0.35	114	0.074	1.87	0.173	4.40	0.280	7.12	—	—

ST8x6x7/16	0.41	100	0.074	1.87	0.151	3.84	0.244	6.21	—	—
ST5x3x1/2	0.44	93	0.074	1.87	0.127	3.23	0.207	5.27	—	—
ST8x8x1/2	0.47	85	0.074	1.87	0.114	2.90	0.182	4.62	0.327	8.31

GREENTECH THERMAL INSULATION PRODUCTS MFG CO L L C — Type WB 3, Investigated for Interior General Purpose. Type WB 4, Investigated for Interior General Purpose. Type WB 4, Investigated for Exterior Use with top coat as described in Item 3

ISOLATEK INTERNATIONAL — Type SprayFilm-WB 3 and Type WB 3, Investigated for Interior General Purpose . Type SprayFilm-WB 4 and Type WB 4, Investigated for Interior General Purpose. Type SprayFilm-WB 4 and Type WB 4, Investigated for Exterior Use with top coat as described in Item 3

3. **Top Coat —** Type SprayFilm - TOPSEAL and Type TOPSEAL required for Exterior Use, applied at a minimum dry thickness of 14 mils (0.34 mm) over the intumescent material.

See Classification information in the **Mastic and Intumescent Coating** (CDWZ) category, Isolatek International, for mixing requirements.

Investigated for Interior General Purpose.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Last Updated on 2016-09-22

CAFCO® SprayFilm® WB 4
(Americas)

ISOLATEK® Type WB 4
(Worldwide)

Intumescent Fireproofing

PRODUCT DESCRIPTION

CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 Intumescent Fire Resistive Material (IFRM), when combined with CAFCO SprayFilm Topseal® / ISOLATEK Type Topseal, is a water-based system investigated by Underwriters Laboratories (UL) for exterior applications.

CAFCO SprayFilm / ISOLATEK Type WB gives architects the ability to design using steel that can be decorative and aesthetically pleasing. It can be top coated to match its surroundings and allows steel to be left exposed to view while providing the fire resistance rating.

PRODUCT ADVANTAGES

- *Water-based intumescent coating with low VOC's*
- *UL "Investigated for exterior use"*
- *Semi smooth architectural finish*
- *Can be finished with a wide variety of topcoat types and colors*
- *Quick, easy application and clean up*
- *Wide range of testing*
- *Provides up to 4-hour fire resistance ratings in accordance with ANSI/UL 263, ASTM E119 and CAN/ULC-S101*

PHYSICAL PERFORMANCE

It is important for fire protection materials to be able to withstand abuse. American Society for Testing and Materials (ASTM) test methods are used to evaluate the performance of intumescent materials when subjected to these various physical forces. CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 has been evaluated to meet rigorous industry test standards.

Physical Performance

Characteristic	ASTM Method	Laboratory Tested Performance*	
Abrasion Resistance	D4060	0.2300 g/ 1,000 cycles	
Bond Strength	D4541	322 psi (2,220 kPa)	
Durometer Hardness (Shore D)	D2240	81 Shore D	
Impact Resistance	D2794	98 inch-lb (11 Nm)	
Surface Burning	E84	Flame Spread 15 Smoke Developed 0	Class A

* Values represent independent laboratory tests under controlled conditions.

Technical Data

Color	White
Density	12.0 lb/gal ±0.5
PH Value	7.5 to 8.5
Application Temperature	Min. 50° F (10° C), Max. 100° F (38° C)

FIRE TEST PERFORMANCE

CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 has been extensively tested for fire resistance and is rated for up to 4 hours for floor assemblies, beams, and columns.

- Classified by UL in accordance with ANSI/UL 263 (ASTM E119)
- Classified by UL in accordance with CAN/ULC-S101 (ASTM E119)

CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 has also been tested for surface burning characteristics in accordance with ASTM E84 and is rated Class A.

Flame Spread .....15 Smoke Developed 0

Type SprayFilm-WB 4 OR Type WB 4 File 16640

CLASSIFIED c UL us

MASTIC COATING
FIRE RESISTANCE CLASSIFICATION
SEE UL FIRE RESISTANCE DIRECTORY

CODE COMPLIANCES

CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 satisfies the requirements of the following:

- IBC® - INTERNATIONAL BUILDING CODE®
- City of Los Angeles (LADBS, Category 1 Material)
- NBC - National Building Code of Canada
- ICC-ES, AC23 and AC10 Requirements (UL ER13348-01)

MAJOR SPECIFICATIONS

CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 complies with the requirements of the following specifications:

- MasterSpec®, Section 078123 APPLIED FIREPROOFING (AIA)
- MasterFormat® 2014, Section 07 81 00 Applied Fireproofing (CSC,CSI)
- Unified Facilities Guide Specification, UFGS 07 81 00 Spray-Applied Fireproofing (USACE, NAVFAC, AFCEC, NASA)
- Master Construction Specifications, Number 07 81 00 Applied Fireproofing (VA)
- Code of Federal Regulations, Title 40 Protection of the Environment (EPA)
- PBS-P100, Facilities Standards for the Public Buildings Services (GSA)

APPLICATION

- A compatible primer must be applied to the steel substrate. Refer to the Primers for CAFCO SprayFilm Intumescent Fireproofing Technical Data Sheet.
- CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 can be brushed or sprayed, not rolled and is also available in a trowel grade formulation (CAFCO SprayFilm WB 4 TG / ISOLATEK Type WB 4 TG).
- The applied thickness of CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 will depend upon the specified fire rating and size / shape of the steel member to be protected.
- For exterior use, SprayFilm WB 4 / ISOLATEK Type WB 4 must be sealed with CAFCO SprayFilm Topseal / ISOLATEK Type WB 4 followed by an approved exterior finish coat to protect against humidity, chemical and damage. Refer to the Topseal and Finish Coat Materials Technical Data Sheets.

Packaging/Storage

Packaging	5.0 U.S. gal (18.9 L) container
Net Contents	5.0 U.S. gal / 58 lbs (18.9 L / 26.3 kg)
Gross Weight (Approx)	61 lbs (27.6 kg)
Shelf Life	12 months in unopened sealed containers, properly stored.
Storage	Storage Temperature 33° F - 100° F (1° C - 38° C) Must protect from freezing and excessive heat. Store in a dry environment.

CAFCO SprayFilm WB 4 / ISOLATEK Type WB 4 Guide Specification

SECTION 078123 - Intumescent Fireproofing

The following is an outline/short language specification. Complete specifications for intumescent fire resistive materials are available on various media upon request.

PART 1 - GENERAL

1.1 Scope

1.1.1 This specification covers labor, materials, equipment, and application necessary for, and incidental to, the complete and proper installation of intumescent fire protection for application to steel structures and supports in accordance with all applicable requirements of contract documents.

1.1.2 This specification shall be supplemented by the applicable requirements of building codes, insurance rating organizations and all other authorities having jurisdiction.

1.2 Section Includes

1.2.1 Intumescent fire protection material.

1.2.2 Topcoat protective decorative finish.

1.3 Related Sections

1.3.1 SECTION 051200 – STRUCTURAL STEEL FRAMING

1.3.2 SECTION 053100 – STEEL DECKING

1.3.3 SECTION 072100 – THERMAL INSULATION

1.3.4 SECTION 078123 – INTUMESCENT FIREPROOFING

1.3.5 SECTION 078443 – JOINT FIRESTOPPING

1.4 References

1.4.1 Underwriters Laboratories Inc. (UL) Fire Resistance Directory

1.4.2 Test Standards

A. UL 263 (ASTM E119) - Fire Tests of Building Construction and Materials.

B. ASTM E84 (UL723, CAN/ULC-S102) - Surface Burning Characteristics of Building Materials. Class A Rating Required; Flame Spread Maximum: 15 and Smoke Developed Maximum: 0.

C. ASTM D2240 – Durometer Hardness (Shore D Only). Minimum: 81 Shore D.

D. ASTM D2794 – Impact Resistance. 98 inch-lb (1.13 kg-m).

E. ASTM D4060 – Abrasion Resistance. Maximum 0.2300 grams/1000 cycles.

F. ASTM D4541 – Bond Strength. Minimum: 322 psi. (2220 k Pa.)

1.4.3 Steel Structures Painting Council (SSPC) Surface Preparation Standards.

1.4.4 Material manufacturer's current published information including, but not limited to, application guide.

1.4.5 AWCI Technical Manual 12-B "Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide", Latest Edition.

1.5 System Description

1.5.1 The intumescent fire protection materials shall be applied at the required thickness to provide the UL fire resistive ratings.

1.6 Submittals

1.6.1 Manufacturer's Data: Submit manufacturer's specifications, including certification as may be required to show material compliance with contract documents

1.7 Quality Assurance

1.7.1 Manufacturer - company specializing in manufacturing fire protection products.

1.7.2 The intumescent fire resistive material shall be manufactured under the Follow- Up Service program of UL or ULC and bear the UL and/or ULC label (mark).

1.7.3 Applicator - A firm with expertise in the installation of fire resistive or similar materials. This firm shall be recognized or otherwise approved by fire resistive material supplier.

1.7.4 Product - The product shall be approved by the architect and applicable authorities having jurisdiction.

1.8 Delivery, Storage and Handling

1.8.1 Deliver materials to the project in manufacturer's unopened packages, fully identified as to trade name, type and other identifying data. Packaged materials shall bear the appropriate labels, seals and UL label (mark) for fire resistive Ratings and shall be stored at temperatures between 33° F - 100° F (1° C - 38° C), in a dry interior location away from direct sunlight. PROTECT FROM FREEZING.

1.9 Project/Site Conditions

1.9.1 When the temperature at the job site is less than 50°F (10°C), a minimum substrate and ambient temperature of 50°F (10°C) shall be maintained prior to, during, and a minimum of 72 hours after application. If necessary for job schedule, the General Contractor shall provide enclosures and heat to maintain proper temperatures and humidity levels in the application areas.

1.9.2 In enclosed areas, ventilation must not be less than 4 complete air exchanges per hour until the material is dry.

1.9.3 Relative humidity shall not exceed 85% throughout the total period of application and drying for the intumescent fire resistive material, and must not exceed 85% throughout the application and drying for the protective decorative topcoat.

1.10 Sequencing and Scheduling

1.10.1 Applicator shall cooperate in the coordination and scheduling of fire protection work to avoid delays in job progress.

1.10.2 The installation of piping, ducts, conduit or other suspended equipment shall not commence until the application of the thin-film fire resistive material is complete in that area.

PART 2 - PRODUCTS

2.1 Compatible Metal Primer

2.1.1 Primer shall be approved by manufacturer and applied in full accordance with the primer manufacturer's written instructions.

2.2 Intumescent Fire Protection System

2.2.1 The intumescent fire resistive material shall be CAFCO® SprayFilm® WB 4 / ISOLATEK® Type WB 4 as supplied by Isolatek International or CAFCO / ISOLATEK Industries.

2.2.2 Intumescent fire resistive material shall be applied in accordance with drawings and/or specifications, and shall have been tested in accordance with the procedures of UL 263 or ASTM E119 or CAN/ULC-S101, and reported by Underwriters Laboratories, Inc. or Underwriters Laboratories of Canada only.

2.3 Decorative Topcoating

2.3.1 Topcoat materials shall be as required for color-coding, aesthetics or additional surface protection, and approved by the thin-film fire resistive material manufacturer.

PART 3 - EXECUTION

3.1 Preparation

3.1.1 All surfaces to receive thin-film fire resistive material shall be clean, dry and free of oil, grease, loose mill scale, dirt, dust or other materials which would impair bond of the thin-film fire resistive material to the surface. Any cleaning of the surfaces to receive fire resistive material shall be the responsibility of the General Contractor or steel erector, as outlined in the structural steel section.

3.1.2 Confirm compatibility of surfaces to receive thin-film fire resistive material. Steel surfaces shall be primed with a compatible primer approved by the thin-film fire resistive material manufacturer.

3.1.3 Provide masking, drop cloths or other suitable coverings to prevent overspray onto surfaces not intended to be coated with intumescent coating.

3.2 Application

3.2.1 The thin-film fire resistive material shall be applied at the required dry film thickness per the appropriate UL design number.

3.3 Mock Up

3.3.1 Before proceeding with the work, the applicator shall apply the thin-film fire resistive material to a section witnessed by the architect's or owner's representative. The application shall be subject to their approval and shall be used as a guide for texture and thickness of the finished work.

3.4 Clean Up and Repair

3.4.1 Upon completion of installation, all excess material, overspray and debris shall be cleared and removed from the job site.

3.4.2 All patching of and repair to thin-film fire resistive material, due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage. Patching shall be performed by applicators recognized or otherwise approved by the manufacturer.

3.5 Inspection and Testing

3.5.1 In addition to continuous Wet Film Thickness checks performed by applicator during application, the installed intumescent material shall be inspected by a qualified independent testing laboratory for thickness in accordance with the AWCI Technical Manual 12-B "Standard Practice For The Testing and Inspection Of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide", Second Edition, before application of the topcoat.

3.5.2 The results of the above tests shall be made available to all parties at the completion of each area and approved prior to the application of topcoat.

ISOLATEK INTERNATIONAL is registered with the AIA Continuing Education System (AIA/CES)

We support our customers with unsurpassed technical expertise and customer service, complemented by an extensive global network of experienced sales representatives and recognized applicators. For detailed product information or for the name of the sales representative in your area please contact us.

Isolatek International provides passive fireproofing materials under the CAFCO® and FENDOLITE® trademarks throughout the Americas and under the ISOLATEK® trademark throughout the world.

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