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DIVISION: 07 00 00 THERMAL AND MOISTURE PROTECTION
Section: 07 81 00 Applied Fireproofing
Section: 07 81 23 Intumescent Fireproofing

REPORT HOLDER:
Carboline Company
350 Hanley Industrial Court,
Brentwood, MO 63144
(314) 644-1000

REPORT SUBJECT:
FireFilm IV Intumescent Fire-Resistant Coating

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2018 and 2015 *International Building Code*® (IBC)

NOTE: This report references 2018 Code sections with [2015] Code sections shown in brackets where they differ.

1.2 FireFilm IV has been evaluated for the following properties (see Table 1):

- Durability
- Fire-resistance
- Surface Burning Characteristics

1.3 FireFilm IV has been evaluated for the following uses:

- Type I and II construction when installed in accordance with IBC Sections 603.1, item 21, and 1705.15.
- Fire-resistance-rated construction for up to a two-hour fire-resistance rating, for interior structural steel columns when constructed as described in Intertek Design Listing No. [CC/IF 120-02](#), or for up to a three-hour fire-resistance rating, for interior structural steel columns when constructed as described in Intertek Design Listing No. [CC/IF 180-04](#).

2.0 STATEMENT OF COMPLIANCE

FireFilm IV complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

3.0 DESCRIPTION

3.1 FireFilm IV is a water-based, thin-film, intumescent fire protective coating which is spray applied or painted with a brush or roller directly to primed steel surfaces.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Carboline FireFilm IV complies with the requirements of ICC-ES AC23 for use in interior general purpose locations defined as interior surfaces in IBC Section 202.

4.2 Carboline FireFilm IV has a Class A interior finish classification, when tested in accordance with ASTM E84.

4.3 Fire Resistance ratings for use of FireFilm IV on steel structural members are described in Intertek Design Listing Nos. [CC/IF 120-02](#) and [CF/IF 180-04](#) (see Appendix A). Material thickness is specified in the Design Listing for each specific beam size.

5.0 INSTALLATION

5.1 General:

FireFilm IV must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 Prior to application of Carboline FireFilm IV, the steel is sandblasted, then primed with Type Carbocoat 150 Universal Primer or with a compatible primer recommended by Carboline Company.



5.3 Application: Special inspections are required for application of Carboline FireFilm IV in accordance with IBC Section 1705.15. The thickness of the intumescent coating must be verified and determined using the methods prescribed in AWCI Technical Manual 12-B.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict, this report governs.

6.2 Application is limited to interior general purpose locations.

6.3 Installation within plenums is outside the scope of this report.

6.4 Special inspections shall be provided in accordance with IBC Section 1705.15.

6.5 The Carboline FireFilm IV is manufactured under a quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM E84-16 [2013A], Standard Test Method for Surface Burning Characteristics of Building Materials.

7.2 Data in accordance with the ICC-ES Acceptance Criteria 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.

7.3 Intertek Listing Report "Carboline FireFilm IV", on the [Intertek Directory of Building Products](#).

8.0 IDENTIFICATION

The Carboline FireFilm IV is identified on packaging with the manufacturer's name (Carboline Company), address, the product name (FireFilm IV), storage and shelf-life, the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-0317).



9.0 OTHER CODES

This section is not applicable.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the <https://bpdirectory.intertek.com> is recommended to ascertain the current version and status of this report.

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TABLE 1 - PROPERTIES EVALUATED

PROPERTY	2018, 2015 IBC SECTION¹
Types I and II Construction	603.1
Fire-Resistance-Rated Construction	703.2
Surface Burning	803.1
Special inspections	1705.15

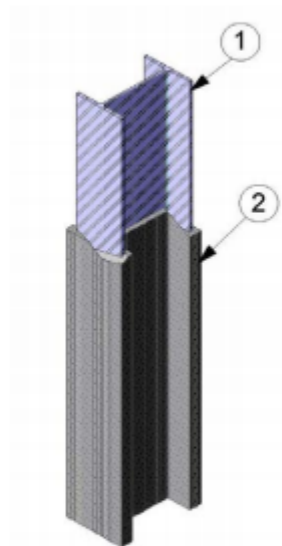
¹ Section numbers may be different for earlier versions of the International codes.





Appendix A

Carboline Company
Design No. CC/IF 120-02
Column
FireFilm IV
ASTM E-119-18a, UL 263 June 21, 2011, 14th Edition, CAN/ULC-S101-14
Rating: See Table CC/IF 120-02



- 1. SOLID STRUCTURAL STEEL COLUMN:** Use solid steel sections, I-shape or W-shape, having nominal H_p/A or W/D section factors based on four-sided exposure. Prior to application of FireFilm IV (Item 1), column shall be prepared and coated with a compatible primer recommended by the manufacturer.
- 2. CERTIFIED MANUFACTURER:** Carboline Company

CERTIFIED PRODUCT: Intumescent Fireproofing

CERTIFIED MODEL: FireFilm IV

Spray or paint in one or more coats according to manufacturer's instructions to the required thickness specified in Table CC/IF 120-02.



Table CC/IF 120-02

HP/A	W/D	60 min		90 min		120 min	
		mm	in.	mm	in.	mm	in.
30	4.466	0.43	0.017	0.85	0.033	1.28	0.050
40	3.349	0.54	0.021	1.08	0.043	1.62	0.064
45	2.977	0.59	0.023	1.19	0.047	1.78	0.070
50	2.679	0.64	0.025	1.29	0.051	1.93	0.076
60	2.233	0.74	0.029	1.48	0.058	2.22	0.087
70	1.914	0.83	0.033	1.66	0.065	2.48	0.098
80	1.675	0.91	0.036	1.82	0.072	2.73	0.107
90	1.489	0.91	0.036	1.94	0.076	2.98	0.117
100	1.340	1.03	0.040	2.09	0.082	3.16	0.124
110	1.218	1.14	0.045	2.22	0.087	3.30	0.130
120	1.116	1.24	0.049	2.33	0.092	3.42	0.135
130	1.031	1.32	0.052	2.42	0.095	3.52	0.139
140	0.957	1.39	0.055	2.50	0.098	3.61	0.142
150	0.893	1.45	0.057	2.57	0.101	3.69	0.145
160	0.837	1.50	0.059	2.63	0.104	3.77	0.148
162	0.827	1.51	0.059	2.67	0.105	3.83	0.151
165	0.812	1.52	0.060	2.72	0.107	3.92	0.154
170	0.788	1.54	0.061	2.80	0.110	4.06	0.160
175	0.766	1.56	0.061	2.88	0.113	4.20	0.165
180	0.744	1.57	0.062	2.95	0.116	4.33	0.170
185	0.724	1.59	0.063	3.02	0.119	4.45	0.175
190	0.705	1.60	0.063	3.08	0.121	4.56	0.180
195	0.687	1.62	0.064	3.14	0.124	4.67	0.184
200	0.670	1.63	0.064	3.20	0.126	4.77	0.188
205	0.654	1.65	0.065	3.26	0.128	4.87	0.192
220	0.609	1.61	0.063				
230	0.582	1.64	0.064				
240	0.558	1.67	0.066				
250	0.536	1.70	0.067				
260	0.515	1.72	0.068				
270	0.496	1.75	0.069				
280	0.478	1.77	0.070				
290	0.462	1.80	0.071				
300	0.447	1.82	0.072				
305	0.439	1.83	0.072				

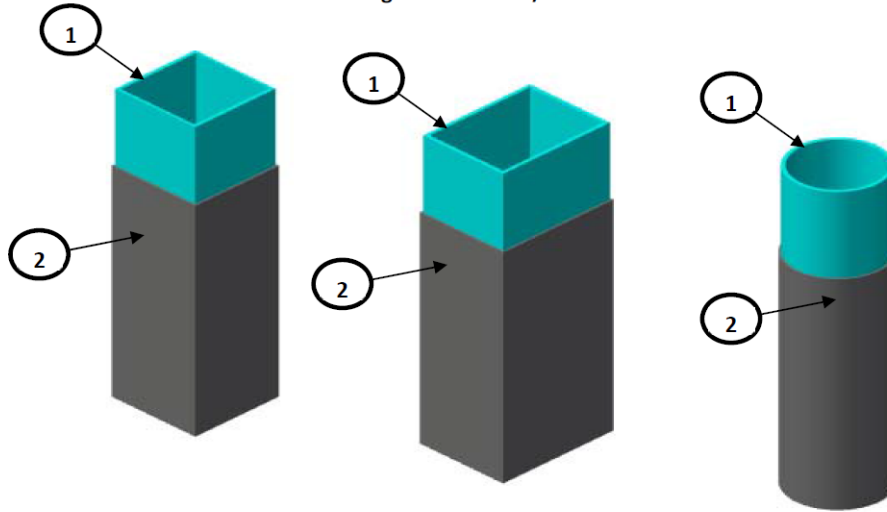


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Carboline Corporation
Design No. CC/IF 180-04
Column
Fire Film IV
ASTM E119, UL 263, CAN/ULC-S101
Rating: See Table CC/IF 180-04



1. **HOLLOW STRUCTURAL STEEL COLUMN:** Use hollow square, rectangular, or circular steel sections, having nominal Hp/A, or A/P section factors based on four-sided exposure. Prior to application of FireFilm IV (Item 2), column shall be prepared and coated with a compatible primer recommended by the manufacturer.

CERTIFIED PRODUCT: Intumescent Fireproofing

CERTIFIED MODEL: FireFilm IV

Spray or paint one or more coats according to manufacturer’s instructions to the required thickness specified in Table CC/IF 180-04.

2. **CERTIFIED MANUFACTURER:** Carboline Company

Table CC/IF 180-04									
Hp/A	A/P	90 min		120 min		150 min		180 min	
1/m	in. ² /in.	mm	in.	mm	in.	mm	in.	mm	in.
169	0.23	4.84	0.190	5.70	0.225	-	-	-	-
114	0.35	3.68	0.145	5.02	0.198	6.37	0.251	7.71	0.304

