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RESEARCH REPORT: RR 25464
(CSI #07840)

Expires: December 1, 2020
Issued Date: February 1, 2019
Code: 2017 LABC

GENERAL APPROVAL – Renewal- Nullifire S605, S606, S607, Thermo-Sorb E and Thermo-Sorb 263 Intumescent Fire-Resistive Material for use on wide flange beams and structural tube steel columns

DETAILS

Carboline Nullifire S605, S606, S607, Thermo-Sorb E and Thermo-Sorb 263 are intumescent fire-resistive materials that expand when subject to intense heat providing up to 3 hours of fire protection.

The approval is subject to the following conditions:

1. The use of Carboline Nullifire S606, S607 and Thermo-Sorb 263 materials are limited to interior structural steel beams and columns only.

2. Carboline Nullifire S605 and Thermo-Sorb E are approved for wide flange steel beams and structural columns for interior and exterior use.

3. Fire-resistive materials shall be delivered to the jobsite in sealed containers identified by the products name.

4. All surfaces to which the product will be applied shall be free of dust, dirt, oil, scale, grease or paint.

5. Special inspection is required.

6. Nullifire S605, S606, S607, Thermo-Sorb E and Thermo-Sorb 263 must be protected from direct and indirect contact with moisture during application. Ambient air and steel temperature shall be no more than 105 F degree and relative humidity in the area must be less than 80%.

7. Before application of Nullifire S605, S606, S607, Thermo-Sorb E and Thermo-Sorb 263 the column or beam surface shall be coated with Nullifire S620 primer at an approximate thickness of 0.003 inch.

8. Application of the fire-resistive material shall be in accordance with the manufacturer's instructions, a copy of which shall be available at the job site.

9. Required minimum W/D ratios for steel columns and beams protected by the products are as shown in Tables 1, 2 and 3.

DISCUSSION

The report is in compliance with the 2017 city of Los Angeles Building Code.

The approval is based on fire and environmental test.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this department has determined that all conditions of this approval have been met in the project in which it is to be used.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction, which must be approved by Department of building and Safety engineers and Inspectors.

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Table 1 - Nullifire S605 - Exterior and Interior Grade

Construction Type	Ratings, Hours, Minimum W/D (A/P)				ULI Design
	1	2	3	4	
Beams Unprotected Deck	.67	.67	1.76		D935
Beams Protected Deck	.67	.78			D784
Beams Restrained & Unrestrained	.67	.78			N609
Wide Flange Columns	.58	.83			X629
Tube Columns Pipe Columns	(.36) (.36)	(.44)			X630 X631

1 ULI - Underwriter's Laboratories

2 Shop Primer - Steel substrate shall be free of dirt, loose scale and oil and primed with a minimum of a red oxide primer.

3 Top Coat - Use Carboguard 1340 intermediate coat applied over base coat applied at .003 inch in thickness and Carbothane 133 HB over the intermediate coat at .003 inch in thickness.

Table 2 - Nullifire S606 - Interior Grade

Construction Type	Ratings, Hours Minimum W/D (A/P)				ULI Design
	1	2	3	4	
Beams Unprotected Deck	.67	.67	1.75		D936
Beams Protected Deck	.67	.67	1.75		D785
Beams Restrained & Unrestrained	.67	.67	1.75		N610
Wide Flange Columns	.42	.57	2.04		X632
Tube Columns Pipe Columns	(.17) (.25)	(.44)			X633 X634

1 ULI - Underwriter's Laboratories

2 Shop Primer - Steel substrate shall be free of dirt, loose scale and oil and primed with a minimum of a red oxide primer.

3 Top Coat - Not required for interior conditioned space. For conditioned space use Carboguard 1340 intermediate coat applied over base coat applied over base coat applied at .003 inch in thickness and Carbothane 133HB over the intermediate coat at .003 inch in thickness or type Carbocrylic 3359 top-coat over the intermediate coat at .003 inch thickness.

Table 3 - Nullifire S607 - Interior Grade

Construction Type	Ratings, Hours, Minimum W/D (A/P)				ULI Design
	1	2	3	4	
Beams Unprotected Deck	1.76				D937
Beams Protected Deck	1.76	1.76			D786
Beams Restrained & Unrestrained	.67	2.21			N611
Wide Flange Columns	.57				X635
Tube Columns Pipe Columns	(.24) (.29)				X636 X637

1 ULI - Underwriter's Laboratories

2 Primer - Steel substrate shall be free of dirt, loose scale and oil and primed with a minimum of a red oxide primer.

3 Top Coat - Required for general purpose use, optimal for conditioned space use. Several top coats available from Carboline Company. Other manufacturer's top coats shall be approved by Carboline company technical department

Table 4 – Thermo-Sorb E - Exterior and Interior Grade

Construction Type	Ratings, Hours, Minimum W/D (A/P)				ULI Design
	1	2	3	4	
Beams Unprotected Deck	.67	.67	1.76		D992
Beams Protected Deck	.67	.78			E703
Beams Restrained & Unrestrained	.67	.78			N643
Wide Flange Columns	.58	.83			Y638
Tube Columns Pipe Columns	(.36) (.36)	(.44)			Y639 Y640

1 ULI - Underwriter's Laboratories

2 Shop Primer - Steel substrate shall be free of dirt, loose scale and oil and primed with a minimum of a red oxide primer.

3 Top Coat - Use Carboguard 1340 intermediate coat applied over base coat applied at .003 inch in thickness and Carbothane 133 HB over the intermediate coat at .003 inch in thickness.

Table 5 – Thermo-Sorb 263 - Interior Grade

Construction Type	Ratings, Hours Minimum W/D (A/P)				ULI Design
	1	2	3	4	
Beams Unprotected Deck	.67	.67	1.75		D995
Beams Protected Deck	.67	.67	1.75		E704
Beams Restrained & Unrestrained	.67	.67	1.75		N645
Wide Flange Columns	.42	.57	2.04		Y642
Tube Columns Pipe Columns	(.17) (.25)	(.44)			Y643 Y644

1 ULI - Underwriter's Laboratories

2 Shop Primer - Steel substrate shall be free of dirt, loose scale and oil and primed with a minimum of a red oxide primer.

3 Top Coat - Not required for interior conditioned space. For conditioned space use Carboguard 1340 intermediate coat applied over base coat applied over base coat applied at .003 inch in thickness and Carbothane 133HB over the intermediate coat at .003 inch in thickness or type Carbocrylic 3359 top-coat over the intermediate coat at .003 inch thickness.