



BYBU.XR739 - FIRE-RESISTANCE RATINGS - ANSI/UL 1709

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.

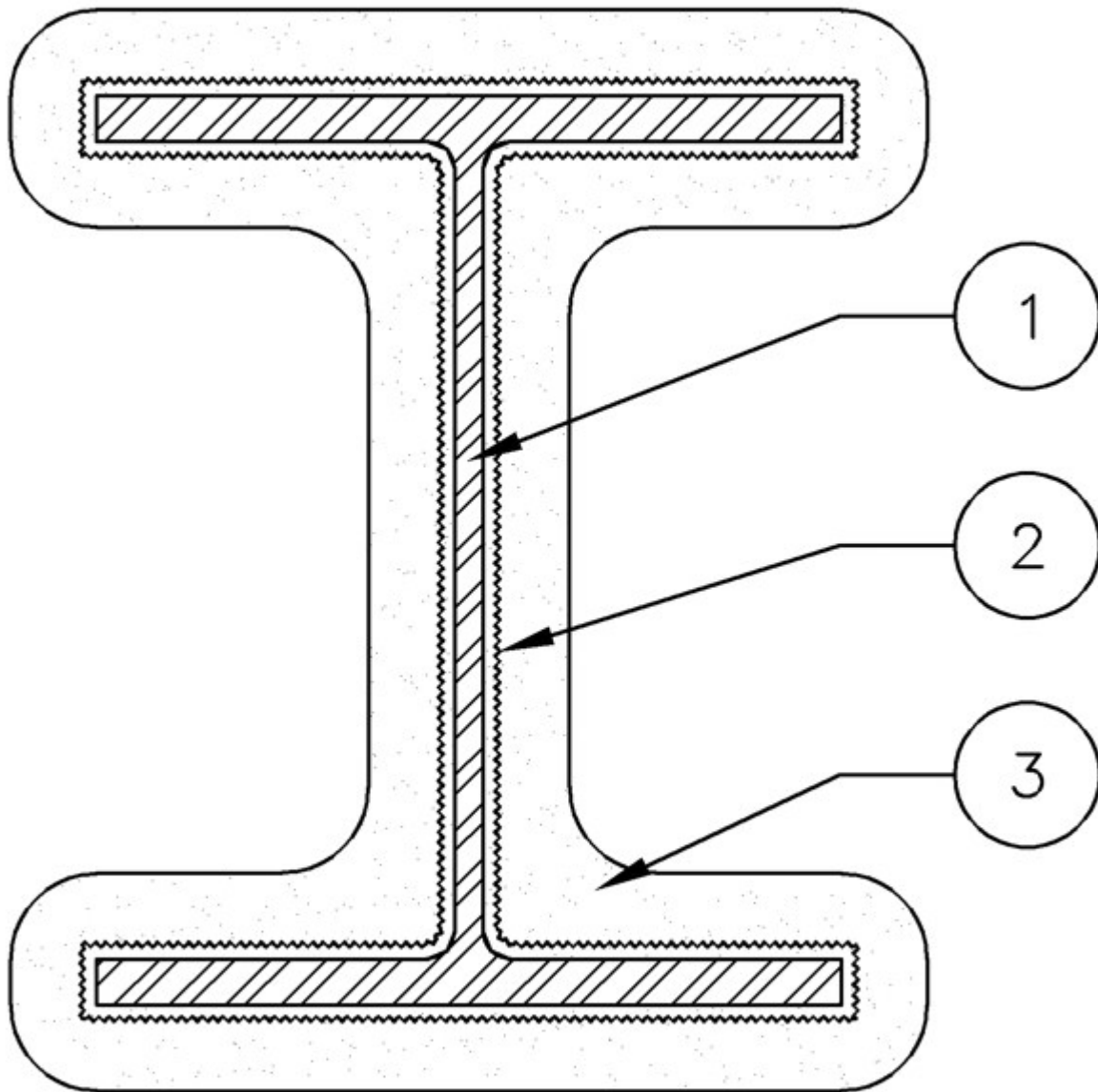
BYBU - Fire-resistance Ratings - ANSI/UL 1709

See General Information for Fire-resistance Ratings - ANSI/UL 1709

Design No. XR739

January 03, 2020

Ratings — 3/4, 1, 1-1/2, 2, 2-1/2, 3 or 4 Hr



1. **Steel Column** — Min size of column W8x10.

2. **Reinforcing Mesh** — Galv steel wire, No. 20 SWG, twisted to form 1 or 2 in. hexagons. Embedded in Spray-Applied Fire Resistive Materials approximately mid-depth of coating. Wrapped around the entire column surface, with minimum 1 inch overlap. Attached with pins and washers to center of webs and flanges, spaced 16 in OC.

2A. **Metal Lath** — (Not Shown) — In lieu of the reinforced mesh, galv. expanded steel lath, weighing 3.4 lb per sq yd may be used. Lath wrapped around entire column surface with minimum 1 in overlap. Secured with power actuated fasteners located at the center of webs and flanges, spaced 18 in OC.

3. **Spray-Applied Fire-Resistive Materials*** — See table below for appropriate thickness. Thickness measured to the steel column surface. Prepared by mixing with water according to instructions on each bag of mixture and spraying in one or more coats, as necessary, directly to the column through the reinforcing mesh, which must be clean and free of dirt, loose scale and oil. As an alternative to spraying, may be machine mixed and trowel applied. Min avg density of 753 kg/m³ (47 pcf), with min individual value of 689 kg/m³ (43 pcf). For method of density determination, see Design Information Section, Sprayed Material. Type M-II/P investigated for UL 2431 Classification Category I-A and Exterior Environmental Purpose.

Min Required Thickness (inch) for Hourly Rating Period (min)

W/D	HP/A	45	60	90	120	150	180	240
0.33	406	7/8	1	1- 3/16	1-3/8	1-1/2	1-11/16	2-1/16
0.43	312	7/8	1	1- 3/16	1-3/8	1-1/2	1-11/16	2-1/16
0.57	235	7/8	1	1- 3/16	1-3/8	1-1/2	1-11/16	2-1/16
0.68	197	3/4	13/16	1	1-3/16	1-3/8	1-9/16	1-15/16
0.75	179	3/4	13/16	1	1-1/8	1-5/16	1-7/16	1-3/4
0.84	160	3/4	13/16	1	1-1/8	1-5/16	1-3/8	1-11/16
0.9	149	3/4	13/16	1	1-1/8	1-5/16	1-3/8	1-11/16
1	134	11/16	13/16	1	1-1/8	1-5/16	1-3/8	1-11/16
1.1	122	5/8	13/16	1	1-1/8	1-5/16	1-3/8	1-11/16
1.2	112	9/16	3/4	1	1-1/8	1-5/16	1-3/8	1-11/16
1.3	103	9/16	3/4	1	1-1/8	1-5/16	1-3/8	1-11/16
1.4	96	1/2	11/16	1	1-1/8	1-5/16	1-3/8	1-11/16
1.5	89	1/2	5/8	15/16	1-1/8	1-5/16	1-3/8	1-11/16
1.6	84	1/2	5/8	7/8	1-1/8	1-5/16	1-3/8	1-11/16
1.63	82	1/2	5/8	7/8	1	1-3/16	1-5/16	1-5/8
1.7	79	1/2	9/16	7/8	1	1-3/16	1-5/16	1-5/8
1.8	74	1/2	9/16	13/16	1	1-3/16	1-5/16	1-5/8
1.9	71	1/2	9/16	3/4	1	1-3/16	1-5/16	1-5/8
2	67	1/2	1/2	3/4	15/16	1-3/16	1-5/16	1-5/8
2.1	64	1/2	1/2	11/16	15/16	1-1/8	1-5/16	1-5/8
2.2	61	1/2	1/2	11/16	7/8	1-1/16	1-5/16	1-5/8
2.3	58	1/2	1/2	11/16	7/8	1-1/16	1-1/4	1-5/8
2.4	56	1/2	1/2	5/8	13/16	1	1-3/16	1-9/16
2.5	54	1/2	1/2	5/8	13/16	1	1-1/8	1-1/2
2.55	53	1/2	1/2	5/8	13/16	15/16	1-1/8	1-1/2

W/D HP/A Min Required Thickness (mm) for Hourly Rating Period (min)

		45	60	90	120	150	180	240
0.33	406	23	26	31	35	39	43	53
0.43	312	23	26	31	35	39	43	53
0.57	235	23	26	31	35	39	43	53
0.68	197	20	21	26	31	35	40	50
0.75	179	20	21	26	29	34	37	45
0.84	160	20	21	26	29	34	35	43
0.9	149	20	21	26	29	34	35	43
1	134	18	21	26	29	34	35	43
1.1	122	16	21	26	29	34	35	43
1.2	112	15	20	26	29	34	35	43
1.3	103	15	20	26	29	34	35	43
1.4	96	13	18	26	29	34	35	43
1.5	89	13	16	24	29	34	35	43
1.6	84	13	16	23	29	34	35	43
1.63	82	13	16	23	26	31	34	42
1.7	79	13	15	23	26	31	34	42
1.8	74	13	15	21	26	31	34	42
1.9	71	13	15	20	26	31	34	42
2	67	13	13	20	24	31	34	42
2.1	64	13	13	18	24	29	34	42
2.2	61	13	13	18	23	27	34	42
2.3	58	13	13	18	23	27	32	42
2.4	56	13	13	16	21	26	31	40
2.5	54	13	13	16	21	26	29	39
2.55	53	13	13	16	21	24	29	39

ISOLATEK INTERNATIONAL — Type M-II/P investigated for exterior use, and additionally evaluated for acid and solvent spray exposure.

GREENTECH ASIA PACIFIC SDN BDH — Type M-II/P investigated for exterior use, and additionally evaluated for acid and solvent spray exposure.

GREENTECH THERMAL INSULATION PRODUCTS MFG CO L L C — Type M-II/P investigated for exterior use, and additionally evaluated for acid and solvent spray exposure.

NEWKEM PRODUCTS CORP — Type M-II/P investigated for exterior use, and additionally evaluated for acid and solvent spray exposure.

PERLITE ITALIANA SRL — Type M-II/P, investigated for exterior use, and additionally evaluated for acid and solvent spray exposure.

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

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