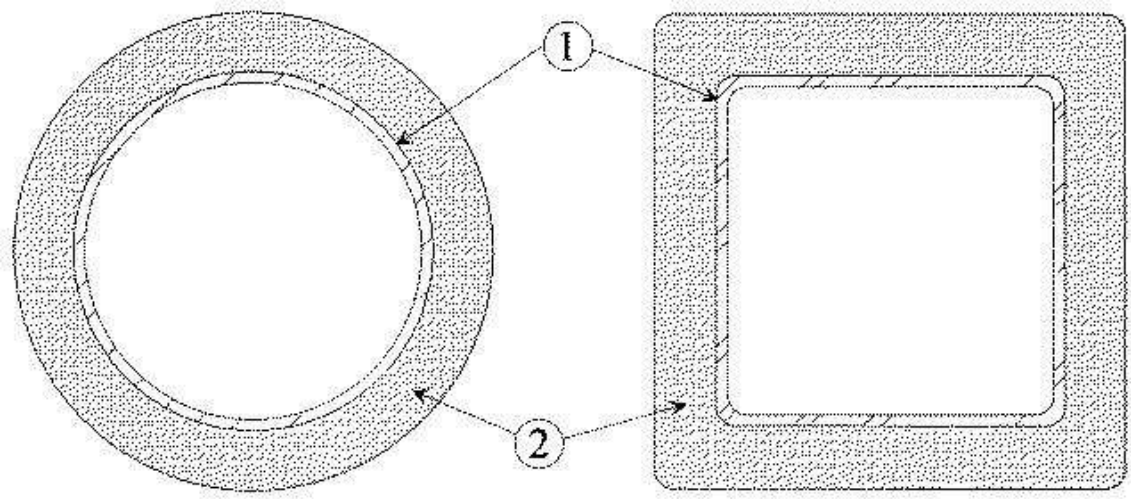
Fire-resistance Ratings - ANSI/UL 263

Design No. Y710

February 05, 2014

Ratings — 1, 1-1/2, 2, 3 and 4 Hr

*** 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 Pipe or Tube Column —** Steel circular pipe (SP) or steel square or rectangular tube (ST). The A/P ratio of the steel pipe or tube (see Item 2) shall range from 0.18 to 2.0.

2. **Spray-Applied Fire Resistive Materials* —** Prepared by mixing with water according to instructions and applying in one or more coats to the thicknesses shown below, to steel surfaces which are clean and free of dirt, loose scale, and oil. Min avg and min ind density for Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set and RG of 15/14 pcf, respectively. Min avg and min ind density for Types Z-106, Z-106/G, Z-106/HY of 22/19 pcf, respectively.

Column Size In.	A/P	Min Thkns In. 1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
ST 3x3x3/16	.18	1	1-11/16	2-5/16	3-9/16	NA
ST 3x3x5/16	.28	11/16	1-1/8	1-1/2	2-5/16	3-1/16
ST 3x3x1/2	.42	7/16	3/4	1	1-1/2	2-1/16
ST 8x8x5/8	.58	3/8	5/8	3/4	1-1/8	1-1/2
ST 20x20x3/4	.72	1/4	3/8	9/16	7/8	1-3/16
ST 20x20x1	.95	1/4	5/16	7/16	11/16	15/16
ST 32x32x1-1/4	1.20	1/4	1/4	3/8	9/16	3/4
ST 32x32x1-1/2	1.43	1/4	1/4	5/16	1/2	5/8
ST 32x32x1-3/4	1.65	1/4	1/4	1/4	7/16	9/16
ST 32x32x2	1.88	1/4	1/4	1/4	3/8	1/2
SP 3x.216	.20	15/16	1-1/2	2-1/16	3-1/8	NA
SP 8x.322	.31	5/8	1	1-5/16	2-1/16	2-13/16
SP 6x.432	.40	1/2	3/4	1	1-9/16	2-1/8
SP 10x.50	.48	3/8	5/8	7/8	1-3/8	1-13/16
SP 6x.864	.74	1/4	3/8	9/16	7/8	1-3/16

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The hourly rating of the structural member is dependent upon the ratio of A/P and the thickness of Spray-Applied Fire Resistive Materials, where A is the cross sectional area of the pipe or tube and P is the heated perimeter.

The A/P ratio of a circular pipe is determined by:

$$A/P\ pipe = \frac{t\,(d-t)}{d}$$

Where:

d = the outer diam of the pipe (in.)

t = the wall thickness of the pipe (in.)

The A/P ratio of a rectangular or square tube is determined by:

$$A/P\ tube = \frac{t\,(a+b-2t)}{a+b}$$

Where:

a = the outer width of the tube (in.)

b = the outer length of the tube (in.)

t = the wall thickness of the tube (in.)

The thickness of Spray-Applied Fire Resistive Materials for rating of 3/4, 1, 1-1/2, 2, 3 and 4 h of a steel pipe or tube can be determined by the equation:

$$h = \frac{R-0.20}{4.43\,(A/P)}$$

Where:

R = the hourly rating (hrs)

h = the thickness of Spray-Applied Fire Resistive Materials, minimum 1/4 in., maximum 3-7/8 in.

ARABIAN VERMICULITE INDUSTRIES — Type MK-6GF, MK-6 GF Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-1000/HB, MK-1000/HB Extended Set.

GCP KOREA INC — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Monokote Acoustic 1, Monokote Acoustic 5, Z-106, Z-106/G, Z-106/HY.

GCP APPLIED TECHNOLOGIES INC — Types MK-4, MK-5, MK-6/HY, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Monokote Acoustic 1, Monokote Acoustic 5, RG, Z-106, Z-106/G, Z-106/HY.

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