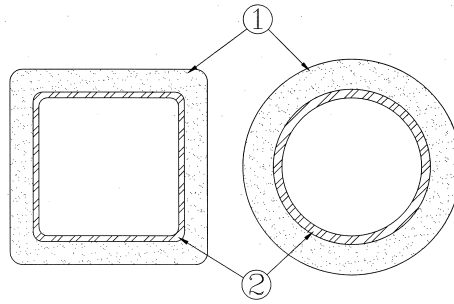


Design No. X768
 Ratings — 1, 1-1/2, 2, 3, or 4 Hr.



1. **Spray-Applied Resistive Material*** — See tables below for appropriate thicknesses. Prepared by mixing with water and spray or trowel applied in one or more coats to column surfaces which must be clean and free of dirt, loose scale and oil. For method of density determination, see Design Information Section, Sprayed Material. Min avg density of 44 pcf with min ind value of 40 pcf for Type M-II. Min avg density of 44 pcf with min ind value of 42 pcf for Type TG.

Column Size In.	A/P	1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
ST 4X4X3/16 IN.	0.18	15/16	1-1/4	1-9/16	2-1/8	2-11/16
ST 4X4X5/16 IN.	0.29	11/16	1	1-5/16	1-15/16	2-5/16
ST 4X4X3/8 IN.	0.34	5/8	13/16	1-3/16	1-3/4	2-3/8
ST 4X4X1/2 IN.	0.44	1/2	3/4	1-1/16	1-9/16	2-1/8
ST 8X8X5/8 IN.	0.58	1/2	5/8	13/16	1-1/4	1-11/16
ST 20X20X3/4 IN.	0.72	1/2	1/2	11/16	1	1-3/8
ST 20X20X1 IN.	0.95	1/2	1/2	9/16	7/8	1-1/8
ST 20X20X1-1/2 IN.	1.39	1/2	1/2	1/2	5/8	7/8
ST 20X20X1-3/4 IN.	1.60	1/2	1/2	1/2	9/16	3/4
ST 32X32X1-1/4 IN.	1.20	1/2	1/2	1/2	11/16	15/16
ST 36X24X1/2 IN.	0.49	1/2	11/16	7/8	1-5/16	1-11/16
SP 4 IN. PIPE X 0.237 IN.	0.23	7/8	1-3/16	1-1/2	2-1/8	2-13/16
SP 6 IN. PIPE X 0.432 IN.	0.40	9/16	13/16	1-1/8	1-5/8	2-13/16

As an alternate to the above table, the thicknesses of Spray-Applied Fire Resistive Materials for rating periods of 1, 1 1/2, 2, 3, and 4 h can be determined from the following equation:

$$h = \frac{R}{125 (A/P) + 35}$$

BERLIN CO LTD —Types M-II or TG. Types M-II and TG investigated for exterior use.

ISOLATEK INTERNATIONAL — Types M-II or TG. Types M-II and TG investigated for exterior use.

LUCKY CORE INSULATING MATERIALS

MANUFACTURING L L C —Types M-II or TG. Types M-II and TG investigated for exterior use.

NEWKEM PRODUCTS CORP —Types M-II or TG. Types M-II and TG investigated for exterior use.

2. **Steel Column** — Steel pipe (SP) or tube (ST) column as shown in the above tables.

Where:

h = Type M-II or TG Spray-Applied Fire Resistive Materials thickness in the range of 9/16 to 3 5/16 in. (rounded up to the nearest 1/16 in.).

R = Fire resistance rating in minutes (60-240 min).

A = Cross-sectional area of pipe or tube.

P = Heated perimeter of steel pipe or tube.

A/P = 0.179 to 0.44.

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

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

Where:

d is the outer diameter of the pipe (in.)

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

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

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

Where:

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

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

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

*Bearing the UL Classification Mark