

USE OF THE W/D THICKNESS MANUAL

This “W/D Thickness Manual” primarily provides Spray-Applied Fire Resistive Material (SFRM) thicknesses for structural steel shapes to achieve various hourly fire resistance ratings. Thicknesses are listed under specific Underwriters Laboratories, Inc. (UL) Designs for CAFCO® BLAZE-SHIELD® II, BLAZE-SHIELD HP, CAFCO 300, CAFCO 300SB, CAFCO 300ES, CAFCO 400 and Fendolite® M-II and TG SFRMs. Also included are designs and thicknesses for CAFCO-BOARD™ and CAFCO SprayFilm® – WB 3 and WB 4 Intumescent Coatings.

Structural steel shapes or members are identified by an American Institute of Steel Construction (A.I.S.C.) designation (For example: “W8 x 28”). This nomenclature describes the section number and weight of a structural steel member. “W8” indicates that the section is a wide flange beam or column with a nominal depth of 8-inches. The “28” represents the weight (lbs. per lineal foot) of the member.

The thickness of the SFRM is a function of the W/D ratio of the member, where “W” refers to the weight per lineal foot (lbs.) and “D” refers to the heated perimeter (inches) at the interface of the fire protection material and the steel. The W/D ratio is determined by dividing the “W” value by the “D” value.

To assist those who prefer to use metric values, “M/D” and “HP/A” values are the Canadian and European metric equivalent to the W/D respectively.

For the specified UL Designs, tables have been provided with the A.I.S.C. designation followed by its corresponding W/D ratio, along with the M/D and Hp/A ratios. SFRM thicknesses are then listed for the various desired hourly ratings.

This information has been prepared with the intent of providing the user with the most competitive structural steel fire protection thicknesses for various construction types.

The points outlined below illustrate some of the ways in which this manual allows for higher degree of competitiveness. It is recommended that time be taken to become familiar with the format.

- (a) Some designs have been broken down to list separate tables of protection thicknesses applicable to certain variations of construction within the design. The best possible thicknesses have been chosen, and other potentially advantageous features such as the “T/2 Option” and “plugging” of flutes (versus filling) have been footnoted where applicable.

IT IS IMPORTANT THAT THE CORRECT DESIGN BE SELECTED TO MATCH THE CONSTRUCTION, OR ELSE THE WRONG THICKNESS MAY BE USED. An example of “incorrect” selection is the use of a table pertaining to steel beams supporting cellular floor deck when the project consists of all-fluted deck. Not using the table for “all-fluted deck” may result in higher than necessary protection thicknesses. The reverse condition i.e. selecting a thickness pertaining to “all-fluted” deck when the project involves cellular deck may result in insufficient fire protection.

NOTE: The construction features listed on top of the pages in this Manual are not intended to replace careful UL design scrutiny for the details of the construction and appropriateness of use. It is assumed that before using the tables in this manual, the appropriate design has been selected. The manual allows “fine-tuning” of thicknesses after design selection.

- (b) In determining the best available thicknesses for D, G, and P-series designs, the benefits of substitutions from N-series and S-series designs are utilized where a lower thickness is available in the N or S design.

For further clarification, please do not hesitate to contact our Technical Service Department at (800) 631-9600, (973) 347-1200 or technical@isolatek.com.

Thickness Adjustment for CAFCO[®] Spray-Applied Fire Resistive Materials

BEAMS:

The equation used to adjust Spray-Applied Fire Resistive Material (SFRM) thicknesses on steel beams is as follows:

$$T_1 = \frac{(W_2/D_2 + 0.6) \times T_2}{(W_1/D_1 + 0.6)}$$

Where:

T = Thickness (in.) of spray-applied fire resistive material

W = Weight of beam (lb/ft)

D = Perimeter of protection, at the interface of the protection material and the steel through which heat is transferred to steel (in.)

Subscript 1 = Refers to desired beam size and required material thickness.

Subscript 2 = Refers to given beam size and material thickness shown on the individual design.

COLUMNS:

The tables and / or equations used to adjust Spray-Applied Fire Resistive Material thicknesses on steel columns are listed in each respective column design.

MISCELLANEOUS SHAPES:

The equations used to adjust Spray-Applied Fire Resistive Material thicknesses on miscellaneous shapes are listed in the wide flange column design for the respective SFRM.