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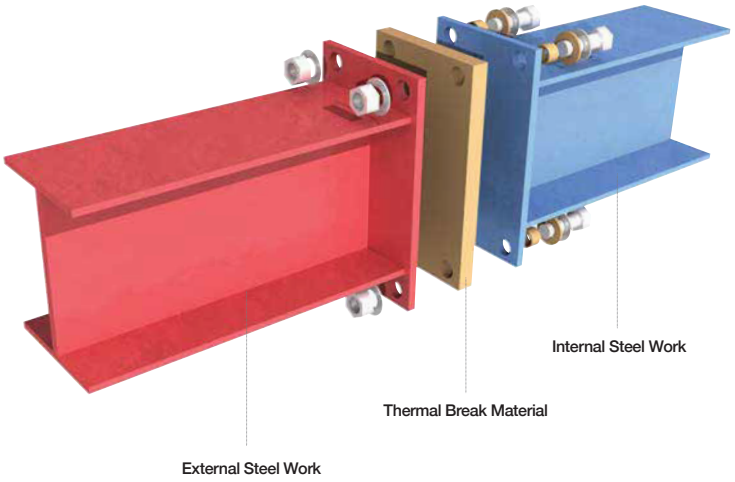
Thermal Break Material
Armatherm™ Grade FRR
For Structural Steel Connections

Introduction

Reducing heat flow within a building's thermal envelope reduces energy consumption as well as potential condensation issues. Thermal bridging through steel and concrete framing can have a significant impact on a buildings' energy performance. Armatherm™ FRR thermal break material provides low thermal conductivity and high compressive strength. Armatherm™ FRR is made of a reinforced, thermoset resin which is fire resistant, does not readily burn and has very limited creep under load making it the ideal material for use in structural thermal break connections.



Specifications of Armatherm™ FRR

Maximum Loading Pressure	**PSI 45,000**
Compressive Modulus	**PSI 1,450,000**
Shear Strength	**PSI 16,000**
Standard Thickness	**1/2", 3/4", 1," & 2"**
Thermal Conductivity	**Btu ft/ft2h°F 0.103**
Thermal Conductivity	**W/m°K 0.20**[1]
Minimum Operating Temp	**°F -60**
Maximum Operating Temp	**°F 220**

[1]For comparison, the thermal conductivity of Mild Steel is 56 W/m.K

- Beam Connections
- Masonry Shelf Angles
- Lintels
- Canopies
- Balconies
- Curtain Wall Mullions
- Rain Screens
- Z Girts
- Roof Penetrations

Armatherm™ Thermal bridging solutions to improve building envelope performance

Call **800 580 3984** For all enquiries

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Armatherm™ Grade FRR

Washer and Bushing

Washer and Bushing

A thermal break should also be provided at the front side of the bolt head between the steel washer and face of the exterior steel. This prevents a thermal bridge through the bolt which would otherwise provide a path for heat flow through the thermal break assembly. ArmathermTM washers and bushings are recommended to eliminate this path and any potential for condensation within the building envelope. Contact us for assistance with your structural design or thermal calculations.

Bushing Detail

Bolt Size	Hole In Pad	Bushing ID	Bushing OD	Hole in Structure	Bushing Length (Standard)
M12	14	14	20	20	10
1/2”	0.55”	0.55”	0.78”	0.78”	0.375”
M16	18	18	24	24	13
5/8”	0.70”	0.70”	1.0”	1.0”	0.50”
M20	22	22	28	28	13
3/4”	0.86”	0.86”	1.10”	1.10”	0.50”
M24	26	26	32	32	17
1”	1.05	1.05	1.25”	1.25”	0.625”

Washer Detail

Bolt Size	Washer ID	Washer OD	Thickness
M12	14	30	6
1/2”	0.55”	1.18”	0.25”
M16	18	40	6
5/8”	0.7	1.57”	0.25”
M20	22	47	6
3/4”	0.86	1.85”	0.25”
M24	26	50	6
1”	1”	2.00”	0.25”