



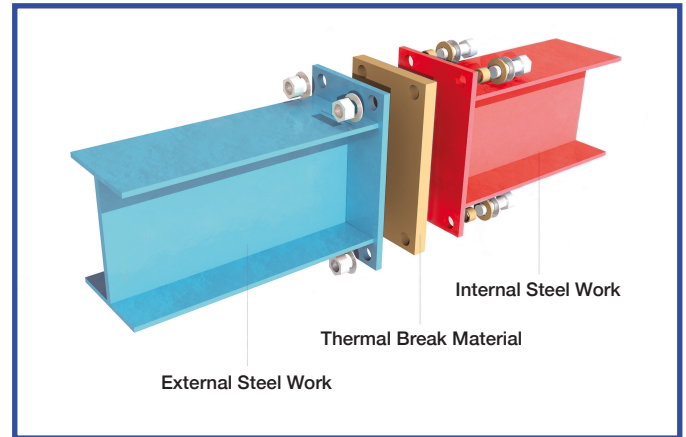
www.armatherm.com

# Armatherm™ Grade FRR

## Structural Thermal Break Material

### 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 building's 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 enables FRR to boast limited combustibility and reduce the amount of creep under load making it the ideal material for use in structural thermal break connections.



### Specifications of Armatherm™ FRR

Maximum Loading Pressure	43,000 psi
Compressive Modulus	835,000 psi
Shear Strength	16,000 psi
Standard Thickness	1/2", 3/4", 1," & 2"
Thermal Conductivity	1.056 BTU·in/h·ft²·°F
Minimum Operating Temp	-60°F
Maximum Operating Temp	220°F

<sup>1</sup>For comparison, the thermal conductivity of Mild Steel is 320 BTU·in/h·ft²·°F

**Other thicknesses available: 1/16", 1/8", 1/4", 3/8", 5/8", 7/8".**

Armatherm™ FRR sheets can be bonded together to satisfy U value and thickness specification requirements.



### Applications of Armatherm™ FRR

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



Call **844 360 1036** For all enquiries

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## Structural Thermal Break Material

### 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. Armatherm™ 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.



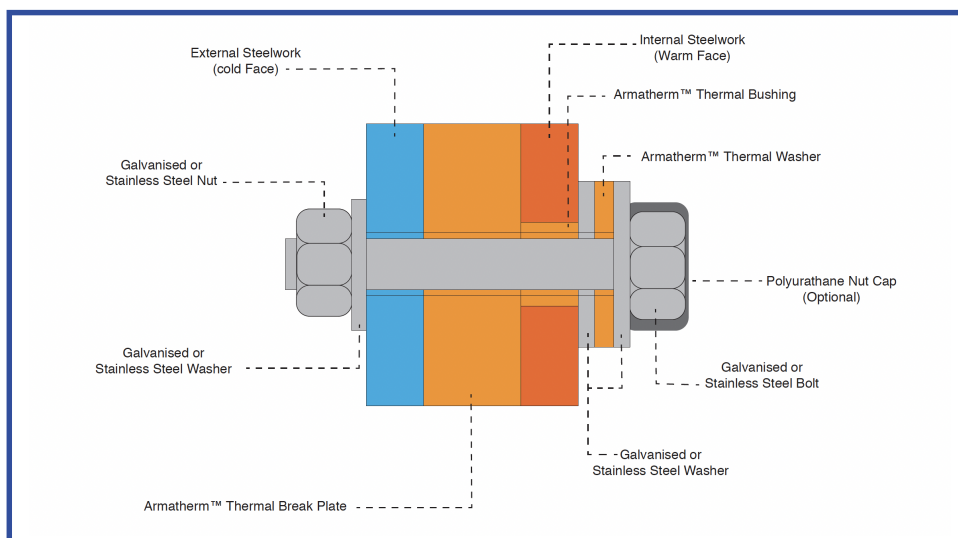
### Bushing Detail

Bolt Size	Hole In Pad	Bushing ID	Bushing OD	Hole in Structure	Bushing Length (Standard)
3/8"	0.44"	0.44"	0.57"	0.64"	0.375"
M12	14mm	14mm	20mm	22mm	10mm
1/2"	0.55"	0.55"	0.78"	0.85"	0.375"
M16	18mm	18mm	24mm	26mm	13mm
5/8"	0.70"	0.70"	1.0"	1.07"	0.50"
M20	22mm	22mm	28mm	30mm	13mm
3/4"	0.86"	0.86"	1.10"	1.17"	0.50"
7/8"	0.94"	0.94"	1.25"	1.31"	0.50"
M24	26mm	26mm	32mm	32mm	17mm
1"	1.05"	1.05"	1.25"	1.38"	0.625"

### Washer Detail

Bolt Size	Washer ID	Washer OD	Thickness
3/8"	0.44"	1.18"	0.25"
M12	14mm	30mm	6mm
1/2"	0.55"	1.18"	0.25"
M16	18mm	40mm	6mm
5/8"	0.70"	1.57"	0.25"
M20	22mm	47mm	6mm
3/4"	0.86"	1.85"	0.25"
7/8"	0.94"	2"	0.25"
M24	26mm	50mm	6mm
1"	1.05"	2.00"	0.25"

Armatherm has a tolerance of +/- 0.03" on the I.D. and + 0.06" on the O.D. on our thermally broken bushings.



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