

### PRODUCT DESCRIPTION

ISOLATEK Type M-II is a single package, factory controlled Spray-Applied Fire Resistive Material (SFRM) recommended for use in petrochemical facilities, refineries, nuclear/power plants, and tunnels.

ISOLATEK Type M-II can be a spray texture or smooth trowel finished and requires only the addition of water as an activator. Tested and developed for fire protection of external structural steel components such as tanks, support legs and saddles, piperacks, vessel skirts, sphere legs or interior situations where higher levels of abrasion resistance are necessary.

ISOLATEK Type TG is specifically developed only for trowel application in areas where spraying is impractical or not permitted.

### PRODUCT ADVANTAGES

- Proven material with over 30 years of in-place performance in hydrocarbon environments
- Tested to the latest industry fire standards (hydrocarbon and jet fire) including exposure to gas explosion and liquid nitrogen
- Vermiculite aggregate provides excellent thermal resistance
- Formulated for durability offering long-term weather, abrasion, and erosion resistance, including high level impact protection
- Reduced thicknesses deliver required ratings with less material
- Lightweight relative to concrete, lowering construction costs with savings in transportation and installation

### FIRE TEST PERFORMANCE

ISOLATEK Type M-II has been extensively tested for fire endurance in accordance with industry specific protocols.

- ANSI/UL1709 Rapid Rise Fire Test of Protection Materials for Structural Steel – UL Designs XR704, XR729, XR730
- ANSI/UL1709 Rapid Rise Fire Test as above however subjecting ISOLATEK TYPE M II to Two Full Scale UL 1709 Fire Tests within a 24-hour period (tested, allowed to cool to ambient and re-tested)
- ANSI/UL1709 Rapid Rise Fire Test (following Gas Explosion Test)
- ANSI/UL1709 Rapid Rise Fire Test (following Liquid Nitrogen Immersion Test)
- BS476, Parts 20-21: 1987 Appendix D-Hydrocarbon Heating Conditions
- Gas Explosion Test (3 Bar Overpressure)
- ISO 22899-1:2007(E) Determination of the Resistance to Jet Fires of Passive Fire Protection Materials
- ISO 22899-1:2007(E) Determination of the Resistance to Jet Fires (following Gas Explosion Test)
- NFPA 58, Annex H Procedure for Torch Fire and Hose Stream Testing of Thermal Insulating Systems for LP-Gas Containers
- Factory Mutual (FM) Fire Protective Coating for LP-Gas Steel Storage Vessels and Process Structures (Class 4971)
- GEIS GASAFE Program – LPG Storage Vessels
- Rijkswaterstaat (RWS) Curve
- Increased Time/Temperature Curve – HCinc

### ENVIRONMENTAL TEST PERFORMANCE

In addition to the required ANSI/UL1709 environmental test conditions (Aging, High Humidity, Industrial Atmosphere, Salt Spray and Combined Wet/Freeze/Dry Cycling), ISOLATEK Type M-II has also been tested under the following conditions:

- Acid Spray - Exposure of the material (with and without topcoat) to a hydrochloric acid /water fog spray.
- Solvent Spray - Exposure of the material (with and without topcoat) to a spray applied solvent for 5 cycles. Each cycle consists of the application of the solvent, 6 hour dry time, re-application of the solvent, and dry time of 18 hours.

### SPECIFICATION AND STANDARDS COMPLIANCE

American Petroleum Institute (API) Section 2510, 2510A, 2218

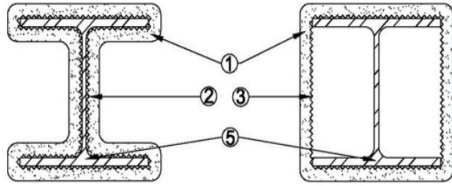
Physical Performance		
Characteristic	ASTM Method	Tested Performance*
Density	E605	704-768 kg/m <sup>3</sup> (44-48 pcf)
Durometer Hardness (Shore DO)	D2240	65+
Surface Burning	E84	Flame Spread 0 Smoke Developed 0
Combustibility	E136	Noncombustible
Cohesion/Adhesion	E736	774 kPa (16,154 psf)
Deflection	E759	No Cracks or Delaminations
Bond Impact	E760	No Cracks or Delaminations
Compressive Strength	E761	3,793 kPa (550 psi)
Air Erosion Resistance	E859	0.000 g/m <sup>2</sup> (0.000 g/ft <sup>2</sup> )
Corrosion Resistance	E937	Does Not Promote Corrosion of Steel
Thermal Conductivity	C518	0.164 W/m•K (1.14 BTU in/hr ft <sup>2</sup> °F @ 75° F R Value = 0.88/in)
Maximum Strain	D790	0.06 mm/mm (0.0024 in/in)
Fungal Resistance	G21	Passed

\* Values represent independent laboratory tests under controlled conditions. Test reports available upon request.

Technical Data	
Color	Off-White
Theoretical Coverage (gross)	66 m <sup>2</sup> /tonne @ 25mm thick**
Thickness	Depends on desired rating and assembly being protected
VOC Compliance	0.0 g/L (EPA Method 24)
Outgassing Analysis, ATD GC-MS (50°C @ 30 mins.)	<12 ppmw (ug/g)
Storage	Dry, Covered, Off-Ground
Shelf Life	24 months

\*\* Applied density of 720 kg/m<sup>3</sup>

**Design No. XR729**  
**BYBU.XR729**  
**Fire-resistance Ratings - ANSI/UL 1709**

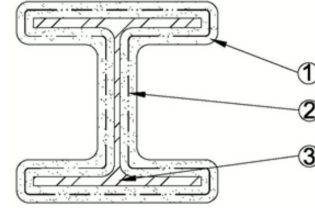


- Spray-Applied Fire-Resistive Materials\*** — See table below for appropriate thickness. Prepared by mixing with water according to instructions on each bag of mixture and spraying in one or more coats, as necessary, directly to the column or onto the metal lath surfaces, which must be clean and free of dirt, loose scale and oil. Min avg density of 44 pcf, with min individual value of 40 pcf for Type M-II. Min avg density of 44 pcf, with min individual value of 42 pcf for Type TG. For method of density determination, see Design Information Section, Sprayed Material.
- Metal Lath** — Galv. expanded steel lath, weighing 3.4 lb per sq yd may be used. Metal lath wrapped around the column profile and secured tight to column by gunned or stud welding pins. Lath lapped 1-1/2 to 3 in. and attached with fasteners at max 24 in. on center at overlaps.
- Metal Lath** — For boxed type protection. Min 3.4 lb per sq yd expanded steel. Lath lapped 1-1/2 to 3 in. at vertical joint on column flange and tied together with No. 18 SWG galv steel wire, spaced vertically 14 in. OC.
- Corner Bead** — (Optional-Not Shown) — No. 25 MSG galv expanded steel corner bead with minimum 2-in. legs. May be used in conjunction with column cage. When used, placed over each corner of column cage and attached to metal lath with tie wire spaced 18 in. OC.
- Steel Column** — Min size of column W10x49.

**UL Design XR729**

Rating, Hr.	Min Thickness, mm (In.)	Min Thickness, mm (In.)
	Contour Application	Boxed Protection
3/4	17.5 (11/16)	17.5 (11/16)
1	20.7 (13/16)	20.7 (13/16)
1-1/2	27.0 (1-1/16)	23.9 (15/16)
2	31.8 (1-1/4)	23.9 (15/16)
2-1/2	36.6 (1-7/16)	30.2 (1-3/16)
3	39.7 (1-9/16)	36.6 (1-7/16)
4	47.6 (1-7/8)	47.6 (1-7/8)

**Design No. XR730**  
**BYBU.XR730**  
**Fire-resistance Ratings - ANSI/UL 1709**



- Spray-Applied Fire-Resistive Materials\*** — See table below for appropriate thickness. Prepared by mixing with water according to instructions on each bag of mixture and spraying in one or more coats, as necessary, to the column surfaces, which must be clean and free of dirt, loose scale and oil. Application to follow the column profile. Min avg. density of 704 kg/m<sup>3</sup> (44 pcf), with min ind. value of 640 kg/m<sup>3</sup> (40 pcf) for Type M-II. Min avg density of 753 kg/m<sup>3</sup> (47 pcf), with min ind. value of 689 kg/m<sup>3</sup> (43 pcf) for Type M-II/P. Min avg. density of 704 kg/m<sup>3</sup> (44 pcf), with min ind. value of 672 kg/m<sup>3</sup> (42 pcf) for Type TG. For method of density determination, see Design Information Section, Sprayed Material.
- Reinforced Mesh** — No. 20 SWG galv steel wire twisted to form 1 or 2 in. hexagons. Mesh attached with steel helical pins or straight pins with washers 16 in. on center to the center of the column flanges and webs prior to application of Spray-Applied Fire Resistive Material. Mesh wrapped around the column and embedded at approximate mid-depth in Spray-Applied Fire Resistive Materials with a min. 3 inch overlap at vertical and horizontal joints. When Type TG is used, mesh shall not be installed until approximate mid-depth has been applied.
- Steel Column** — Min size of column W10x49.

**UL Design XR730**

Rating, Hr.	Min Thickness, mm
3/4	17.5
1	20.7
1-1/2	27.0
2	32.5
2-1/2	36.8
3	41.2
4	50.0



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Isolatek International provides passive fireproofing materials under the CAFCO® trademark throughout the Americas and other markets and under the ISOLATEK® trademark throughout the world.

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