

PRODUCT DESCRIPTION

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

Advanced Portland cement based formula provides increased density, enhanced bond strength and exceptional flexural strength. Developed and tested for fire protection of external structural steel components (on or off-site) such as tanks, support legs and saddles, piperacks, vessel skirts, sphere legs, or interior situations where higher levels of abrasion resistance are necessary.

PRODUCT ADVANTAGES

- 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
- Higher density and cohesive properties offers ultimate weather, abrasion, and erosion resistance, including high impact damage protection
- Increased flexural strength for resistance to cracking, shrinkage, and spalling as well as for transportation of fireproofed steel structures
- Reduced thicknesses provide required ratings with less material
- Lightweight relative to concrete, lowering construction costs with savings in transportation and installation
- Spray or trowel application allows for more options during installation

Physical Performance		
Characteristic	ASTM Method	Laboratory Tested Performance*
Density	E605	50-55 pcf (800-881 kg/m ³)
Durometer Hardness (Shore DO)	D2240	71+
Surface Burning	E84	Flame Spread 0 Smoke Developed 0
Combustibility	E136	Noncombustible
Cohesion/Adhesion	E736	19,001 psf (910 kPa)
Deflection	E759	No Cracks or Delaminations
Bond Impact	E760	No Cracks or Delaminations
Compressive Strength	E761	617 psi (4,254 kPa)
Air Erosion Resistance	E859	0.000 g/ft ² (0.000 g/m ²)
Corrosion Resistance	E937	Does Not Promote Corrosion of Steel
Thermal Conductivity	C518	1.27 BTU in/hr ft ² ° F @ 75 ° F (R Value = 0.79 / inch)
Impact Resistance	D2794	Indents at 40 foot pounds
Fungal Resistance	G21	Passed

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

+ Value is provided based on Shore DO which more accurately represents a non-homogeneous product.

FIRE TEST PERFORMANCE

FENDOLITE M-II/P / ISOLATEK Type M-II/P 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 Design XR725
- ANSI/UL1709 Rapid Rise Fire Test as above however subjecting FENDOLITE M II/P / ISOLATEK Type M-II/P 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 Liquid Nitrogen Immersion Test)
- 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
- NFPA 290, Standard for Fire Testing of Passive Fire Protection Materials for use on LP-GAS Containers, standard and extended 150 minute tests
- Factory Mutual (FM) Fire Protective Coating for LP-Gas Steel Storage Vessels and Process Structures (Class 4971)
- ISO 20088-1(2016) - Standard for Determination of the Resistance to Cryogenic Spillage of Insulation Materials
- ISO 20088-1:2016 Cryogenic Resistance Followed by ISO 22899-1:2007 Resistance to Jet Fires

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, FENDOLITE M-II/P / ISOLATEK Type M-II/P has also been evaluated 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.
- Investigated for UL 2431 Classification Category I-A - Outdoor, Heavy Industrial Use

SPECIFICATION AND STANDARDS COMPLIANCE

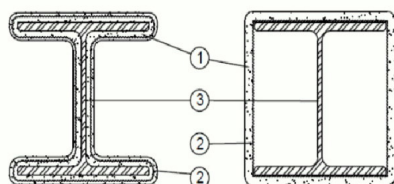
American Petroleum Institute (API) Section 2510, 2510A, 2218

Technical Data

Color	Gray Gold
Theoretical Coverage (gross)	15 Bd. Ft./Bag**
Thickness	Depends on desired rating and assembly being protected
VOC Compliance	0.0 g/L (EPA Method 24)
Storage	Dry, Covered, Off-Ground
Shelf Life	24 months

** When applied at minimum UL Design average density.

**Design No. XR725
BYBU.XR725
Fire-resistance Ratings - ANSI/UL 1709**



1. **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, onto the metal lath surfaces, which must be clean and free of dirt, loose scale and oil. As an alternate to spraying, may be machine mixed and trowel applied. Min avg density of 47 pcf (753 kg/m³), with min individual value of 43 pcf (689 kg/m³). For method of density determination, see Design Information Section, Sprayed Material.
2. **Metal Lath** — For boxed and contour protection, min 3.4 lb per sq. yd. expanded steel lath lapped 2 in at joints and attached to column with power actuated fasteners and washers, spaced 18 in OC at overlap.
3. **Steel Column** — Min size of column W10x49.
4. **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 O.C.

UL Design XR725*

Rating, Hr.	Minimum Thickness in (mm) Contour or Boxed Application
3/4	1/2 in (13 mm)
1	9/16 in (15 mm)
1- 1/2	3/4 in (20 mm)
2	7/8 in (23 mm)
2 - 1/2	1-1/16 in (27 mm)
3	1-1/8 in (29 mm)
4	1-7/16 in (37 mm)

* For a complete listing of steel sizes and W/D ratios, please refer to UL Design XR725.

PRODUCT USES

FENDOLITE® M-II/P / ISOLATEK® Type M-II/P protects vital structural steel sections located within industrial hydrocarbon and nuclear facilities. With its improved physical properties including hardness as well as flexural stress, it is ideal for new construction (on or off-site). When used for on-site repair, plants can remain operational while undergoing maintenance.

Petrochemical and Refineries Nuclear/Power Plants

- Horizontal and Vertical Vessels
- Support Legs
- Saddles
- Vessel Skirts
- Sphere Legs and Bracing
- Piperacks
- Blockouts
- Main Reactor Areas
- Turbine and Generator Structures
- Spent Fuel Storage Buildings
- Control Rooms
- Diesel Generator Rooms



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