

PRODUCT DESCRIPTION

CAFCO 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

FIRE TEST PERFORMANCE

CAFCO 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 CAFCO 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, CAFCO 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.

SPECIFICATION AND STANDARDS COMPLIANCE

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

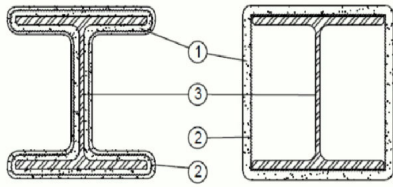
Physical Performance		
Characteristic	ASTM Method	Tested Performance*
Density	E605	800-881 kg/m ³ (50-55 pcf)
Durometer Hardness (Shore DO)	D2240	71+
Surface Burning	E84	Flame Spread 0 Smoke Developed 0
Combustibility	E136	Noncombustible
Cohesion/Adhesion	E736	910 kPa (19,001 psf)
Deflection	E759	No Cracks or Delaminations
Bond Impact	E760	No Cracks or Delaminations
Compressive Strength	E761	4,254 kPa (617 psi)
Air Erosion Resistance	E859	0.000 g/m ² (0.000 g/ft ²)
Corrosion Resistance	E937	Does Not Promote Corrosion of Steel
Thermal Conductivity	C518	0.182 W/m•K
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. Filed test results will exceed minimum standard performance values.

Technical Data	
Color	Off-White
Theoretical Coverage (gross)	61 m ² /tonne @ 25 mm thick**
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 mm (in) Contour or Boxed Application
3/4	13 mm (1/2 in)
1	15 mm (9/16 in)
1- 1/2	20 mm (3/4 in)
2	23 mm (7/8 in)
2 - 1/2	27 mm (1-1/16 in)
3	29 mm (1-1/8 in)
4	37 mm (1-7/16 in)

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

MECHANICAL REINFORCEMENT:

Vessel and Tower Skirts — Minimum 1.8 kg/m² (3.4 lb/yd²) galvanized metal lath secured to steel at 300 mm to 360 mm (12 in to 14 in) centers in accordance with the specific application being installed. As an alternate, 51 mm x 51 mm (2 in x 2 in), 20 gauge steel plastic coated wire mesh may be used. Certain applications may require a metal lath overlapped at lath joints. Secure mesh to the steel by stud welded, helical or powder actuated fasteners installed in accordance with the application requirements. Tie wire may be used at overlap joints.

Control joints are made by cutting cut a “V” or “U” shaped groove approximately 6 mm (¼ in) wide to provide stress relief. Fill the grooves with a silicone based sealant after application of any top coat system.

For vertical joint spacing on vessel skirts with a diameter less than 1.5 m (60 in) – two stress relief cuts, each one 180° apart. For Vessel skirts with a diameters greater than 1.5 m (60 in) but less than 3.0 m (120 in) – four stress relief cuts, one each at the quarter point of the circumference. For vessel skirts with a diameter greater than 3.0 m (120 in) – one stress relief cut every 2.5 m (100 in). For horizontal spacing for all towers and vessel skirts over 2.5 m (100 in) in height – one horizontal stress relief cut for each 2.5 m (100 in) of tower height. As an alternate, plastic nosed, open leg, wire cornerbeads may be used as a control joint. Spacing for the preferred corner bead method should be on 3 m (10 ft) centers, both horizontally and vertically.

The above abbreviated guide methods are not intended as a substitute for the ISOLATEK® Type M-II/P Application & Installation Manual or Guideline Specifications. Contact Isolatek Technical Department with any questions.

PRODUCT USES

CAFCO FENDOLITE 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

- Horizontal and Vertical Vessels
- Support Legs
- Saddles
- Vessel Skirts
- Sphere Legs and Bracing
- Piperacks
- Blockouts

Nuclear/Power Plants

- Main Reactor Areas
- Turbine and Generator Structures
- Spent Fuel Storage Buildings
- Control Rooms
- Diesel Generator Rooms

The performance data herein reflects Isolatek International's expectations based on tests conducted in accordance with recognized standard methods under controlled conditions. The applicator, general contractor, property owner and/or user MUST read, understand and follow the directions, specifications and/or recommendations set forth in Isolatek International's publications concerning use and application of these products, and should not rely merely on the information contained in this product data sheet. Isolatek International is not responsible for property damage, bodily injuries, consequential damages, or losses of any kind that arise from or are related to the applicator's, general contractor's or property owner's failure to follow the recommendations set forth in Isolatek International publications.

ISOLATEK INTERNATIONAL® provides passive fireproofing materials under the CAFCO® and FENDOLITE® trademark throughout the Americas and under the ISOLATEK® trademark throughout the world.



GREENTECH THERMAL INSULATION PRODUCTS MANUFACTURING CO. P.O. BOX 3350, UMM AL QUWAIN, UNITED ARAB EMIRATES
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