



THE **PASSIVE FIRE PROTECTION** SPECIALISTS

*Our Credentials :*



Quality Management System  
ISO 9001-2008



ISO 14001 Registered  
OHSAS 18001 Registered



Licensee of Cafco Asia Pacific  
(A Division of Promat (Malaysia) Sdn. Bhd.)



UL follow-up service inspection



PSB Listed Class 1A & 2 and  
Quality Audit



CAFCO Fendolite MII: 022-109-2365  
CAFCO Mandolite CP2: 022 - 109 - 2366



WSHC – BizSafe Level STAR



Building and Construction Authority  
Registered Contractor: BCA ID 87.1.9  
(CR01/CR02/CR09)

# Cafco Fendolite

# MII

## Vermiculite Cementitious Fireproofing Products

UL Type PFM 2 / UL Type F5 Promat Product

## Construction

### PROSTAR CONTRACT SERVICES PTE LTD

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## Introduction



**Cafco Fendolite MII is a spray applied, single package factory controlled premix, based on vermiculite and Portland cement.**

**Cafco Fendolite MII** is specifically developed for application to elements in exterior environments and interior environments and interior situations where mechanical damage is a factor for consideration.

**Cafco Fendolite MII** is used for application on construction elements such as individual steel or concrete sections particularly where off-site application is required.

Building types that will benefit from the use of **Cafco Fendolite MII**, include a wide range of educational, leisure and entertainment centres or commercial projects.

### Outstanding Characteristics

1. Tested in accordance with British Standard 476 Part 21 : 1987.
2. Tested in accordance with U.L.1709 Rapid Temperatures Rise Fire Test.
3. Hard and durable finish that will indent rather than shatter on impact. Excellent adhesive properties.
4. Reinforcement optional for interior applications depending on service.
5. Single package formulation requires only the addition of water at the jobsite. Easy to handle, apply, clean up and repair for tie-in work.
6. Creates no known health hazards. Asbestos free and non-toxic.

## Fire Protection

**Cafco Fendolite MII** is classified by Underwriters Laboratories for use in the following constructions:

- Columns
- Floor Beams
- Floor-Ceiling Assemblies
- Roof Beams
- Roof-Ceiling Assemblies

Further, **Cafco Fendolite MII** is approved by factory Mutual for LPG Tanks and process Structural.

## Physical Data



### Application

Spray

### Finish

Spray applied texture or smooth trowel

### Work Life

1 hour at 70° F

### Drying Time

Initial set 2-6 hours at 70° F to topcoat 10 days at 70° F

### Shelf Life

12 months

### Dry Density

44 lbs./ft<sup>3</sup>min.avg

### Calculated Coverage

16.3 board feet per 50 lb.bag

### Surface Burning Characteristics (ASTM E84)

Flame Spread 0  
Smoke Contributed 0

### Compressive Strength (ASTM E761)

548 p.s.i

### Bond Strength (ASTM E736)

11,000 p.s.f

### Deflection (ASTM E759)

No cracking or delamination

### Bond Impact (ASTM E760)

No cracking or delamination

## Physical Data (cont.)



### Air Erosion (ASTM E859)

<0.0025 g/ft<sup>2</sup>

### Corrosion (ASTM E937)

0.00g/mm<sup>2</sup> weight loss

### Chloride Content (Method 408B)

<10 p.p.m.

### Noncombustibility (ASTM E136)

Non Combustible

**Cafco Fendolite MII** produces a monolithic coating able to withstand the thermal shocks experienced in a high intensity cellulosic fire.

Although low in density, thus significant reducing dead load, **Cafco Fendolite MII** is highly durable and will not crack or spall under mechanical impact.

**Cafco Fendolite MII** does not release toxic or hazardous fumes, and presents no known health hazards either before, during or after application.

The surface may either be spray textured or float finished.

**Cafco Fendolite MII** also provides fire protection in petrochemical plants and refineries for structural steel, vessel skirts and supports, sphere legs and pressurized vessels. **Cafco Fendolite MII** also offers protection for nuclear and conventional power plants, pharmaceutical facilities, manufacturing plants and many commercial buildings where maximum durability is required.

## Properties &

## Performance

### Colour and Finish

Off-white, with monolithic spray texture or floated.

### Minimum Practical Thickness

8mm when unreinforced. 15mm when reinforced

### Theoretical Coverage

53m<sup>2</sup>/tonne at 26mm thickness

### Number of coats

One or more, as required.

### Cure

By hydraulic set

### Initial Set

2 to 6 hours at 20 ° C and 50% RH

## Properties & Performance (cont.)



### Drying time

After initial set:	50% strength	5days
	75% strength	12days
	98% strength	28days

### Density

Minimum 680kg/m<sup>3</sup> ± 15% (When dry and in place)

### Cohesion/adhesion

168kPa (3504lb/ft<sup>2</sup>) to ASTM E736

### Compressive strength

3133kPa (455psi) to ASTM E761

### Combustibility

Non-combustible to BS 476: Part 4

### Smoke Generation

Does not contribute to smoke generation

### Thermal Conductivity

0.19W/mK at 20 °C

### Specific heat

0.97kJ/kgK at 25 °C to 35 °C

### Corrosion Resistance

Does not promote corrosion of steel. However, a primed substrate is recommended for long term corrosion resistance, particularly when the structure is to be fully exposed to the elements. See "Preparation".

### pH Value

12.0-12.5

### Sound Absorption

Noise Reduction Coefficient (NRC) 0.35

### Fire Resistance

Structures protected with Cafco Fendolite MII have undergone fire resistance tests in approved independent laboratories to recognized standards in the following countries:

UK (to BS 476: Part 20-22: 1987 Appendix D)

Germany (to DIN 4102)

USA (to ASTM E119 UL 263 and UL 1709 – Design No. XR719).

The test also comply with International Standard ISO 834.

The fire resistance test results relate solely to the constructions tested and test conditions imposed.

## Fire Protection Thickness

### Fire Resistance

Cafco Asia Pacific provides computer based thickness calculations to meet specific fire ratings on receipt of details. See “Fire protection thickness”.

### Establish the correct thickness

The thickness of the fire protection for a given period of fire resistance in either a cellulosic or hydrocarbon type fire, relates to the Hp/A ratio of the section. Hp/A is the ratio of the heated perimeter exposed to fire to the cross-sectional area of steel.

All column and beam sections have their own specific Hp/A ratio. Refer to the “Technical Introduction” to establish the Hp/A ratio for a particular beam or column section, or contact Prostar. Then use Tables 1 and 2 on below to ascertain the thickness of Cafco Fendolite MII that meets the required period of fire resistance.

Thickness for hollow sections or castellated sections can be supplied by Prostar.

### Establishing the Correct Thickness

**Table 1:** Cafco Fendolite MII thickness for 1 section beams (3 sided exposure). Critical temperature 620 °C, continuous concrete topping.

Fendolite MII thickness (mm) for fire resistance of:						
Hp/A	30	60	90	120	180	240
	(mins)	(mins)	(mins)	(mins)	(mins)	(mins)
30	8	8	8	9	14	19
50	8	8	9	13	20	27
70	8	8	12	16	25	33
90	8	8	13	18	28	39
110	8	9	15	20	32	43
130	8	10	16	22	34	46
150	8	11	18	25	38	52
170	8	11	18	26	40	54
190	8	12	19	26	41	56
210	8	12	20	27	42	58
230	8	12	20	28	43	-
250	8	13	21	29	44	-
270	8	13	21	29	45	-
290	8	13	21	29	45	-
310	8	13	21	30	46	-
330	8	13	22	30	47	-

**Table 2:** Cafco Fendolite MII thickness for 1 section beams and H section columns (4 sided exposure). Critical temperature 550 °C.

Fendolite MII thickness (mm) for fire resistance of:						
Hp/A	30	60	90	120	180	240
	(mins)	(mins)	(mins)	(mins)	(mins)	(mins)
30	8	8	9	11	17	23
50	8	8	12	16	24	32
70	8	9	14	19	29	39
90	8	11	16	22	33	45
110	8	12	18	24	36	49
130	8	12	19	26	39	52
150	8	13	20	27	41	55
170	8	14	21	28	43	58
190	8	14	22	29	44	-
210	8	14	22	30	46	-
230	8	15	23	31	47	-
250	8	15	23	31	48	-
270	8	15	24	32	49	-
290	8	16	24	33	49	-
310	8	16	24	33	50	-
330	8	16	25	33	51	-

**Note:** UK maximum steel temperature are normally accepted at 550 °C (for columns) and 620 °C (for 3 sided beams) for fully loaded steel members.

## Preparation

### Typical Substrates

Steel and concrete structural frames, metal decks and return air plenums.

### Substrate Preparation

The substrate shall be clean, dry and free from dust, loose millscale, loose rust, oil and any other condition preventing good adhesion. Cafco Fendolite MII can be applied to unprimed and primed steelwork.

Prior to the application of **Cafco Fendolite MII**, primed steel should be prepared by the application of keycoat if required.

### Mesh Reinforcement

Most fire tests conducted have been carried out without mesh reinforcement, to demonstrate the ability of **Cafco Fendolite MII** to stay in place under the most severe fire conditions. However, for maximum long term in-service durability, the use of lightweight mesh reinforcement is recommended for exterior work and for interior use where vibration or mechanical damage and the possibility of subsequent de-bonding exist.

## Application

### Initial Steps

Application of **Cafco Fendolite MII** must be carried out by an applicator recognized by Cafco Asia Pacific [A division of Promat (Malaysia) Sdn. Bhd.] and applied in accordance with the Installation Guide available from Cafco Asia Pacific.

### Methods

Mix **Cafco Fendolite MII** with potable water in a suitable mixer and apply by a spraying machine approved by Cafco Asia Pacific.

**Cafco Fendolite MII** may be float finished using conventional hand tools or spray textured.

### Limitations

**Cafco Fendolite MII** may be applied when the substrate and air temperatures are at least 2 °C and rising, but should not be applied if the substrate or air temperatures are less than 4 °C and falling. Maximum air and substrate temperature is 45 °C.

Substrate temperature should be at least 2 °C above dewpoint temperature

## Topcoating

### General Considerations

Under certain circumstances, Topcoat may be used as protection from frequent wash down, long term chemical spills, or for improved resistance to fungal, algal and bacterial growth.

## Packaging, Storage, Shelf Life

### Packaging

Approximate 20 kg bags.

### Storage

Off the ground and kept dry until ready for use.

### Shelf Life

12 months maximum.

## Environmental

- ▶ Not reality biodegradable
- ▶ Not expected to bioaccumulate
- ▶ Not expected to be toxic to aquatic life except at high concentrations.
- ▶ Do not discharge into drains and watercourses.

## Health and Safety

Cafco Asia Pacific's activities are conducted with due regard to all statutory requirements with appropriate safeguards against exposing employees and the public to health and safety risks.

A fully copy of Cafco Asia Pacific's Health, Safety and Environment Policy document is available on request.

See Safety Data Sheet (including COSHH Regulations) Code Reference [Saf-6](#).

## Quality Assurance

Cafco Asia Pacific operates a quality system in accordance with BS EN ISO 9002: 1994, and has received full accreditation by BSI to these standards.

Operating to these standards means that all activities, which have a bearing upon quality, are set out in written procedures. Systematic and thorough checks are made on all materials and their usage. Test equipment is subjected to regular checks and is referred back to national standards.

The information given in this data sheet is based on actual tests and is believed to be typical of the product. No guarantee of results is implied however, since conditions of use are beyond our control.

## Further Information

Licensee of Cafco Asia Pacific  
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