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CI/SfB	Vu4 (K3)

**Promat**



# Cafco MANDOLITE® HS3

*Vermiculite Cement Based Wet Mix Spray*

construction applications



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## Cafco MANDOLITE® HS3

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### Vermiculite Cement Based Wet Mix Spray

#### INTRODUCTION

Cafco MANDOLITE® HS3 is a spray applied, single package factory controlled premix, based on vermiculite and Portland cement.

Cafco MANDOLITE® HS3 produces a monolithic coating able to withstand the thermal shocks experienced in high intensity cellulosic and hydrocarbon fires. Concrete structures in particular, will be protected from explosive spalling when coated with Cafco MANDOLITE® HS3.

Although low in density, thus significantly reducing dead load, Cafco MANDOLITE® HS3 is highly durable and will not crack or spall under mechanical impact.

Cafco MANDOLITE® HS3 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 MANDOLITE® HS3, include a wide range of educational, leisure and entertainment centres or commercial projects.

#### ADVANTAGES

- Structures protected with Cafco MANDOLITE® HS3 can provide fire resistance for up to 240 minutes.
- Does not release toxic or hazardous fumes.
- Presents no known health hazards either before, during or after application.

#### QUALITY ASSURANCE

Promat operates a quality system in accordance with BS EN ISO 9001: 2000 and has received full accreditation 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.

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### PROPERTIES AND PERFORMANCE

Colour and finish	Off-white with a monolithic spray texture. May be float finished
Minimum practical thickness	8mm when unreinforced, 15mm when reinforced
Theoretical coverage	92m <sup>2</sup> /tonne at 15mm thickness
Number of coats	One or more as required
Cure	By air drying
Initial set	2 to 6 hours at 20°C and 50% RH
Drying time	After initial set: 50% strength in 5 days 75% strength in 12 days 98% strength in 28 days
Density	750kg/m <sup>3</sup> ± 15% (when dry and in place)
Hardness	No penetration by a load less than 2.5kgf (BS 3900: Part E2 - Scratch test)
Cohesion/adhesion	169kPa (3533lb/ft <sup>2</sup> ) to ASTM E736
Compressive strength	3933kPa (569psi) to ASTM E761
Combustibility	Non-combustible to BS 476: Part 4
Flame spread	Class 0 as defined by the Building Regulations
Smoke generation	Does not contribute to smoke generation
Thermal conductivity	0.225W/mK at 20°C
Specific heat	0.97kJ/kgK at 25-35°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 <b>Preparation</b>
pH value	12.0-12.5
Sound absorption	Noise reduction coefficient (NRC) 0.35
Fire resistance	Structures protected with Cafco MANDOLITE® HS3 have undergone extensive fire resistance tests in approved independent laboratories to recognised standards in the UK (BS 476: Parts 20-21: 1987 Appendix D)  Cafco MANDOLITE® HS3 protected structures have been successfully tested under BS 476: Part 21 to failure temperatures of up to 800°C. This allows the specifier the freedom to adopt a fire engineering approach to fire resistance in accordance with BS 5950: Parts 3 and 8, as well as the Fire Appendices of the forthcoming Eurocode  The fire resistance test results relate solely to the constructions tested and test conditions imposed. Promat provides computer based thickness calculations to meet specific fire resistance on receipt of details. See <b>FIRE PROTECTION THICKNESS</b>

### PREPARATION

Typical substrates	Unprimed and primed steel, concrete frames, metal floor/roof 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 MANDOLITE® HS3 can be applied to unprimed or primed steelwork. Prior to the application, incompatible primers should be prepared by the application of CAFCO® SC 125 or CAFCO® SBR Bonding Latex used as a keycoat
Mesh reinforcement	Most fire tests conducted have been carried out without mesh reinforcement, to demonstrate the ability of Cafco MANDOLITE® HS3 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



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### FIRE PROTECTION THICKNESS

The thickness of the fire protection for a given period of fire resistance in a cellulosic or hydrocarbon type fire, relates to the A/V ratio of the section.

All column and beam sections have their own specific A/V ratio. Please consult Promat to establish the A/V ratio for a particular beam or column section. TABLES 1 and 2 ascertain the thickness of Cafco MANDOLITE® HS3 that meets the required period of fire resistance for I-section beams and H- section columns. For advice on thickness calculations for hollow sections, cellular beams, castellated sections, composite floors, upgrading of concrete slabs and more complex situations, please contact Promat.

**TABLE 1 Cafco MANDOLITE® HS3 thicknesses for I-section beams (3-sided exposure). Critical temperature 620°C, continuous concrete topping. Tested in cellulosic fire conditions.**

A/V	Thickness for the required fire resistance					
	30 min	60 min	90 min	120 min	180 min	240 min
30	8mm	8mm	8mm	9mm	14mm	19mm
50	8mm	8mm	9mm	13mm	20mm	27mm
70	8mm	8mm	12mm	16mm	25mm	33mm
90	8mm	8mm	13mm	18mm	28mm	39mm
110	8mm	9mm	15mm	20mm	32mm	43mm
130	8mm	10mm	16mm	22mm	34mm	46mm
150	8mm	10mm	17mm	23mm	36mm	49mm
170	8mm	11mm	18mm	25mm	38mm	52mm
190	8mm	11mm	18mm	26mm	40mm	54mm
210	8mm	12mm	19mm	26mm	41mm	56mm
230	8mm	12mm	20mm	27mm	42mm	58mm
250	8mm	12mm	20mm	28mm	43mm	–
270	8mm	13mm	21mm	29mm	44mm	–
290	8mm	13mm	21mm	29mm	45mm	–
310	8mm	13mm	21mm	30mm	46mm	–
330	8mm	13mm	22mm	30mm	47mm	–

**TABLE 2 Cafco MANDOLITE® HS3 thicknesses for I-section beams and H-section columns (4-sided exposure). Critical temperature 550°C. Tested in cellulosic fire conditions.**

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

### HEALTH AND SAFETY

Adequate ventilation must be provided during use. Avoid contact with the skin and eyes by using eye protection, gloves, barrier cream and a face mask.

If the product comes into contact with the skin, wash immediately with soap and water. If the eyes are affected, flush with plenty of water and seek medical attention immediately.

A safety data sheet is available from Promat upon request.

Promat activities are conducted with due regard to all statutory requirements with appropriate safeguards against exposing employees and the public to health and safety risks.



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### APPLICATION

<b>Initial steps</b>	Application of Cafco MANDOLITE® HS3 must be carried out by an applicator recognised by Promat
<b>Methods</b>	Mix Cafco MANDOLITE® HS3 with potable water in a suitable mixer and apply by a spraying machine approved by Promat Cafco MANDOLITE® HS3 may be float finished using conventional hand tools or spray textured
<b>Limitations</b>	Cafco MANDOLITE® HS3 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 substrate and air temperature is 45°C Substrate temperature should be at least 2°C above dew point temperature

### TOP COATING

Under certain circumstances, Cafco TOPCOAT® 200 may be used as protection from frequent wash down, long term chemical spills or for improved resistance to fungal, algal and bacterial growth.

### PACKAGING

20kg bags.

### STORAGE

Off the ground and kept dry until ready for use.

### SHELF LIFE

Maximum 12 months.

### ENVIRONMENTAL

- Do not discharge into drains, watercourses or soil.
- Not readily biodegradable.
- Not expected to bioaccumulate.
- Not expected to be toxic to aquatic life except at high concentrations.

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