Cafco MANDOLITE® CP2

Vermiculite & Portland Cement Based Wet Mix Spray



Promat





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INTRODUCTION

Cafco MANDOLITE® CP2 is a spray applied, single package factory controlled premix, based on vermiculite and Portland cement, for internal use.

Cafco MANDOLITE® CP2 produces a monolithic coating able to withstand the thermal shocks experienced in a high intensity cellulosic fires. Concrete structures in particular, will be protected from explosive spalling when coated with Cafco MANDOLITE® CP2.

Although low in density, thus significantly reducing dead load, Cafco MANDOLITE® CP2 is highly durable and will not crack or spall under mechanical impact.

Cafco MANDOLITE® CP2 may be applied within environments where limited exposure to the elements is likely throughout the building phase of the project, e.g. perimeter beams.

Cafco MANDOLITE® CP2 is used for application to steel and concrete frames, metal floor or roof decks, and return air plenums. It may be easily removed and reinstated locally when additional fixings are required. Building types that will benefit from the use of Cafco MANDOLITE® CP2, include a wide range of educational, leisure and entertainment centres, commercial or industrial projects.

Properties and performance	
Colour and finish	Off-white with a monolithic spray texture
Theoretical coverage	172m²/tonne at 15mm 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
Density	390kg/m³ ± 15% (when dry and in place)
Bond impact	No cracks or delaminations in accordance with ASTM E760
Air erosion resistance	No erosion in accordance with ASTM E859
Deflection effect	No cracks or delaminations within normal code limits
Compressive strength	563kPa in accordance with ASTM E761
Combustibility	Non combustible in accordance with BS476: Part 4
Flame spread	Class 0 as defined by relevant Building Regulations
Smoke generation	Does not contribute to smoke generation
Thermal conductivity	0.095W/mK at 20°C
Corrosion resistance	Does not promote corrosion of steel. However, a primed substrate is recommended for long term corrosion resistance. See **Preparation**.
pH value	12.0-12.5
Fire resistance	Structures protected with Cafco MANDOLITE® CP2 have undergone fire resistance tests up to 240 minutes in approved independant laboratories to recognised standards throughout the world, including: • Australia (AS1530: Part 4) • UK (BS476: Parts 20-21: 1987) • Germany (DIN 4102) • USA (ASTM E119 UL263) The tests also comply with International Standard ISO834 Cafco MANDOLITE® CP2 protected structures have been successfully tested under BS476: Part 21 to failure temperatures of up to 800ºC. This allows the specifier the freedom to adopt a fire engineering approach to fire resistance in accordance with BS5950: Parts 3 and 8, as well as the relevant Eurocodes. 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 FIRE PROTECTION THICKNESS.

ADVANTAGES

- Structures protected with Cafco MANDOLITE® CP2 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 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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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 mill scale, loose rust, oil and any other condition preventing good adhesion. Cafco MANDOLITE® CP2 can be applied to unprimed or primed steelwork. Prior to the application, incompatible primers should be prepared by the application of Cafco PSK® 101 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 MANDOLITE® CP2 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 where vibration or mechanical damage and the possibility of subsequent loss of bond may exist.

Please refer to the separate publication of Cafco MANDOLITE® CP2 application guide for further details or consult your nearest Promat office for specific details pertaining to local conditions.

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.

Where a dust inhalation hazard exists, dust mask of other appropriate P.P.E should be worn.

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.

FIRE PROTECTION THICKNESS

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

All column and beam sections have their own specific Hp/A ratio. Please consult Promat to establish the Hp/A ratio for a particular beam or column section. TABLES 1 and 2 ascertain the thickness of Cafco MANDOLITE® CP2 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® CP2 thicknesses for I section beams (3-sided exposure). Critical temperature 620ºC, continuous concrete topping. (BS476: Part 21: 1987)

Hp/A	Thickness for the fire resistance required					
	30 min	60 min	90 min	120 min	180 min	240 min
30	8mm	8mm	9mm	11mm	16mm	21mm
50	8mm	8mm	12mm	15mm	22mm	28mm
70	8mm	10mm	14mm	18mm	26mm	34mm
90	8mm	11mm	16mm	20mm	29mm	38mm
110	8mm	12mm	17mm	22mm	31mm	41mm
130	8mm	13mm	18mm	23mm	33mm	43mm
150	8mm	13mm	19mm	24mm	35mm	45mm
170	8mm	14mm	19mm	25mm	36mm	47mm
190	8mm	14mm	20mm	26mm	37mm	48mm
210	9mm	15mm	20mm	26mm	38mm	49mm
230	9mm	15mm	21mm	27mm	39mm	51mm
250	9mm	15mm	21mm	27mm	39mm	51mm
270	9mm	15mm	21mm	28mm	40mm	52mm
290	9mm	16mm	22mm	28mm	40mm	53mm
310	9mm	16mm	22mm	28mm	41mm	54mm

TABLE 2 Cafco MANDOLITE® CP2 thicknesses for I section beams and H section columns (4-sided exposure). Critical temperature 550ºC. (BS476: Part 21: 1987)

Hp/A	Thickness for the fire resistance required					
	30 min	60 min	90 min	120 min	180 min	240 min
30	8mm	8mm	10mm	13mm	19mm	24mm
50	8mm	10mm	14mm	18mm	25mm	33mm
70	8mm	12mm	16mm	21mm	30mm	38mm
90	8mm	13mm	18mm	23mm	33mm	43mm
110	9mm	14mm	19mm	25mm	35mm	46mm
130	9mm	15mm	20mm	26mm	37mm	48mm
150	10mm	15mm	21mm	27mm	38mm	50mm
170	10mm	16mm	22mm	28mm	40mm	52mm
190	10mm	16mm	22mm	28mm	41mm	53mm
210	10mm	17mm	23mm	29mm	42mm	54mm
230	10mm	17mm	23mm	30mm	42mm	55mm
250	11mm	17mm	24mm	30mm	43mm	56mm
270	11mm	17mm	24mm	30mm	44mm	57mm
290	11mm	18mm	24mm	31mm	44mm	57mm
310	11mm	18mm	24mm	31mm	45mm	58mm

NOTE: Maximum steel temperatures are normally accepted at 550ºC (for columns) and 620ºC (for 3-sided beams acting as support to composite concrete floors only) for fully loaded steel members. The above tables are based on report no. WFRC C52252.



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Application	
Initial steps	Application of Cafco MANDOLITE® CP2 must be carried out by an applicator recognised by Promat.
Methods	Mix Cafco MANDOLITE® CP2 with potable water in a suitable mixer and apply by a spraying machine approved by Promat. Cafco MANDOLITE® CP2 may be centrally pumped vertically or horizontally, enabling all spray plant and material storage to be contained in one area.
Limitations	Cafco MANDOLITE® CP2 may be applied when the substrate and air temperatures are at least 2ºC and rising, but should not be applied if the substrate or air temperatures are less than 4ºC and falling. Maximum substrate and air temperature is 45ºC. Substrate temperature should be at least 2ºC above dew point temperature.

TOP COATING

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

12.5kg bags except:
15kg for Taiwan
20kg for Australia

STORAGE

Off the ground and kept dry until ready for use.

SHELF LIFE

Maximum 12 months.

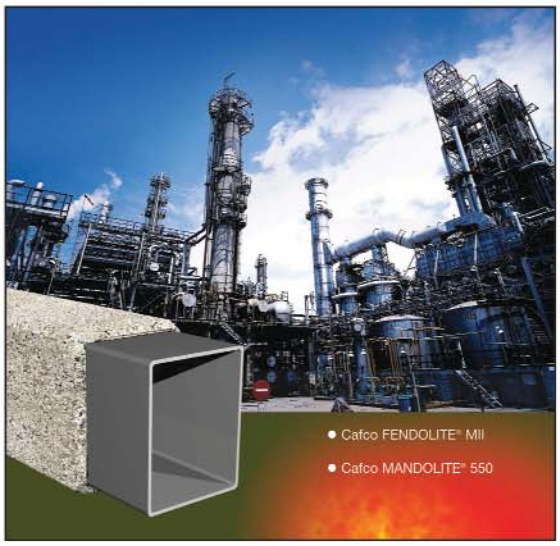
ENVIRONMENTAL

- 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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For The Petrochemical Industry



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For The Construction Industry

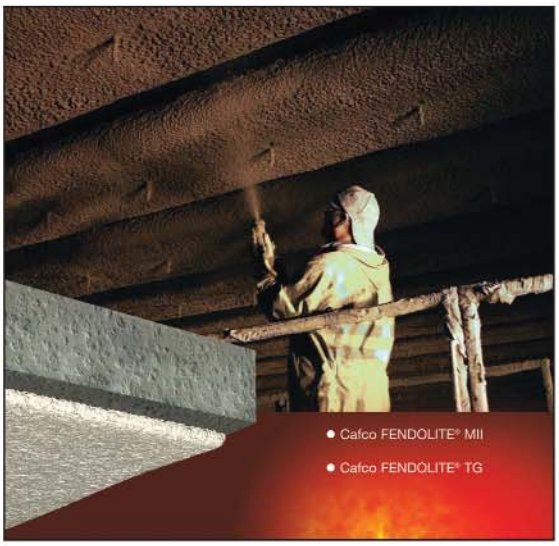


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For Tunnel Linings



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These titles also available from Promat Sprays Division Asia Pacific

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For latest information of the Promat Asia Pacific organisation,
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1. This document is produced on the basis of information and experience available at the time of preparation. Promat is constantly reviewing and updating all of its test data and reserves the right to change products and specifications without notice.

2. Promat is not responsible if recipients of fire test reports, assessments or literature incorrectly interpret said contents and use products based on those interpretations.

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