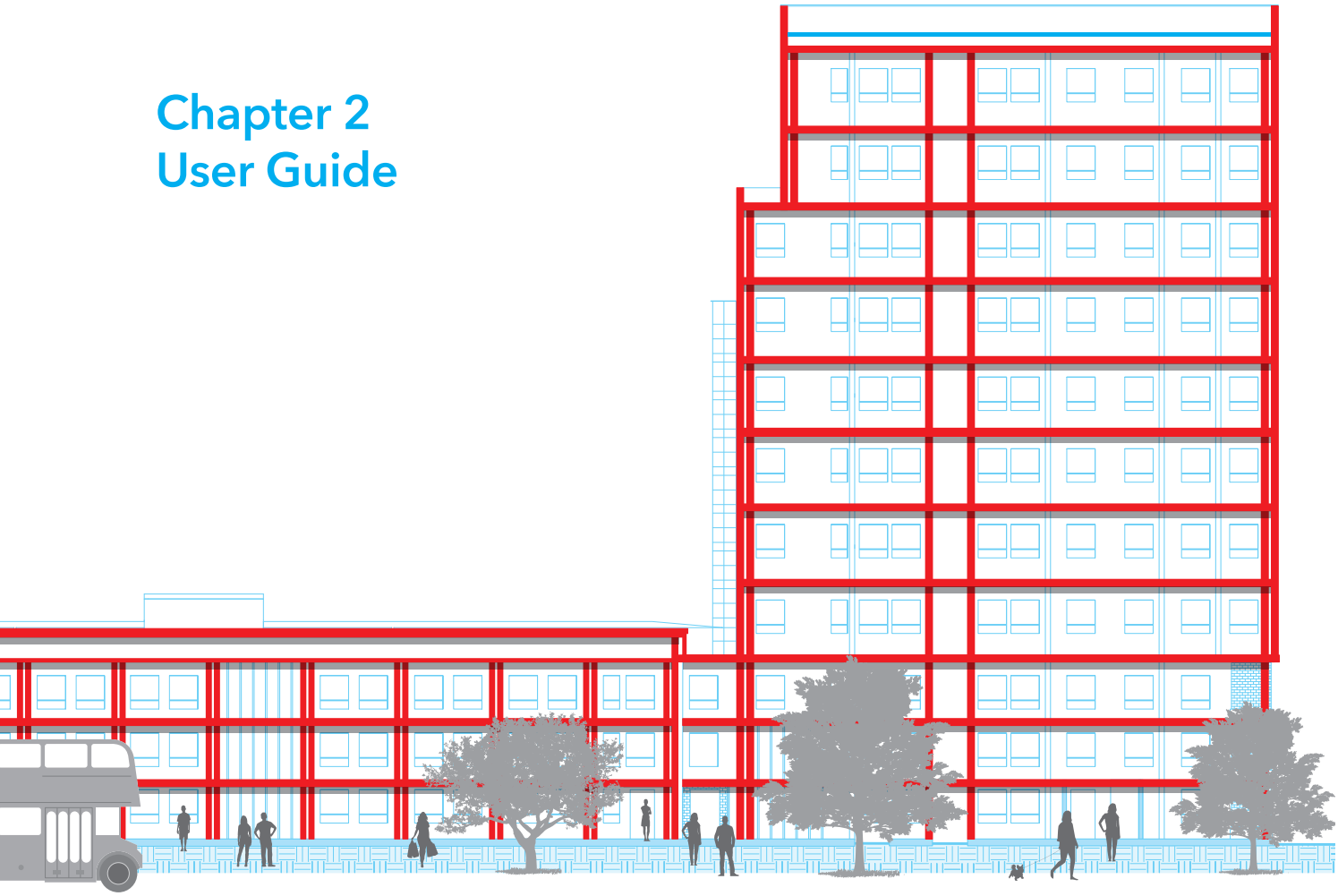
Promat

The Passive Fire Protection Handbook

The UK's comprehensive guide to passive fire protection

Chapter 2
User Guide



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etex building performance

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Promat DURASTEEL®

APPLICATIONS

- Ductwork and smoke extraction
- Service enclosures
- Walls, partitions, service shafts, lift enclosures, cavity barriers and smoke plenums
- Membrane ceilings and plenum chambers
- Industrial, valve box enclosures and fuel pipe protection
- Fire doors

NOTE: All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.

GENERAL DESCRIPTION

Promat DURASTEEL® is a non-combustible composite panel of fibre reinforced cement mechanically bonded to punched steel sheets on both surfaces.

Promat DURASTEEL® has been developed and supported through rigorous testing for use in partitioning, ducting, door and ceiling applications, with a wide range of specifications available.

Promat DURASTEEL® systems combine lightweight, strength, impact resistance and durability with exceptional fire resistance. These systems remain resistant to fire fighters' hoses, leaving them capable of performing their original function even in the aftermath of a fire. Promat DURASTEEL® systems have been used successfully for many years, including rail and metro projects, airports, military developments and in commercial, pharmaceutical and petrochemical facilities.

A safety information sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the board. The board is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. They can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

Table 2a Typical Mechanical Properties

Flexural strength $F_{rupture}$	6mm 9.5mm	Average, dry Average, dry	N/mm² N/mm²	109 84
Modulus of elasticity E	6mm 9.5mm	Average, dry Average, dry	N/mm² N/mm²	55,000 40,000

Table 2b General Technical Data

Material class		Non-combustible
Surface spread of flame		Class 1
Building Regulations classification		Class 0
Alkalinity (approximately) pH (core)		10-13
Thermal conductance (approximately) at 20°C W/m²K		60 (9.5mm)
Coefficient of expansion (20-100°C) m/mK		15 x 10^{-6} (9.5mm)
Nominal moisture content (air-dried) %		6
Moisture movement (ambient to saturated) %		-
Thickness tolerance of standard board	6mm 9.5mm	+1.5 to -0.0 +1.0 to -1.0
Length x Width tolerance of standard boards mm		± 2.0

Table 2c Board Format Data

Thickness (mm)	Length x Width (mm)	Approx. Weight (kg/m²)	
		Dry	With approximately 6% moisture
6	2500 x 1200	15.9	16.8
9.5	2500 x 1200 2000 x 1200	19.8 19.8	21.0 21.0

Promat MASTERBOARD®

GENERAL DESCRIPTION

Promat MASTERBOARD® is a versatile Class 0 building board suitable for use in a wide range of internal and semi-exposed applications. It is a material of limited combustibility and can be used in constructions providing up to 30 minutes fire protection.

Promat MASTERBOARD® is a calcium silicate board reinforced with selected fibres and fillers. It is formulated without inorganic fibres and does not contain formaldehyde.

Promat MASTERBOARD® is off-white in colour and has a smooth finish on one face with a sanded reverse face. It can be left undecorated or can be easily decorated with paints, wallpapers or tiles.

Promat MASTERBOARD® is resistant to the effects of moisture, will not physically deteriorate when used in damp or humid conditions and can withstand temperatures up to 80°C and frequent temperature changes.

A safety information sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the board. The board is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. They can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

Table 2e Typical Mechanical Properties			
Flexural strength*	Average, dry	N/mm²	≥ 4.5
Modulus of elasticity E	Average, dry	N/mm²	6500
Tensile strength (parallel)*	Average, dry	N/mm²	0.99
Compressive strength*	Average, dry	N/mm²	9.3

*Reference ETA 09/0250

APPLICATIONS

- Partitions
- Ceilings
- Swimming pool ceilings
- Wall and roof linings
- Soffit, porch or canopy linings
- Service duct and pipe covers
- Boiler and airing cupboard linings
- Door upgrades

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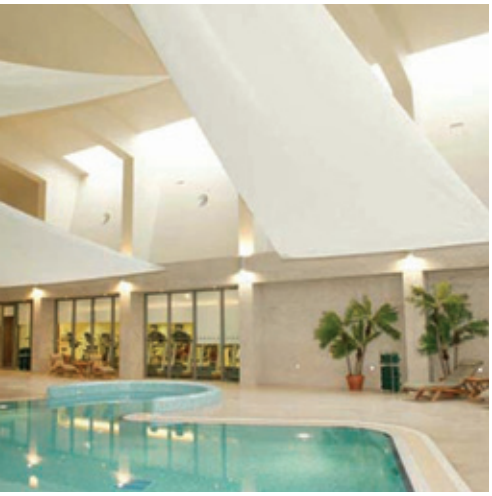
Promat MASTERBOARD®



Note: *All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.*

Table 2f General Technical Data		
Designation		Calcium silicate
Material class		Limited combustibility
Surface spread of flame		Class 1
Building Regulations classification		Class 0
Nominal dry density (average) kg/m³		975
Alkalinity (approximately) pH		7-10
Thermal conductivity (approximately) at 20°C W/mK		0.22
Coefficient of expansion (20-100°C) m/mK		9×10^{-6}
Nominal moisture content (ambient) %		6
Moisture movement (ambient to saturated) %		≤ 0.15
Water vapour resistivity MNs/gm (BS 7374: 1990)		80
Thickness tolerance of standard boards (mm)		+0.5 to -0.5 (6 & 9mm boards) +1.0 to -1.0 (12mm boards)
Length x Width tolerance of standard boards (mm)		± 3.0
Surface condition	Front face Back face	Smooth, unsanded Sanded

Table 2g Board Format Data			
Thickness (mm)	Length x Width (mm)	Approx. Weight (kg/m²)	
		Dry	With approximately 6% moisture
6	2500 x 1200 2440 x 1220 2134 x 914	5.9 5.9 5.9	6.3 6.3 6.3
9	2500 x 1200 2440 x 1220*	8.8 8.8	9.3 9.3
12	2500 x 1200 2440 x 1220	11.7 11.7	12.4 12.4

*Note: *9mm rebated edge board also available.*
Other sizes are available upon request.

Promat TD Board®

GENERAL DESCRIPTION

Promat TD Board® is an inert rock wool board. It is green/brown in colour and is used for the fire protection of structural steel.

Promat TD Board® is available unfaced or faced with aluminium foil. It is manufactured in accordance with an independently accredited BS EN ISO 9001 quality management system.

Promat TD Board® is resistant to the effects of moisture and is suitable for internal and semi-exposed applications.

Promat TD Board® is generally installed using spiral screws made from 16 s.w.g. galvanised wire.

PERFORMANCE AND PROPERTIES

Fire Performance

Up to 240 minutes fire resistance for structural steelwork, assessed to BS 476: Part 21: 1987 at 550°C and 620°C failure criteria. The unfaced, foil and tissue faced products achieve reaction to fire Euroclass A1 in accordance with BS EN 13501-1.

Moisture

Promat TD Board® fibres are randomly oriented, avoiding any tendency to promote capillary action or hygroscopic moisture absorption.

Moisture content	0% in air-dried state
Moisture absorption	0.004% by volume at 20°C and 90°C relative humidity
Water absorption	Maximum 60 grammes/m² after 24 hour total water immersion testing (i.e. approximately 1.5% by weight for 25mm plain board)

Table 2h General Technical Data		
Material class		Non-combustible
Surface spread of flame		Class 1
Building Regulations classification		Class 0
Alkalinity (approximately) pH		7-9
Thickness tolerance of standard boards (mm)		± 2 mm
Tolerance of standard boards (mm)	Length Width	± 5 mm ± 3 mm

Table 2i Board Format Data				
Size (mm)	2000 x 1200			
Thickness (mm)	25	30	35	40
Approx. weight (kg/m²)	4.5	5.4	6.3	7.2
Nominal density (kg/m³)	180	180	180	180

APPLICATIONS

Structural steelwork

FIXING OPTIONS

A comprehensive range of practical systems is available to meet a variety of site requirements. Dry joint systems can be joined together using purpose-made clips, glued rock wool noggings or stud welded pins to secure the insulation to structural steel sections. All board-to-board joints are straight butt joints, without the need for glue. Spiral screws (minimum twice the insulation thickness, less 5mm) are used to secure the insulation boards to each other and/or to the noggings.

The glued joint system can be joined together using an inorganic and non-toxic Promat VICUBOND® WR ADHESIVE to bind board-to-board joints and/or to the noggings. Standard flat head nails, twice the thickness of the insulation, are used as initial supports.

PROMAT VICUBOND® WR

A ready-to-use, one part non-combustible cement for fixing Promat TD Board® and other Promat boards. It may also be used for gap filling. Delivered as semi liquid in 10 litre drums. Allow 1 litre for each 1.5m² of 25mm Promat TD Board®. Other thicknesses require a pro-rata amount.

Note: *All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.*

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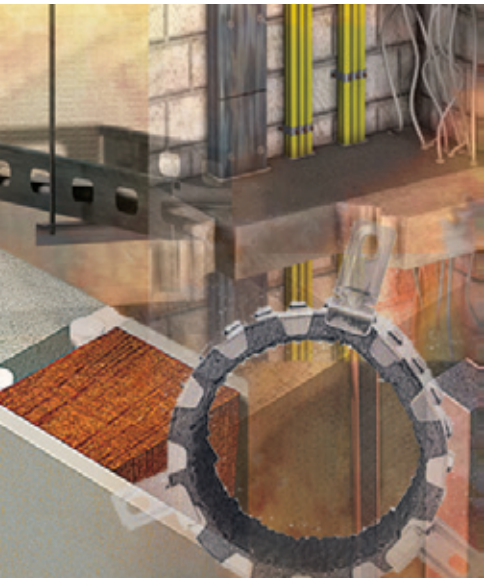
Promat PROMASEAL® Firestopping Products

APPLICATIONS

- Pipes penetrating partitions and walls
- Temporary closing of voids
- Sealing of gaps and joints
- Movement joints



GENERAL DESCRIPTION

The Promat PROMASEAL® range of fire stopping products is one of the most comprehensive in the industry. It is comprised of a number of sealing solutions, from Intumescent andSilicone sealants, through to Fire Pillows and the unique Promat PROMASEAL® UniCollar®.

The Promat PROMASEAL® range also includes elements such as the Promat PROMASEAL® RSB-N and RSB-V, designed to prevent the spread of flame in cavities.

Systems such as these have a proven track record of sealing the penetrations found in buildings during construction, such as power cables, plumbing and heating pipes, ventilation ducts, movement joints etc.

The range is designed to offer specific protection for individual penetrating elements. Every service passing through fire resistant building elements reacts in a different way in the event of a fire, so there is no single solution or product that will protect all services.

All Promat PROMASEAL® products are tested to the highest standards and are manufactured using the highest quality materials in accordance with an independently accredited BS EN ISO:9001 quality management system.

For further technical information on the entire Promat PROMASEAL® fire stopping range, please contact the Promat Technical Services Department.

THE PROMAT PROMASEAL® RANGE:

- PROMASEAL® RSB-V & RSB-N
- PROMASEAL® Intumescent Sealant
- PROMASEAL® Silicone Sealant
- PROMASEAL® Fire Barrier
- PROMASEAL® Fire Compound
- PROMASEAL® Fire Compound Extra Strength
- PROMASEAL® Fire Pillows
- PROMASEAL® Expansion Joint Strip
- PROMASEAL® UniCollar
- PROMASEAL® Pipewrap

Promat PROMATECT®-250

GENERAL DESCRIPTION

Promat PROMATECT®-250 is a non-combustible mineral bound light weight board. It has a smooth matt upper surface and is off-white in appearance.

Promat PROMATECT®-250 provides a high degree of strength, dimensional stability and fire performance to structural steelwork. Promat PROMATECT®-250 also offers a quickly installed solution for the fire protection of mezzanine floors.

A safety information sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the board. The board is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. They can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

APPLICATIONS

- Fire protection of structural steelwork
- Fire protection of mezzanine floors

Table 2j Typical Mechanical Properties			
Flexural Strength*	Average, dry	N/mm²	3.0
Tensile Strength (parallel)*	Average, dry	N/mm²	1.2
Compressive Strength*	Average, dry	N/mm²	6.6

**Reference ETA 08/0161*

Table 2k General Technical Data	
Designation	Mineral bound calcium silicate
Material class	Non-combustible
Surface spread of flame	Class 1
Building Regulations classification	Class 0
Nominal dry density (average) kg/m³	875 (12mm) 750 (15-30mm)
Alkalinity (approximately) pH	9
Thermal conductivity (approximately) at 20°C W/mK	0.189
Nominal moisture content %	1-2
Thickness tolerance of standard boards (mm)	+0.5 to -0.5
Length x Width tolerance of standard boards (mm)	+0.0 to -3.0
Surface condition	Smooth, unsanded

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Promat PROMATECT®-250

Table 2l Board Format Data			
Thickness (mm)	Length x Width (mm)	Approx. Weight (kg/m²)	
		Dry	With approximately 2% moisture
12	2500 x 1200	10.5	10.8
15	2500 x 1200	11.3	11.5
18	2500 x 1200	13.5	13.8
20	2500 x 1200	15	15.3
22	2500 x 1200	16.5	16.8
25	2500 x 1200	18.8	19.1
30	2500 x 1200	22.5	22.9

Note: *All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.*

Promat PROMATECT®-L500

GENERAL DESCRIPTION

Promat PROMATECT®-L500 is a non-combustible low density calcium silicate board, used for the construction of fire resistant ducts. It is a Class 0 product as defined in the Building Regulations.

Promat PROMATECT®-L500 is off-white in colour and has a smooth sanded surface on one face with a lightly honeycombed texture on the reverse face.

Promat PROMATECT®-L500 is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture. Untreated surfaces will absorb water which can cause some loss of strength, but full strength is regained after drying. It will not encourage mould growth and is resistant to attack by insect or vermin.

Promat PROMATECT®-L500 is chemically inert and is resistant to dilute acids and alkalis. Boards should be protected where high chemical concentrations are likely to occur.

A safety information sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the board. The board is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. They can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

Table 2m Typical Mechanical Properties			
Flexural Strength*	Average, dry	N/mm²	≥ 1.7
Tensile Strength (parallel)*	Average, dry	N/mm²	0.44
Compressive Strength*	Average, dry	N/mm²	4.2

**Reference ETA 06/0218*

APPLICATIONS

- Ventilation and smoke extract ducts
- Mechanical and electrical service enclosures
- Service enclosures
- Cable protection

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Promat PROMATECT®-L500

Note: *All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.*

Table 2n General Technical Data		
Designation		Calcium silicate
Material class		Non-combustible
Surface spread of flame		Class 1
Building Regulations classification		Class 0
Nominal dry density (average) kg/m³		480
Alkalinity (approximately) pH		9
Thermal conductivity (approximately) at 20°C W/mK		0.09
Coefficient of expansion (25-105°C) m/mK		7.0×10^{-6}
Nominal moisture content (ambient) %		3-5
Moisture movement (ambient to saturated) %		≤ 0.15
Thickness tolerance of standard boards (mm)		± 0.5
Length x Width tolerance of standard boards (mm)		± 3.0
Surface condition	Front face Back face	Smooth, sanded Honeycomb pattern

Table 2o Board Format Data			
Thickness (mm)	Length x Width (mm)	Approx. Weight (kg/m²)	
		Dry	With approximately 5% moisture
20	2500 x 1200	10.0	10.5
25	2500 x 1200	12.5	13.1
30	2500 x 1200	15.0	15.8
35	2500 x 1200	17.5	18.4
40	2500 x 1200	20.0	21.0
50	2500 x 1200	25.0	26.3
52	2500 x 1200	26.0	27.4

Promat SUPALUX®

Promat SUPALUX® is a non-combustible calcium silicate board reinforced with selected fibres and fillers. It is formulated without inorganic fibres and does not contain formaldehyde.

Promat SUPALUX® is off-white in colour and has a smooth finish on one face with a sanded reverse face. Promat SUPALUX® can be left undecorated or easily finished with paints, wallpapers or tiles.

Promat SUPALUX® is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture.

Promat SUPALUX® is also produced as bevelled edge panels for suspended ceilings using a concealed grid system.

A safety information sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the board. The board is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. They can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

APPLICATIONS

- Timber and steel frame partitions
- Single skin solid wall
- Fire protection to timber floors and mezzanine floors
- Wall, ceiling linings and suspended ceilings
- Ducting and structural steelwork casings
- Construction and upgrading of timber or panelled doors
- Fire protection of wind posts
- Soffits
- Fire protection of thatched roofs

Table 2p Typical Mechanical Properties			
Flexural Strength*	Average, dry	N/mm²	≥ 4.5
Modulus of elasticity E	Average, dry	N/mm²	6000
Tensile Strength (parallel)*	Average, dry	N/mm²	0.99
Compressive Strength*	Average, dry	N/mm²	9.3

**Reference ETA 07/0176*

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Promat SUPALUX®

Note: *All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.*

Table 2q General Technical Data

Designation		Calcium silicate
Material class		Non-combustible
Surface spread of flame		Class 1
Building Regulations classification		Class 0
Nominal dry density (average) kg/m³		950
Alkalinity (approximately) pH		7-10
Thermal conductivity (approximately) at 20°C W/mK		0.17
Coefficient of expansion (20-100°C) m/mK		9 x 10^{-6}
Nominal moisture content (ambient) %		6
Moisture movement (ambient to saturated) %		≤ 0.1
Thickness tolerance of standard boards (mm)		(6-12mm) ± 0.5 (15-20mm) ± 1.0 (25mm) ± 1.5
Water vapour resistivity MNs/gm		98
Length x Width tolerance of standard boards (mm)		± 3.0
Surface condition	Front face Back face	Smooth, un-sanded Sanded

Table 2r Board Format Data

Thickness (mm)	Length x Width (mm)	Approx. Weight (kg/m²),	
		Dry	With approximately 6% moisture
6	2440 x 1220 2500 x 1200	5.7 5.7	6.0 6.0
9	1220 x 1220 2440 x 1220 2500 x 1200	8.6 8.6 8.6	9.1 9.1 9.1
12	1220 x 1220 2440 x 1220 2500 x 1200	11.4 11.4 11.4	12.1 12.1 12.1
15	2440 x 1220 2500 x 1200	14.3 14.3	15.1 15.1
20	2500 x 1250	19.0	20.1
25	2500 x 1250	23.8	25.2

Note: Bevelled edge ceiling tiles are also available. Other sizes are available upon request.

Promat VERMICULUX®

GENERAL DESCRIPTION

Promat VERMICULUX® is a lightweight non-combustible board specially designed to provide fire protection to structural steelwork. Up to 240 minutes fire resistance can be achieved depending on the thickness of material used based on the dimensions and critical temperature of the beam or column being protected.

Promat VERMICULUX® is a low density calcium silicate board containing vermiculite and reinforced with selected fibres and fillers. It is formulated without any inorganic fibres.

Promat VERMICULUX® is off-white in colour with a sanded finish on both faces. It can be left undecorated or it can be easily painted. It is resistant to moisture, will not disintegrate, warp or swell and can be installed at any time during the building programme, even before the external wall has been completed and the building closed in.

A safety information sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the board. The board is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. They can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

Table 2s Typical Mechanical Properties			
Flexural strength $F_{rupture}$	Average, dry	N/mm²	2.0
Modulus of elasticity E	Average, dry	N/mm²	1000

Table 2t General Technical Data	
Designation	Calcium silicate
Material class	Non-combustible
Surface spread of flame	Class 1
Building Regulations classification	Class 0
Nominal dry density (average) kg/m³	500
Alkalinity (approximately) pH	7-10
Thermal conductivity (approximately) at 20°C W/mK	0.13
Coefficient of expansion (20-60°C) m/mk	7.5×10^{-6}
Nominal moisture content (air-dried) %	3
Moisture movement (ambient to saturated) %	≤ 0.1
Thickness tolerance of standard boards (mm)	+0 to -0.8
Length x Width tolerance of standard boards (mm)	+0 to -1.5
Surface condition	Smooth, sanded

APPLICATIONS

- Fire protection to structural steelwork
- Fire protection upgrade of concrete structures

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Promat VERMICULUX®

Table 2u Board Format Data			
Thickness (mm)	Length x Width (mm)	Approx. Weight (kg/m²),	
		Dry	With approximately 3% moisture
20	1220 x 1220	10.0	10.3
25	1220 x 1220	12.5	12.9
30	1220 x 1220	15.0	15.5
35	1220 x 1220	17.5	18.0
40	1220 x 1220	20.0	20.6
45	1220 x 1220	22.5	23.2
50	1220 x 1220	25.0	25.8
55	1220 x 1220	27.5	28.3
60	1220 x 1220	30.0	30.9

Note: *All physical property values are averages based on standard production. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please contact Promat Technical Services Department.*

CAFCO® 300

CAFCO® 300 is a spray or trowel applied, single package factory controlled premix, based on vermiculite and gypsum, for internal use.

CAFCO® 300 is a lightweight coating that provides very efficient fire resistance with minimal thickness to steel and concrete frames, metal floor and roof decks, and to return air plenums.

Building types that will benefit from the use of CAFCO® 300 include a wide range of educational, leisure and entertainment centres, and commercial projects.

FIRE RESISTANCE

Structures protected with CAFCO® 300 have undergone fire resistance tests up to 240 minutes in approved independent laboratories to recognised standards throughout the world, including:

- UK (BS 476: Part 21)
- USA (ASTM E119)

Table 2z Properties and Performance	
Colour and finish	Off-white, with a monolithic spray texture
Theoretical coverage	217m²/tonne at 15mm thickness
Number of coats	One or more as required
Cure	By hydraulic set
Initial set	10 to 15 hours at 20°C and 50% RH without accelerator
Density	310kg/m³ ± 15% without accelerator. Approximately 10% less with accelerator
Bond impact	No cracks or delaminations to ASTM E760
Air erosion resistance	No erosion to ASTM E859
Compressive strength	1.22kg/cm² to ASTM E761
Deflection	No spalling, delamination or cracking to ASTM E759
Flame spread	Class 0 as defined by the Building Regulations
Thermal conductivity	0.078W/mK
pH value	8.0 - 8.5

Packaging: 20kg bags

Storage: Protect from frost, excessive heat (above 45°C) and strong radiant sunlight

Shelf life: 6 months maximum

This product may be used alongside other Promat products. For further information contact Promat Technical Services Department.

A safety data sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the product. The product is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. It can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

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Cafco MANDOLITE® CP2

Packaging: 12.5kg bags

Storage: Off the ground and kept dry until ready for use

Shelf life: 12 months maximum

This product may be used alongside other Promat products. For further information contact Promat Technical Services Department.

FIRE RESISTANCE

Structures protected with Cafco MANDOLITE® CP2 have undergone fire resistance tests up to 240 minutes in approved independent laboratories to recognised standards throughout the world, including:

- UK (BS 476: Parts 20-24: 1987)
- USA (ASTM E119 UL 263)

A safety data sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the product. The product is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. It can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

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 fire. 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, eg. perimeter beams. Cafco MANDOLITE® CP2 does not release toxic or hazardous fumes, and presents no known health hazards either before, during or after application.

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.

Table 2aa Properties and Performance	
Colour and finish	Off-white, with a monolithic spray texture
Minimum practical thickness	8mm when unreinforced. 15mm when reinforced
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)
Air erosion resistance	No erosion to ASTM E859
Bond impact	No cracks or delaminations
Deflection effect	No cracks or delaminations within normal code limits
Compressive strength	563kPa (81.6lb/in²) 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	0.095 W/mK at 20°C
Corrosion resistance	Does not promote corrosion of steel. However, a primed substrate is recommended for long term corrosion resistance.
ph value	12.0 – 12.5

Cafco FENDOLITE® MII

Cafco FENDOLITE® MII is a spray applied, single package factory controlled premix, based on vermiculite and Portland cement. Cafco FENDOLITE® MII produces a monolithic coating able to withstand the thermal shocks experienced in a high intensity cellulosic and hydrocarbon fires. Concrete structures in particular, will be protected from explosive spalling when coated with Cafco FENDOLITE® MII.

Although low in density, thus significantly 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 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.

Table 2ab Properties and Performance	
Colour and finish	Off-white, with a monolithic spray texture or floated
Minimum practical thickness	8mm when unreinforced. 15mm when reinforced
Theoretical coverage	92m²/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 5 days 75% strength 12 days, 98% strength 28 days
Density	750kg/m³ ± 15% (when dry and in place)
Cohesion/adhesion	169kPa (3533lb/ft²) to ASTM E736
Compressive strength	3933kPa (569psi) to ASTM E761
Hardness	No penetration by a load less than 2.5kgf (BS 3900: Part E2 - scratch test)
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/kg 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.
pH value	12.0 - 12.5
Sound absorption	Noise reduction coefficient (NRC) 0.35

Packaging: 20kg bags

Storage: Off the ground and kept dry until ready for use

Shelf life: 12 months maximum

This product may be used alongside other Promat products. For further information contact Promat Technical Services Department.

FIRE RESISTANCE
Structures protected with Cafco FENDOLITE® MII have undergone fire resistance tests up to 240 minutes in approved independent laboratories to recognised standards in the UK (to BS 476: Parts 20-22: 1987 Appendix D).

A safety data sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the product. The product is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. It can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.

Chapter 2: User Guide

Other Products from Promat

As well as the products shown in this manual, Promat also manufacture a number of other products, including:

Promat PROMATECT®-HD
- Non-combustible cladding and infill panel
- Non-combustible rainscreen cladding
- Non-combustible external board

Promat PROMATECT®-T/Promat PROMATECT®-H
- Fire Protection of Tunnel Linings

Promat TL BOARD®
- Thermal upgrade of concrete floors and soffits (from below)
- Thermal insulation of concrete soffits (ie car parks)

Promat TLFR BOARD®
- Thermal and fire resistance upgrade of concrete floors and soffits (from below)

For further information on any of the above products, please contact the Promat Technical Services Department.

Cutting, Fastening and Fixing

CUTTING

Promat boards can be worked with conventional woodworking equipment although the use of hand saws with hardened teeth is recommended.

Promat boards greater than 6mm in thickness may be more easily cut using a power circular saw in conjunction with tungsten carbide tipped blades, or a jigsaw. For rough cutting, 6mm sheets can be deeply scribed and broken over a straight edge.

Promat DURASTEEL® can be cut with a jigsaw around services etc. For the cutting of straight edges, a guillotine is recommended for large areas.

Promat recommend that all cutting should be carried out in well ventilated spaces, using dust extractors. Operators should wear protective face masks.

FASTENING AND FIXING

1. Nailing

The most economical method of fastening is to use pneumatic nailing and stapling equipment.

Nails can be driven directly through boards, without pre-drilling (excluding Promat DURASTEEL®), provided they are at least 12mm from the edge of the board, and the back face of the board is fully supported.

In areas of high humidity, galvanised nails should be used. Panel pins, oval or lost head nails should not be used. Nails should be located minimum 40mm from corners.

For applications such as direct fix, single-sided protection to structural steelwork, it is permissible to fix Promat VERMICULUX®, SUPALUX® and PROMATECT®-250 using shot-fired nails. Promat PROMATECT®-250 minimum thickness for shot-firing is 15mm. Refer to application specifications for further information.

Fig 2.10.1

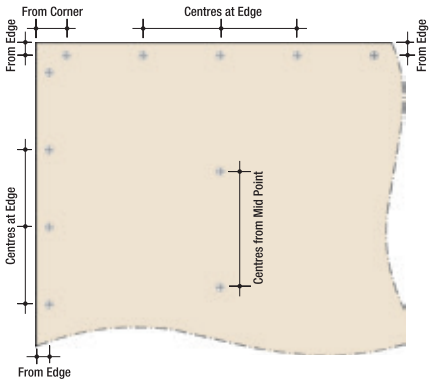


Table 2ac Fixing guide as below, used with drawing opposite

From Edge	From Corner	Centres at Edge	Centres from Mid Point
Min. 12mm	Min. 40mm	Min. 150mm	Max. 300mm

Chapter 2: User Guide

Installation

2. Screw Fixing

Pilot holes should be pre-drilled not less than 12mm from the edge of the boards and countersunk (minimum 9mm) if required. Use self-drilling or self-tapping screws when securing boards to steel. For all other situations, drywall screws e.g. Hilo are generally suitable.

Boards of thicknesses greater than 15mm can be edge screwed. Self-drilling or self-tapping screws are suitable. If edge screwing the board, minimum screw penetration should be 30mm. If screws do not have a deep thread, pilot holes should be drilled and care should be taken not to over tighten. Screws should be minimum 40mm from corners.

Screws at corners should be positioned at a distance equal to the board thickness from the corner, or a minimum of 40mm, whichever is the greater. Boards can be edge screwed or screwed face to face. Care should be taken not to overtighten screws. For best results using screws, variable speed electric screw drivers with a torque control have proven the most successful.

BUTT JOINTING

Boards can be simply butt jointed with sheets having square, bevelled or chamfered edges. If required, a filler may be used to finish joints before decoration. Adhesives are not required.

INSTALLATION OPTIONS

a) Promat boards can be fastened with self-tapping screws and drivers with torque control.
b) Promat boards are easily fixed with pneumatically operated stapling equipment.
c) Boards can be trimmed and shaped using hand-held handsaws.
d) For on-site cutting use tungsten carbide tipped blades fitted to circular saws.

PLASTERING

All calcium silicate boards have a high suction and therefore it is generally difficult to apply gypsum plaster.

Plastering boards: If a skim coat is desired, apply a sealing coat of diluted universal primer/PVA (e.g. 1 part PVA and 5 parts water). Sealing coat should be allowed to dry thoroughly (approximately 24 hours). Apply bonding coat (3 parts PVA and 1 part water).

Apply plaster skim (5mm thick) while the bonding coat is wet and tacky.

It is recommended that a small test area is plastered initially to ensure that the boards have been adequately sealed. It is advisable that self-adhesive or hessian scrim is applied over joints and internal angles. Paper scrim is not recommended.

NOTE: The bonding agent and plaster manufacturers' recommendations should be followed at all times.

The plaster manufacturers' recommendations should be followed at all times.

FINISHING OF BOARD SYSTEMS

Promat materials provide a surface ready to receive most forms of decoration. Where finishes such as wallpaper are to be used, application can be made easier by first sealing the board with a proprietary sealer or paint.

TILING

Promat SUPALUX® and Promat MASTERBOARD®

Promat MASTERBOARD® and Promat SUPALUX® can be tiled with ceramic, marble, granite and natural stone tiles (maximum 30kg/m²). In order to tile successfully, the following guidelines must be followed:

Supports: Vertical timber supports (minimum 50mm x 50mm) or steel studs should be installed at 400mm centres and all board joints must be supported.

Board preparation and fixing: The minimum board thickness to be used should be 9mm. The board should be sealed on both faces with PVA or watered down tile adhesive and allowed to dry. Fix the boards, preferably with the back (textured) face outward, to the supports at 200mm centres. The screws should be countersunk and corrosion resistant. The tiles should then be fixed using standard tile adhesive. Do not use Promat SUPALUX® or Promat MASTERBOARD® as a tile backer when they are part of a fire resistant constuction.

Note: *For tiling all other Promat products, please contact Promat Technical Services Department.*

PAINTING

All coatings should be supplied by a reputable manufacturer and their recommendations regarding surface preparation, sealing and finish coat should be followed at all times.

Promat boards have an attractive, smooth finish but if required they can be painted with emulsion or oil based paints. With water based paints, a diluted first coat should be used.For oil based paints a suitable alkali resisting primer should be used. Painted vapour barriers may be formed by the application of chlorinated rubber, epoxy resin or polyurethane paint. Backsealing may be required.

GB ORDERLINE

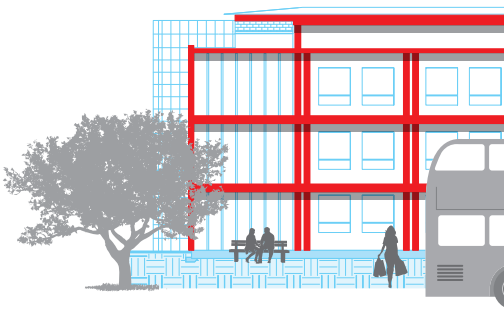
For placing orders, delivery enquiries
and local stockists etc.
T: 0800 373 636
F: 01275 379 037
E: orderline@etexbp.co.uk

TECHNICAL SERVICES

For technical support and advice.
T: 0800 145 6033
E: technical.promat@etexbp.co.uk

RESOLUTIONS

For any problems with invoices or deliveries.
T: 01275 379 031 or 0800 373 636
E: customer.support@etexbp.co.uk



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