

MONALITE® M1-M1A

MONALITE®-materials from Promat are “technical ceramics” made from calcium silicate. They are formulated without the use of asbestos fibres and are thermally insulating, non-wetting, fracture tough materials with low shrinkage. MONALITE® is the standard product for use in aluminium casting and is also used in the furnace industry and other process industries.



ADVANTAGES AND PROPERTIES

- **Thermal properties**
Service temperature to 850°C or 1000°C depending on the grade. Low thermal conductivity and thermal capacity. Low shrinkage and coefficient of thermal expansion. Performs well against thermal shock.
- **Mechanical / Chemical properties**
Good compressive and flexural strength. Machinable to close tolerances. Non-wetting to most non-ferrous molten metals. High chemical stability in alkaline media. Reactive in acid media.
- **Conditioning**
All products should be adequately dried and conditioned prior to use at elevated temperatures. Please

consult Promat's technical services department for advice.

- **Handling**
Large components should be supported by a light metal support system. MONALITE® boards and cut sizes can be mechanically fixed together with glue or screw fixings. MONALITE® should be transported and stored under dry conditions.
- **Thermal performance**
MONALITE® is non combustible. It withstands continuous operating temperatures of up to 1000°C and gives prolonged resistance to cracking and disintegration under thermal shock or the action of mobile liquid metal. This eliminates the risk of inclusions and casting contamination. The low thermal capacity

AREAS OF APPLICATION

- **MONALITE® M1**
Standard product for contact with molten metal up to 850°C. MONALITE® M1 is the standard grade for most applications and will operate at temperatures of up to 850°C. It does not promote corundum formation - an ideal benefit for aluminium holding tanks.
- **MONALITE® M1A**
Product with higher strength and lower shrinkage.
- **Non-ferrous metals**
Components for containment transmission, distribution and flow control in casting processes.
- **Furnace industry**
Hot face linings in holding dosing and homogenising furnaces.





TECHNICAL DATA

	MONALITE® M1	MONALITE® M1A		
Product name	white	white		
Colour	white	white		
Maximum Service Temperature	850	1000	°C	
Bulk density ρ	85	970	kg/m³	
Compressive strength	15	18	N/mm²	
Bending strength δ	8	10	N/mm²	
Hardness	60	65	Shore D	
Shrinkage at 750°C(12 h)	0,1/0,4	0,01/0,05	%	
Loss on Ignition				
Thermal conductivity λ				
	20°C	0,21	0,29	W/mK
	200°C	0,22	0,28	W/mK
	400°C	0,23	0,27	W/mK
	600°C	0,25	0,26	W/mK
Specific heat capacity c	0,96	0,97	kJ/kg K	
Loss on Ignition	3,1	2,7	%	
Thermal expansion α	6,1 x 10 ⁻⁶	6,2 x 10 ⁻⁶	m/mK	
Alkalinity	7-10	7-10	pH-value	
Chemical Analysis				
	SiO ₂	55,6	48,5	%
	CaO	41,9	46,8	%
	Al ₂ O ₃	0,18	0,19	%
	Fe ₂ O ₃	0,4	0,39	%
	MgO	0,3	0,2	%
	K ₂ O + Na ₂ O	0,05	0,04	%
	Mn ₃ O ₄	0,24	0,25	%
	L.O.I	1,3	3,6	%

Tolerances
Length and width: ± 3,0 mm
Thicknesses: ± 0,4 mm

Promat contains the right to change without notice the properties and values of all products. The given technical values are obtained in specific conditions and are average and indicative. In case of any doubt if these properties and/or values are matching the application requirements, please contact Promat for advise.



MONALITE® M1-M1A

and high insulating value of MONALITE® ensure maintenance of low melting and holding temperatures, resulting in fuel economy, reduced surface metal oxidation and improved metal quality.

- Shrinkage
MONALITE® is factory heat treated to ensure low thermal shrinkage, minimising subsequent thermal movement and retaining dimensional stability when in direct contact with molten metal.
- Chemical resistance
MONALITE® is an inert material that will resist chemical attack by alloying elements, lubricants, boron nitride and graphite coatings. It will not contaminate molten metal

through gaseous emission caused by heat or chemical reaction.

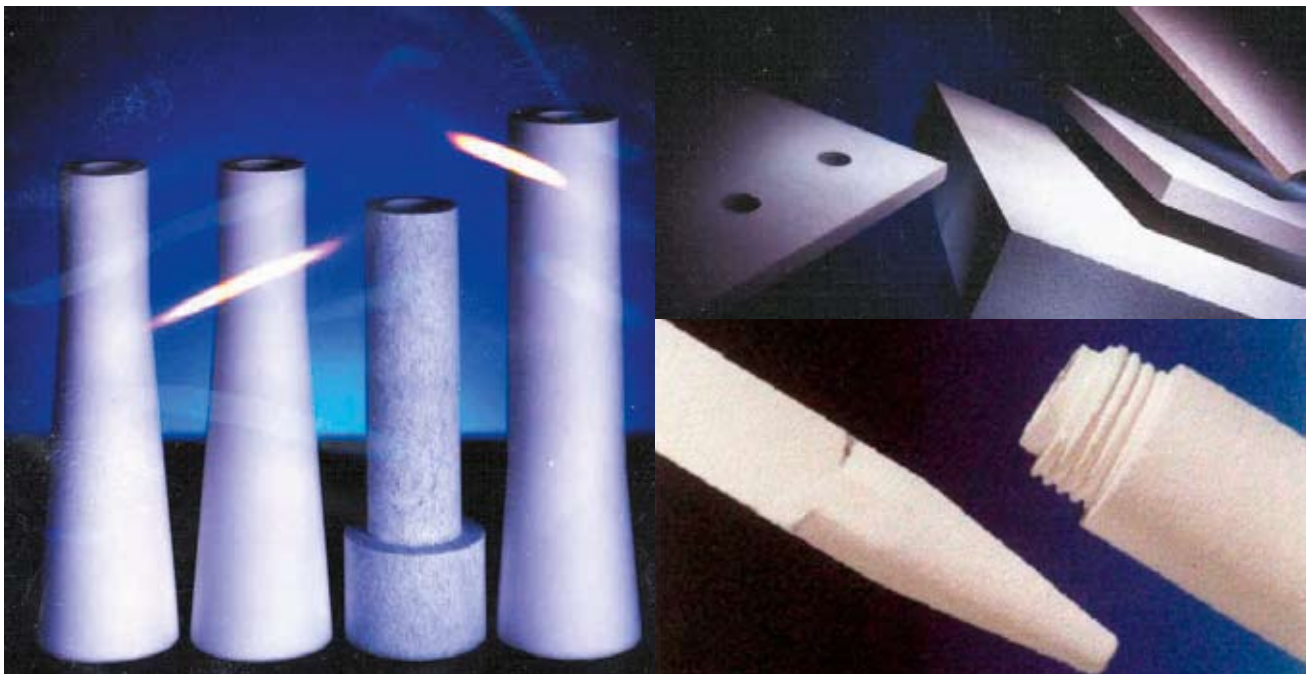
- Non-wetting performance
MONALITE®'s smooth non-porous surface will prevent metal adhesion, allowing easy removal of any frozen metal residues after cooling without damage to the components.

WORKING AND PROCESSING

- Machining
MONALITE® is easy to saw, bevel, drill, screw and machine using normal engineering tools and techniques. For repetitive cutting and machining, it is recommended that carbide tipped tools are used. It is recommended that adequate dust

extraction is installed adjacent to the cutting tool to remove nuisance dust.

- Jointing
Due to the range of sizes and thicknesses of MONALITE®, large components can be machined from single boards. Metal tight joints in MONALITE® assemblies may be made with 3 mm thick gaskets. MONALITE® components can be mechanically fixed to each other. It is recommended that screw holes be filled with high temperature fillers.
- Supports
Launders and reservoir assemblies should be supported by a light gauge metal support system on which the MONALITE® should rest without securement.





- **Repairs**
 Repairs to surfaces or joints of MONALITE® components can be made with high temperature fillers. A final coating of colloidal graphite or boron nitride will improve its effectiveness in cyclic metal casting applications.
- **Coatings**
 Coatings with graphite or boron nitride can improve the life time in discontinuous casting units. Painting of the materials with alkali resistant colours is possible.

PACKAGING, SUPPLY AND STORAGE

- MONALITE® is supplied heat treated and polythene wrapped on timber pallets. All the boards leave the factory with a moisture content < 3%. It is recommended that boards and components should be transported and stored in dry conditions. It is important that the moisture content of the MONALITE® does not exceed 3% prior to contact with molten metal.

- **Chemical and process industry**
 Collars, gaskets and pipe support rings
- **MONALITE® M1**
 Floats, dip tubes and spouts, stoppers, nozzles, distribution boxes, flow gates, header boxes and launder linings, baffles, skimmers, heat resistant splash guards, heat breaks, self supporting casings, hot pipe supports, collars, gaskets, rings, dust free continuous service tunnel linings, support pads, roller supports, heating tape supports.

STANDARD SIZES

Dimensions	boards/pallet
MONALITE® M1	
1500 x 1220 x 12,7 mm	60
1500 x 1220 x 19,1 mm	40
1500 x 1220 x 25,4 mm	30
1500 x 1220 x 31,8 mm	24
1500 x 1220 x 38,1 mm	20
1500 x 1220 x 50,8 mm	15
1500 x 1220 x 76,2 mm	10
1450 x 1220 x 101,6 mm	7
MONALITE® M1A	
1500 x 1220 x 12,7 mm	60
1500 x 1220 x 19,1 mm	40
1500 x 1220 x 25,4 mm	30
1500 x 1220 x 31,8 mm	24
1500 x 1220 x 38,1 mm	20
1500 x 1220 x 50,8 mm	15
1500 x 1220 x 76,2 mm	10