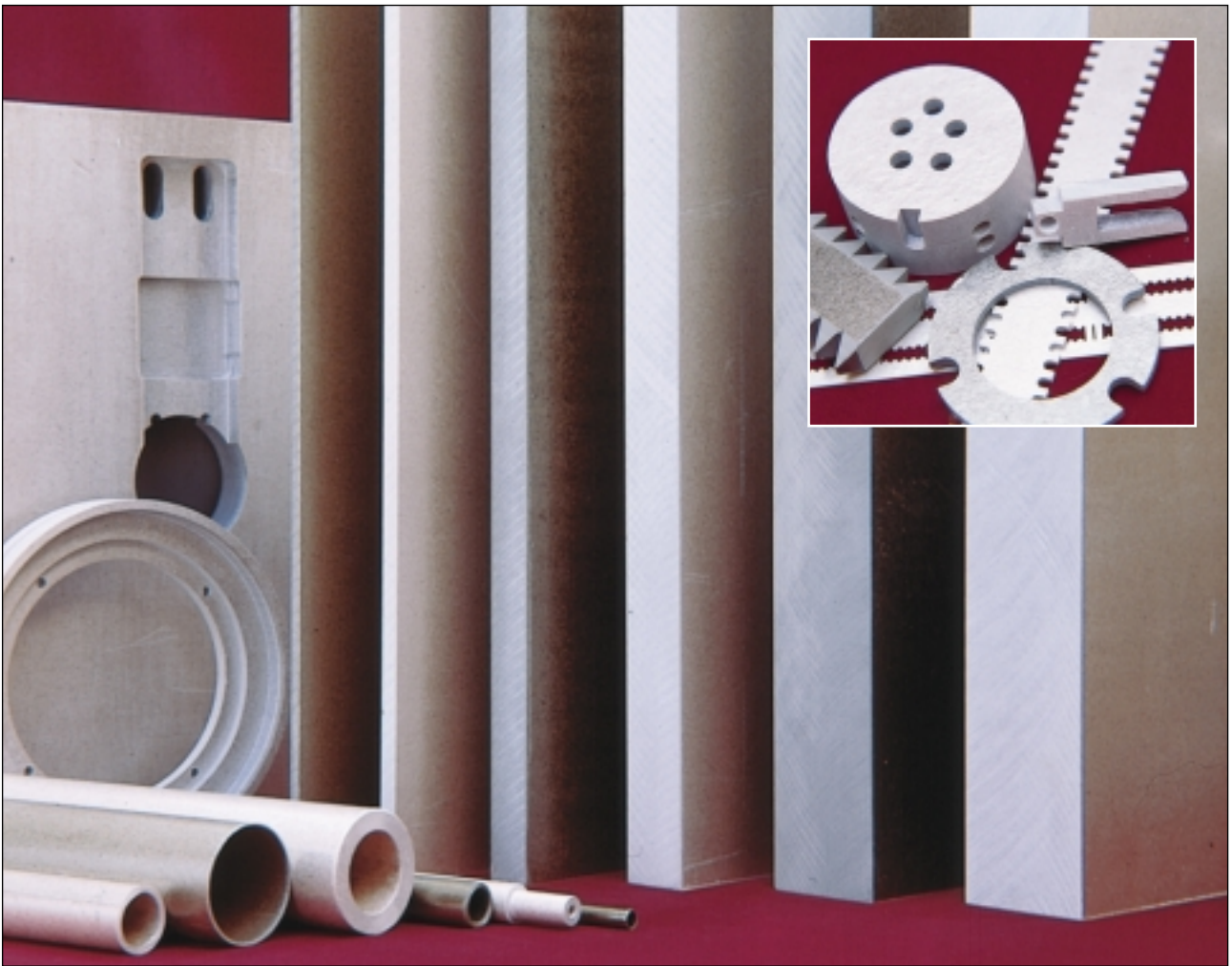


Mica plates for high-performance thermal and electrical insulation



Cogetherm is a mica laminate designed for electromechanical and thermomechanical applications requiring one or more of the following properties:

- *excellent resistance to heat and even to open flame up to 1000°C ,*
- *low thermal conductivity,*
- *excellent electrical insulation,*
- *high resistance to pressure,*
- *impervious to most chemicals, in particular oil and grease,*
- **ASBESTOS-FREE,**
- *ecologically safe and non-toxic.*

APPLICATIONS

Cogetherm is used as a replacement for asbestos and other insulating boards for a variety of applications.

A few examples:

- due to its resistance to pressure at high temperatures, a piece of Cogetherm is placed between the plate and the die in forging presses to minimise the heat spreading through the press mechanism.

- in the hollow glassware industry, Cogetherm's thermal qualities and abrasion resistance make it ideal for the parts which guide bottles as they leave the mold, where temperatures may exceed 700°C.

- Cogetherm is used in high voltage appliances thanks to its dielectric qualities and its resistance to electric arc and erosion.

- in the gas distribution sector, internal network connections are sealed using Cogetherm, due to its resistance to pressure and its extraordinary thermal properties, which results in the prevention of gas leaks even during a fire.

- in the construction of induction and arc furnaces, Cogetherm is used for its thermal and electric insulation properties, as well as its permeability to high-frequency waves.

- in the field of induction heated equipment for brazing aluminium and copper discs to cooking utensils, Cogetherm is the ideal replacement for asbestos-cement plates.

COMPOSITION

Cogetherm is available in 4 different types:

Cogetherm M, consists of $\pm 90\%$ Cogemica Muscovite and $\pm 10\%$ of bonding material. Cogetherm M has the highest resistance to pressure and is most recommended for complicated cut pieces. For continuous service temperature with temperature up to 500°C, we recommend Cogetherm M.

Cogetherm MC, our "desmoked" grade. It is only available in thickness ranging from 1,5 to 10 mm. During first application at temperature $> 250^\circ\text{C}$, fumes coming out of Cogetherm MC are very low.

Cogetherm P, consists of $\pm 90\%$ Cogemica-Phlogopite and $\pm 10\%$ of bonding material. The resistance to pressure of Cogetherm P is less than M and it should be applied only for continuous applications $> 500^\circ\text{C}$.

Cogetherm PC, our "desmoked" grade. It is only available in thickness ranging from 1,5 to 10 mm. As Cogetherm MC, during first application at temperature $> 250^\circ\text{C}$, fumes coming out of Cogetherm PC are very low.



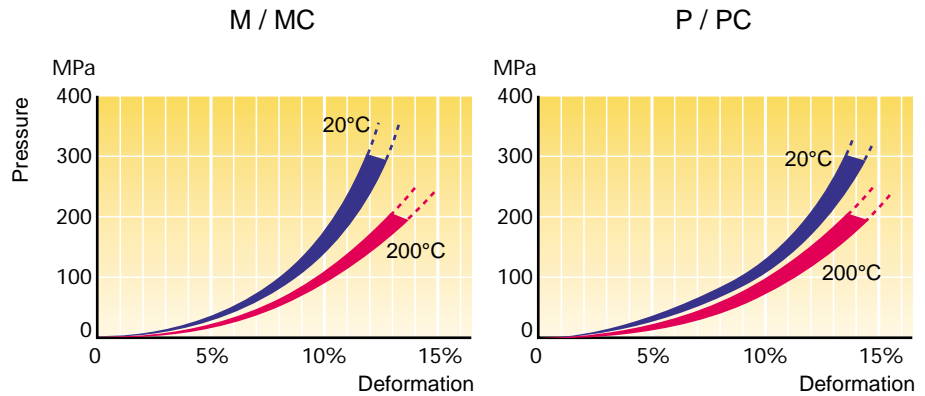
AVAILABILITY

Plate size:	1220x1016mm (untrimmed)
Usable area:	1200x1000 mm
Thickness:	up to 80mm
Tolerance on thickness:	
- Plates from 1,5 to 5 mm:	$\pm 7\%$
- Plates from 5 to 30 mm:	$\pm 5\%$
- Plates from 30 to 80 mm:	$\pm 3\%$

MECHANICAL PROPERTIES

	Test Procedure	Unit	M	MC	P	PC
Density	IEC371-2	g/cm ³	2,15	2,15	2,15	2,15
Compressive Strength	20°C ISO 604	MPa	400	360	330	310
	200°C	MPa	250	235	240	225
Tensile strength	ISO 527	MPa	150	140	110	100
Bending strength	ISO 178	MPa	230	200	170	150

DEFORMATION UNDER PRESSURE (ISO604)



	Unit	M/MC	P/PC
Heat Resistance			
continuous	°C	500	700
peak	°C	700	1000
Resistance to thermal shocks			
up to 6 mm thickness	°C	500	400
above 6 mm thickness	°C	400	200
Weight loss			
continuous temperature 500 °C	%	< 1	< 1
700 °C	%		< 2
Thermal conductivity			
perpendicular to plane of the plate	W/m·°K	0,3	0,3
along the plane of the plate	W/m·°K	3	3
Specific heat	J/kg °C	866	866
Thermal expansion			
perpendicular to plane of the plate	10 ⁻⁶ /°K	100	100
along the plane of the plate	10 ⁻⁶ /°K	10	10
Water absorption 24h/23°C	%	< 1	< 1

Fire resistance classification	Norm	Class
	BS 476	1
	NBN 21-203	A1
	NFF 16 101 u.102	MO u.FO
	UL 94	94 V-O

Fume toxicity classification	CEI 2037/85	Index 0,16
	very low optic density of fumes	
	non toxic	

* application parameters such as the pressure and clamping of the plate, the temperature gradient, the rate at which the temperatures rises, the cooling, etc., may have a significant impact on the maximum temperature for use.

ELECTRICAL PROPERTIES

	Test Procedure	Unit	M/MC	P/PC
Dielectric strength	IEC 243			
20°C		kV/mm	25	25
400°C/ 1 hour, tested at 20°C		kV/mm	13	13
600°C/ 1 hour, tested at 20°C		kV/mm	10	10
Tracking Resistance	IEC 112	V	500	525
Volume resistivity				
20°C	IEC 93	Ω·cm	> 10 ¹⁶	> 10 ¹⁶
400°C	IEC 93	Ω·cm	> 10 ¹²	> 10 ¹²
500°C	IEC 93	Ω·cm	> 10 ⁹	> 10 ⁹
Dielectric loss 160 °C	IEC 250	%	< 1	< 1
Relative permittivity				
20°C	IEC 250		6,5	6
400°C	IEC 250		7	6,5
Arc resistance	ASTM D495	sec.	≥ 420	≥ 420
	VDE 0303	L3	2.2.1.0	2.2.1.0

MACHINING

Up to 2 mm Cogetherm can be punched.
We recommend that tools be fitted with draw rings.

Above 2 mm we recommend machining (sawing, drilling, etc.) with high speed steel or tungsten carbide tools.

Data are average results of laboratory tests conducted under standard procedures and are subject to variation. These do not constitute a warranty or representation for which we assume legal responsibility.