

## Rigid mica plates

### General description

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 and ecologically safe and non-toxic. Cogetherm is available in 4 different types:

**Cogetherm M** consisting of Cogemica Muscovite and bonding material has higher resistance to pressure and is most recommended for complicated cut pieces.

**Cogetherm MC** is the “desmoked” grade of the Cogetherm M. During first application at temperature above 250°C, fumes coming out of Cogetherm MC are very low.

**Cogetherm P** consisting of Cogemica Phlogopite and bonding material has higher resistance to heat and is most recommended for applications working continuously at temperatures above 500°C.

**Cogetherm PC** is the “desmoked” grade of Cogetherm P. During first application at temperature above 250°C, fumes coming out of Cogetherm PC are very low.

### 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 minimize 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.

### Availability

Untrimmed plate size:	1220x1016 mm
Usable area:	1200x1000 mm

### Machining

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

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

### Storage

Unlimited shelf life in a dry place at room temperature.

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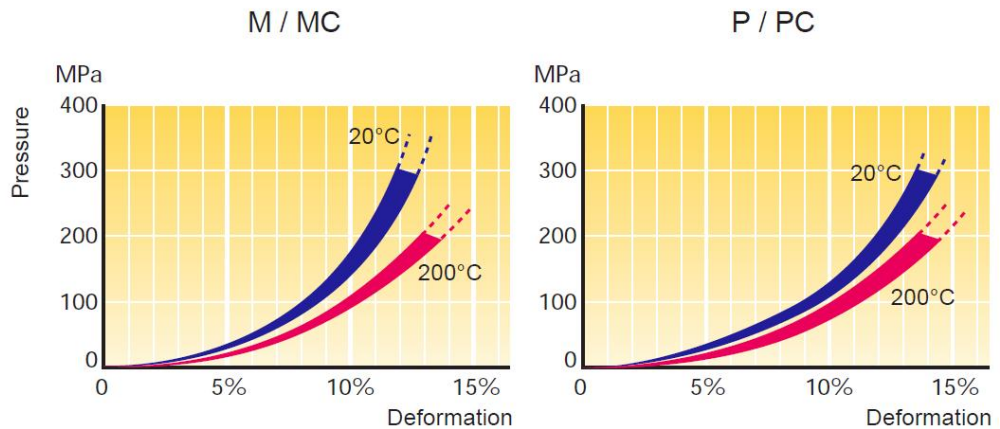
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## Characteristics

Mechanical properties		M	MC	P	PC	
Thickness	mm	< 80	1.5 - 10	<80	1.5 - 10	IEC 371-2
Tolerance						IEC 371-2
1,5 - 5,0 mm	%	7	7	7	7	
5,0 - 30 mm	%	5	5	5	5	
30 - 80 mm	%	3	3	3	3	
Mica content	%	90	<b>90</b>	<b>90</b>	<b>90</b>	IEC 371-2
Bond content	%	10	<b>10</b>	<b>10</b>	<b>10</b>	IEC 371-2
Density	g.m <sup>-3</sup>	0.69				IEC 371-2
Compressive strength						ISO 604
20°C	MPa	400	<b>360</b>	<b>330</b>	<b>310</b>	
200°C	MPa	250	<b>235</b>	<b>240</b>	<b>225</b>	
Tensile strength	MPa	150	<b>140</b>	<b>110</b>	<b>100</b>	ISO 527
Bending strength	MPa	230	<b>200</b>	<b>170</b>	<b>150</b>	ISO 178

Deformation under pressure (ISO 604):



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Thermal properties		M / MC	P / PC
Heat resistance			
Continuous service	°C	500	<b>700</b>
Intermittent service	°C	700	<b>1000</b>
Resistance to thermal shocks			
Up to 6mm thickness	°C	500	400
Above 6mm thickness	°C	400	200
Weight loss			
Continuous service	%	< 1	<1
Intermittent service	%		<1
Thermal conductivity			
Perpendicular	W.m <sup>-1</sup> .K <sup>-1</sup>	0.3	<b>0.3</b>
Parallel	W.m <sup>-1</sup> .K <sup>-1</sup>	3	<b>3</b>
Specific heat	J.kg <sup>-1</sup> .C <sup>-1</sup>	866	<b>866</b>
Thermal expansion			
Perpendicular	10 <sup>-6</sup> .K <sup>-1</sup>	100	<b>100</b>
Parallel	10 <sup>-6</sup> .K <sup>-1</sup>	10	<b>10</b>
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	Norm	Index
	CEI 2037/85	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		M / MC	P / PC
Dielectric strength			
20°C	kV.mm <sup>-1</sup>	25	<b>25</b>
400°C / 1hour, tested at 20°C	kV.mm <sup>-1</sup>	13	<b>13</b>
600°C / 1hour, tested at 20°C	kV.mm <sup>-1</sup>	10	<b>10</b>
Tracking resistance	V	500	<b>525</b>
Volume resistivity			
20°C	Ω.cm	> 10 <sup>16</sup>	> 10 <sup>16</sup>
400°C / 1hour, tested at 20°C	Ω.cm	> 10 <sup>12</sup>	> 10 <sup>12</sup>
600°C / 1hour, tested at 20°C	Ω.cm	> 10 <sup>9</sup>	> 10 <sup>9</sup>
Loss factor			
160°C	%	< 1	< 1
Relative permittivity			
20°C	Ω.cm	6.5	6
400°C / 1hour, tested at 20°C	Ω.cm	7	6.5
Arc resistance			
	sec.	≥420	≥420
	L3	2.2.1.0	<b>2.2.1.0</b>

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.

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