Calmicaglas® 2005 & 0409

Calmicaglas® 2005 and Calmicaglas® 0409 are identical tapes, consisting of mica paper based on calcined muscovite, a glass cloth carrier and a thermosetting epoxy-novolac resin. The reason for the different numbers is that Calmicaglas® 2005 is supplied with a plastic interleave and Calmicaglas® 0409 is supplied without an interleave for use in automatic taping machines.

Properties

Calmicaglas® is very flexible and can easily be wrapped in total width by hand or taped with automatic taping machines. After curing in a hot press the Calmicaglas® insulation provides excellent dielectric, thermal, mechanical and chemical properties.

Application

Calmicaglas® is used for the insulation of bars and coils of motors and generators up to the highest output and nominal voltage.

Calmicaglas® is also suitable for the fabrication of moulded parts e.g. as commutator caps, tubes and cylinders.

Availability

Calmicaglas® 2005 x 0.18mm is stocked in tapes and mother/log rolls. Other thicknesses and Calmicaglas® 0409 are available on indent.

Tapes and Rolls : from 10mm width up to a maximum width of 1000mm
Type 2005 is supplied interleaved. Type 0409 is supplied without interleave

Processing Advice

Pressing Conditions to Achieve Form Stability: -

Temperature : 130°C to 180°C

Pressure : 2 - 3 N / mm²

Time : 8.0 to 0.5 hours

Example : 1 hour at 160°C and 2 N/mm²

Full curing is achieved after 4 hours at 160°C

Storage and Shelf Life

Tapes and rolls should always be stored in sealed polythene plastic away from heat and direct sunlight; preferably in a cool room at approx. 5°C.
Calmicaglas® has a minimum shelf life of 1 year when stored at 5°C & 50% relative humidity.

Minimum of 12 months at 5°C **Minimum of 6 months at 20°C**

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Properties	Test Method	Unit	Value	Value	Value	Value
Nominal Thickness	IEC 60371-2	mm	0.12	0.18	0.21	0.24
Tolerance	IEC 60371-2	mm	± 0.01	± 0.03	± 0.02	± 0.02
Total Substance	IEC 60371-2	g/m²	164 ± 14	258 ± 26	303 ± 31	350 ± 36
Mica Paper	IEC 60371-2	g/m² %	75 ± 3 45	120 ± 8 46	150 ± 8 49	180 ± 10 52
Glass Cloth	IEC 60371-2	g/m² %	24 ± 1 15	33 ± 3 13	33 ± 3 11	33 ± 3 9
Resin Content	IEC 60371-2	g/m² %	65 ± 10 40	105 ± 15 40	120 ± 20 40	137 ± 23 39
Tensile Strength	IEC 60371-2	N/cm	≥ 70	≥ 150	≥ 150	≥ 150
Volatile Content (15 min 150°C)	IEC 60371-2	%	≤ 1	≤ 1	≤ 1	≤ 1

Technical Data after Pressing 4 hours at 160°C

Properties	Test Method	Unit	Value	Value
Nominal Thickness		mm	0.18	0.21
Thickness after Pressing		mm	ca. 0.125	ca. 0.143
Number of Layers per mm			8 ± 1	7 ± 1
Density	ISO 1183	g/cm^3	1.8 - 2.0	
Thermal Conductivity		W/mK	0.25 - 0.30	
Linear Thermal Coefficient of Expansion		1/K	ca. 10 x 10^{-6}	
Flexural Strength @ 23°C & 150°C	ISO 178	MPa	≥ 200 / ≥ 150	
Dielectric Strength (measured on plates 0.3mm thick) @ 23°C & 150°C	IEC 60243-1	kV/mm	≥ 50 ≥ 45	
Dielectric Constant (23°C -150°C)	IEC 60250		4.5 - 5.3	
Tracking Resistance	IEC 60112		CTI 350	
Dielectric Loss Factor @ 23°C 90°C 155°C	IEC 60250		≤ 10 x10^{-3} ≤ 25 x10^{-3} ≤ 100 x10^{-3}	
Thermal Classification	IEC 60216-2		155°C Class F	

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