

AEROSPACE:

THERMALLY CONDUCTIVE GLASS-REINFORCED COMPOSITES



WHY?

High thermal conductivity in glass-fabric epoxy composites allow to reach the high thermal conductivity of typical carbon based composites, while remaining electrically insulating.

APPLICATION

Improved heat dissipation leads to higher efficiency and higher power density in electro-technical equipment; this is specifically relevant to equipment operating at high temperatures or close to sources of heat:

- + Engine parts
- + Electrical panels in the cabin
- + Cockpit parts (nose, windows frames)
- + Subcomponents for LSP and Edge glow prevention in fuel tank

TECHNOLOGY

Epoxy resin modification to enhance specific thermal conductivity.



Schematization of a Von Roll product with good electrical insulation used for aircraft electrical cabinets.

KEY PRODUCT: VETRONITE EGS 619 HTC

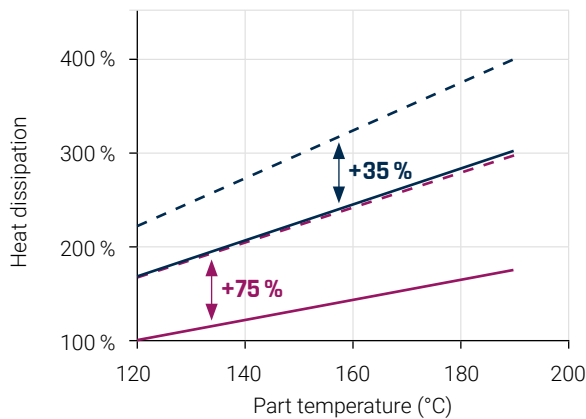
HIGH THERMAL CONDUCTIVITY GLASS-FABRIC EPOXY COMPOSITE

FEATURES

- + Composite laminate made of **glass cloth** and **high temperature epoxy**, type **FR-4** (NEMA LI 1)
- + Outstanding **thermal conductivity**
- + **Excellent mechanical** and electrical properties
- + **Flame retardant**

	Unit	Value
Mechanical properties		
Flexural strength	MPa	450
E-modulus	GPa	24
Compressive strength //, at 23°C	MPa	250
Compressive strength ⊥, at 23°C	MPa	420
Tensile strength	MPa	300
Thermal properties		
Temperature index (TI)	°C	130 (Class B)
Thermal conductivity (ISO 8301)	W /m K	0.86

	Unit	Value
Electrical properties		
Insulation resistance	Ohm	10 ¹²
Breakdown voltage //, 90°C in oil	kV	65
Electric strength I, 90°C in oil	kV/mm	15
Comparative tracking index CTI	V	500
Relative permittivity at 1 MHz	(-)	5.3
Dissipation factor at 1 MHz (-) 0.01	(-)	0.01
Physical properties		
Density	g/cm ³	2.05



1.0 mm laminate allows for an increased heat dissipation by about 75% (compared to standard composite)

— 0,4 mm — 1,0 mm
 - - 0,4 mm - HTC - - 1,0 mm - HTC

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