ELANTAS
Electrical Insulation

Product Information

Elmotherm® 083-1980

Solvented Impregnating Varnish

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Elmotherm® 083-1980

Description:

Elmotherm® 083-1980 is a solvented, specially modified isophthalic varnish with long-term tank stability and capable of withstanding Class H temperatures (180°C) in service.

Elmotherm® 083-1980 gives a good, hard but resilient finish in conjunction with excellent penetration and combines resilience with exceptionally high bond strength capabilities.

Elmotherm® 083-1980 is an ideal impregnant for all kinds of transformers, stators & coils and, with extended stoving, most armatures and rotors where good bond strength at high temperature is required.

Elmotherm® 083-1980 exhibits excellent chemical and water resistance and is compatible with most types of insulation products and systems.

Application:

Elmotherm® 083-1980 is suitable for impregnation using components at ambient temperatures or preheated. If components are preheated, care should be taken to ensure that the varnish is not exposed to temperatures in excess of 40°C. This will ensure excellent penetration whilst minimising solvent loss from the tank.

Processing:

Development of Bond Strength is a function of both curing temperature and time (refer to “Cure Characteristics” graph overleaf).

When determining cure times at the chosen temperature, account must be taken of two factors: first, that component temperature will lag significantly behind indicated oven air temperature both in time and value attained, dependent on component size and oven efficiency and second, that the solvent has to escape from any deep section windings, tightly wound coils and long slot lengths before the varnish cure mechanism in those areas can commence.

Maintenance of Resin:

The tank viscosity of Elmotherm® 083-1980 should be monitored regularly by reference to the “Viscosity / Temperature” graph for this product which is available on request.

The recommended solvent is F186 available from ELANTAS UK along with type DIN4 viscosity measuring cups. - A tank sample testing service is available on request.

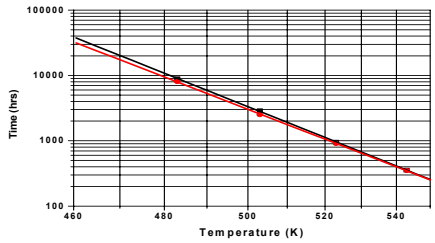
Properties:

Appearance	Clear amber / brown liquid	
Viscosity	130 - 165 secs @ 50% solids	B4 4 Flow Cup @ 21ºC
Specific Gravity	0.93	g / cm³
Mix Ratio	Single component	p.b.w.
Mix Ratio	Single component	p.b.v.
Gelation Time	1 hour	@ 165ºC
Cure Schedule	4 hours	@ 160ºC
Flash Point	38	º C

Elmotherm® 083-1980

TYPICAL PROPERTIES

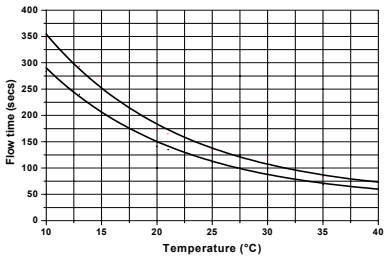
- ❑ THERMAL ENDURANCE
- ❑ BOND STRENGTH
- ❑ VISCOSITY/ TEMPERATURE
- ❑ GENERAL DATA
- ❑ OTHER INFORMATION
- ❑ DIELECTRIC LOSS



THERMAL ENDURANCE

Thermal Endurance has been carried out on **Helical Coils** and **Twisted Pairs** to ASTM Standard D3145). The results, using MW35 (polyester with amide/imide overcoat) grade wire enamel, gave thermal indices **196°C** of and **194°C** respectively.

VISCOSITY



Comparison graph of Temperature vs Viscosity using a B4 flow cup. The graph, which shows the upper and lower limits of operating specification, is a small-scale version. Full-scale curves are available on request and these should be used as a guide to maintain and control tank viscosity.

A tank sampling service is available on

GENERAL DATA

DIELECTRIC STRENGTH (to IEC 60464-2 (1974))
50µm film on aluminium panel tested @ 500 volts/sec @ 50 Hz

Temperature	**21**	**90**	**130**	**155**	**180**
Volts/µm	108	103	113	114	113

After 24 hrs water immersion @ 20°C (Volts/µm) 76
After 7 days water immersion @ 20°C (Volts/µm) 60

RESISTANCE TO TRACKING to IEC 60464-2(1974)
Protection : 100 drops @ 200 volts

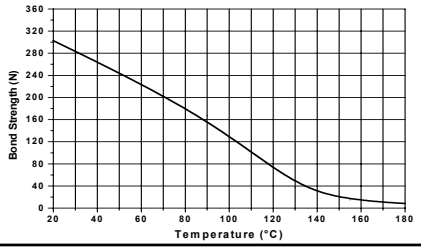
OTHER INFORMATION

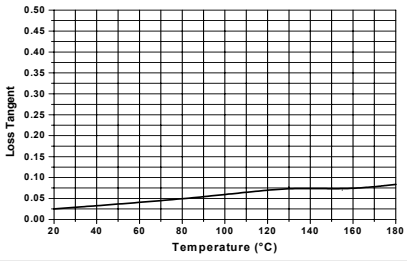
Other variants of this polyester varnish system are available with various viscosities, colours and non-volatile content characteristics.

For further information on variants of this varnish contact the **ELANTAS UK** Technical Sales department.

BOND STRENGTH

This graph shows the effect of temperature on the bond strength of Elmotherm® 083-1980 and demonstrates that the resin system maintains adequate bond strength characteristics across the designed operating temperature range.
Carried out using helical coil specimens





DIELECTRIC LOSS

The Loss Tangent was determined on 50µm film on aluminium panels to IEC 60250. The test was carried out with a stress of 2v/µm (50 Hz rms) using an Amperes-turns bridge. The samples were cured at 160°C for 16 hrs prior to testing.