ELANTAS
Electrical Insulation

Product Information

Elmotherm® 073-1979

1 Component Solvented Stoving Varnish

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Elmotherm® 073-1979

Description:

Elmotherm® 073-1979 is a solvented, specially modified isophthalic varnish, which has an excellent long-term tank stability. The cured product gives a tough / resilient film with excellent chemical and moisture resistance.

Elmotherm® 073-1979 has a thermal class of 180°C (class `H`) and exhibits compatibility with most types of insulation products and systems (UL class systems are available containing this product) and is ideally suited for processing of transformers, especially where a clean drain characteristic and fast cure is required as well as the impregnation of small stators and coils where flexibility of connection leads has to be maintained

The relative low viscosity of the varnish, combined with a high non-volatile content gives excellent penetration characteristics and good winding fill.

Application:

Elmotherm® 073-1979 is suitable for impregnation of components at ambient or elevated temperatures. 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® 073-1979 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 Electrical Insulation. A tank sample testing service is available on request.

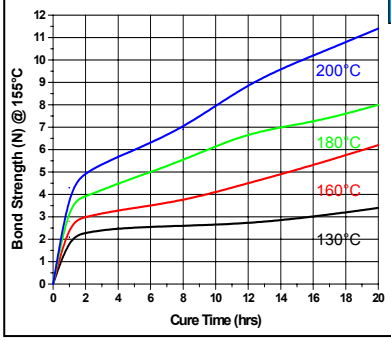
Properties:

Appearance	Clear amber / brown liquid	
Viscosity	95 - 130 secs	B4 4 Flow Cup @ 21ºC
Specific Gravity	0.98	g / cm³
Gelation Time	1 hour	@ 165ºC
Cure Schedule	4 - 6 hours	@ 160ºC
Flash Point	38	º C

Elmotherm® 073-1979

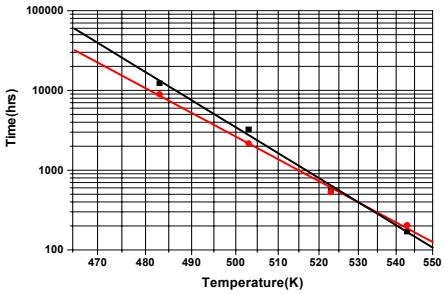
TYPICAL PROPERTIES

CURE CHARACTERISTICS
THERMAL ENDURANCE
VISCOSITY
GENERAL DATA
OTHER INFORMATION
BOND STRENGTH
DIELECTRIC LOSS



CURE CHARACTERISTICS

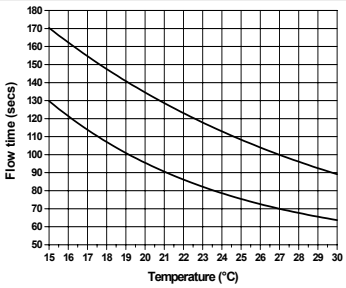
This graph clearly demonstrates the effect of increasing cure temperature on Bond Strength. The more demanding the application, the higher the cure temperature necessary. Whilst extending the cure time has a positive effect, particularly at higher temperatures, it can be seen that most benefit is derived from the use of higher cure temperatures.



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 **205°C** of and **198.5°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 request.

GENERAL DATA

50µm film on aluminium panel tested @ 500 volts/sec @ 50 Hz

Temperature	21	90	130	155	180
Volts/µm	145	113	105	95	83

After 24 hrs water immersion @ 20°C (Volts/µm) 126
After 7 days water immersion @ 20°C (Volts/µm) 127

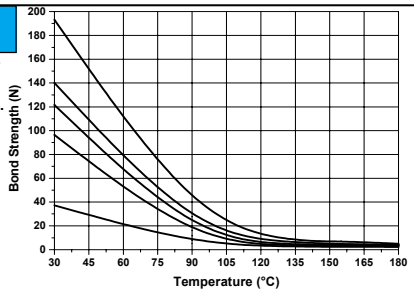
RESISTANCE TO TRACKING to IEC 60464-2(1974)
Protection : 266

OTHER INFORMATION

This product is Underwriters Laboratories Inc. (UL) listed under file number E151126, OBOR2 – Components, Varnishes.

BOND STRENGTH

This series of graphs shows the effect of operating temperature on Bond Strength. Carried out on Helical Coils to ASTM D2519, using mw-35 grade wire (polyester with amide/imide overcoat), graphs 2 – 5 illustrate 4 hr cures, and graph 1 shows the effect of a more full cure, i.e. 16 hrs @ 180°C.



DIELECTRIC LOSS

The Loss Tangent was determined on 50µm film on aluminium panels to IEC 250 (1969). 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.
The results are characteristic of a tough and flexible varnish system.