

**Product Information**

**Elmotherm® 073-1010**

Solvented Varnish

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# Elmotherm<sup>®</sup> 073-1010

## Description:

Elmotherm<sup>®</sup> 073-1010 is a solvented, specially modified isophthalic varnish, with long-term tank stability and a thermal rating of 200°C.

Elmotherm<sup>®</sup> 073-1010 gives a very good surface build in conjunction with excellent penetration and combines flexibility with high bond strength capabilities. The chemical and water resistance of Elmotherm<sup>®</sup> 073-1010 is excellent.

An ideal impregnant for all kinds of stators, armatures and transformers where an excellent quality surface finish is required, Elmotherm<sup>®</sup> 073-1010 is compatible with most types of insulation products and systems.

## Application:

Elmotherm<sup>®</sup> 073-1010 is suitable for impregnation of components either at ambient temperature or pre-heated. If components are pre-heated, 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:

Elmotherm<sup>®</sup> 073-1010 development of bond strength is a function of both curing temperature and time (refer to "Cure Characteristics" graph overleaf). Curing temperatures at the lower end of the scale (130 – 140°C) may generally be used when bond strength is not of prime importance e.g. in small transformers and fractional h.p stators. For applications where windings will be expected to withstand harsh chemical environments or to endure high mechanical stress factors on, for example, high speed armatures, traction machines, stators of large industrial motors or high output units such as 2-pole motors, curing temperatures of at least 160°C should be used.


When selecting cure times at the chosen temperature, account must be taken of two factors: Component temperatures 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. This is particularly relevant when the process has involved a vacuum and / or pressure cycle.

## Maintenance of Resin:

The tank viscosity of Elmotherm<sup>®</sup> 073-1010 should be monitored regularly by reference to the "Viscosity / Temperature" graph for this product which is available on request. A reduced-scale version for B4 Cup viscosity is reproduced overleaf.

The recommended solvent is F121 available from ELANTAS UK along with type DIN4 viscosity measuring cups. - A tank sample testing service is available on request.

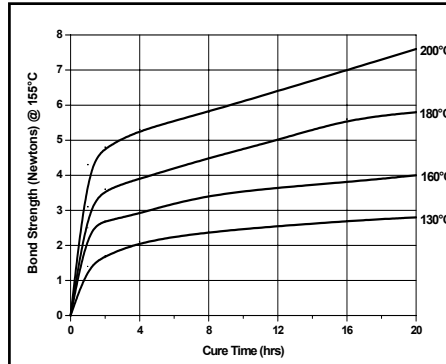
## Properties:

Appearance	Clear amber / brown liquid	
Viscosity	135 - 165 secs @ 50% solids	B4 4 Flow Cup @ 21°C
Specific Gravity	0.98	g / cm <sup>3</sup>
Mix Ratio	Single component	p.b.w.
Gelation Time	1 - 2 hours	@ 165°C
Cure Schedule	4 - 6 hours	@ 160°C
Non Volatile content	48 - 52	% by weight
Flash Point	34	° C

## TYPICAL PROPERTIES

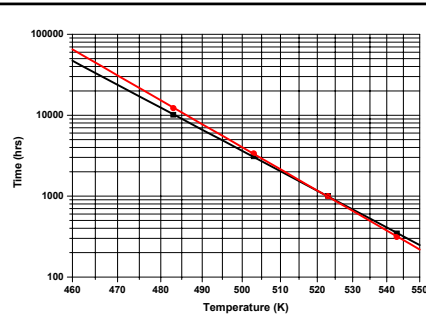


- CURE CHARACTERISTICS
- THERMAL ENDURANCE
- VISCOSITY/TEMPERATURE
- GENERAL DATA
- OTHER INFORMATION
- BOND STRENGTH
- DIELECTRIC LOSS



## CURE CHARACTERISTICS

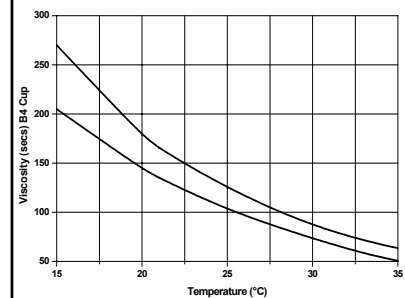
This graph clearly demonstrates the effect of increasing cure temperature on Bond Strength. The more demanding the application, the higher the cure temperature necessary. Whilst extending the cure time has a positive effect, particularly at higher temperatures, it can be seen that most benefit is derived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



## THERMAL ENDURANCE

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 **200°C** and **202°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

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

Temperature	21	60	90	130	155	180
Volts/µm	175	135	120	110	110	105

After 24 hrs water immersion @ 20°C (Volts/µm) 145  
After 7 days water immersion @ 20°C (Volts/µm) 117

RESISTANCE TO TRACKING to IEC 60464-2(1974)  
Protection : 195 drops @ 200 volts

FLASH POINT ABEL CLOSED CUP 34°C

## OTHER INFORMATION

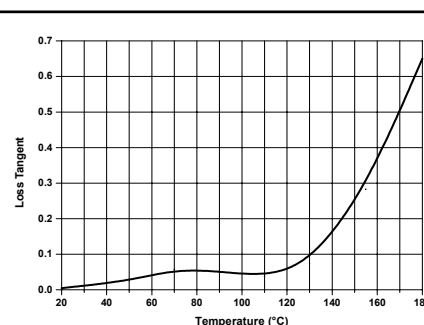
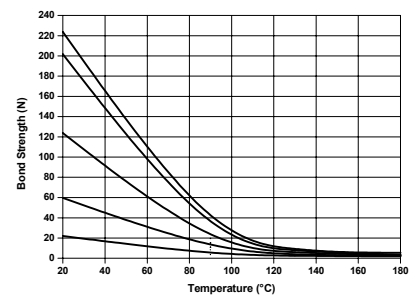
This product is Underwriters Laboratories Inc. (UL) listed under file number E151126, OBOR2 – Components, Varnishes.

ELANTAS UK Product 073-1010 should be used where a flash point of over 32° C is required.

**For further details contact sales at ELANTAS UK Ltd.**

## 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.

Our advice in application technology given verbally, in writing and by testing corresponds to the best of our knowledge and belief, but is intended as information given without oblige, also with respect to any protective rights held by third parties. It does not relieve you from your own responsibility to check the products for their suitability to the purposes and processes intended. The application, usage and processing of the products are beyond our reasonable control and will completely fall into your scope of responsibility. Should there nevertheless be a case of liability from our side, this will be limited to any damage to value of the merchandise delivered by us. Naturally, we assume responsibility for the unobjectionable quality of our products, as defined in our General Terms and conditions.