ELANTAS
Electrical Insulation

Product Information

Electrical Insulation System
Impregnating Varnish

Elmotherm® 1538 C

Air drying anti-tracking impregnating varnish.
Good chemical resistance.

Product description

Elmotherm® 1538 C is a single component, red pigmented varnish based on an alkyd modified resin with long-term tank stability and a thermal rating of 155°C.
The product consists of a polymeric binder, the so-called solid content and a solvent mixture.
Reducer X2 will be available for the dilution of the varnish.
It is designed for use in applications where good bond strength and/or good moisture and chemical resistance is required.
Polymerization is initiated by atmospheric oxygen and proceeds as a rapid chain-reaction until a three-dimensionally cross linked, duroplastic cured material is produced.
The product fulfils the directive 2011/65/UE and 2002/95/CE (RoHS).
The raw materials of the product are pre-registered according to directive to CE 1907/2006 and s.m.i. (REACH).
The product does not contain polycyclic aromatic hydrocarbons and substances listed in the SVHC Candidate List.

Areas of application

Preferred applications for Elmotherm® 1538 C are:

- motors
- transformers
- generators
- general use

Properties of cured resin

The tough-hard material displays very good mechanical and dielectric properties. The windings impregnated with Elmotherm® 1538 C show good elasticity, which is advantageous for processing of tubes and flexes and when temperature cycling occurs. In addition, the cured material displays good resistance to the effects of liquid chemicals and their vapours.

Storage and stability

Under appropriate storage conditions, protected from humidity and solar radiation, Elmotherm® 1538 C and Reducer X2 can be stored in unopened container at 23°C for 12 months.

Flow time (viscosity)

Elmotherm® 1538 C is produced with a medium viscosity: 130-150 sec measured with B4 cup at 21°C.
The kind of processing, e.g. with higher ambient temperatures, leads to rising losses of solvent and increased flow time.
In this case it will be necessary to adjust the flow time by addition of Reducer X2.

Processing methods

Elmotherm® 1538 C is using as a finishing varnish only, not as an impregnating varnish.
An impregnating process has to be carried out with a corresponding impregnating material.
The flow time of air-drying varnish in opened container will increase permanently due to the evaporation of solvent, film forming can occur additionally. Therefore the containers should be closed carefully after application, the flow time should be checked frequently and adapted with Reducer X2 if required.
Like all pigmented products Elmotherm® 1538 C shows sedimentation of the pigments, therefore the product should be carefully stirred up before each application.
Elmotherm® 1538 C can be applied by dipping or brushing at the delivered flow time.
When spraying, it is recommended to add 10-20% of Reducer X2; in this case it will be advantageous to preheat the objects up to 50-60°C for faster drying of the varnish, a second layer can be applied after 10-20 minutes already.
Drying of the varnish will be at ambient temperature normally, time can be shortened by support of hot air at 70-90°C.
It will be necessary to follow the instruction of the Material Safety Data Sheet (MSDS) for varnish and reducer.

Properties of varnish as supplied

Property	Value	Unit
Shelf life at 23 °C	12	months
Appearance/color	Liquid/red oxide	
Density at 21°C, DIN 51757	1060-1080	g/l
Flow time at 21°C B4 cup	130-150	sec

Curing condition

Temperature	20°C	80°C	°C
Curing Time	12-24	9-18	h
Tack free	30-60	15-20	min

Mechanical properties in dried condition

Test criterion	Condition	Value	Unit
Bond strength, Elantas test following IEC 61083 (helical coil)	23 °C 155°C 180 °C	> 80 - -	N
Mandrel test (3 mm) Elantas test following IEC 60464-3	23 °C	180	°
Adhesion on steel UNI EN ISO 2409 Double application	40 µ	100	%

Temperature Index

Test criterion	Condition	Value
Proof voltage Elantas test following IEC 60172 (twisted pair)	1000 V	-

Dielectric properties in dried condition

Test criterion	Condition	Value	Unit
Volume resistivity after water immersion Elantas test following IEC 60464 part 2	Initial value 7 d storing	$>10^{16}$ $>10^{15}$	$\Omega \times$ cm
Electrical strength, after water immersion Elantas test following IEC 60464 part 2	Initial value 24 h storing	>170 -	KV/mm
Electrical strength, at elevated temperature Elantas test a following IEC 60464 part 2	155 °C 180 °C	> 100 > 100	KV/mm
Temperature at relative permittivity tang °= 0,1 Elantas test following IEC 60250	50 Hz 1 KHz 10 KHz	- > 130 -	°C

Resistance to chemicals

Test criterion	Condition	Value	Unit
Resistance to vapour of solvents Elantas test following IEC 60464 part 2	Acetone Xylene Methanol Hexane	resistant resistant resistant resistant	- - - -
Water absorption Elantas test following IEC 62	at 23 °C 0,5 h at 100 °C	< 5 < 10	mg mg

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