ELANTAS
Electrical Insulation

Product Information

Electrical Insulation System
Impregnating Varnish

Elmotherm® VA42

Anti-tracking, air-drying varnish, red version.
Good moisture resistance.

Product description

Elmotherm® VA 42 is a single component, impregnating varnish based on an alkyd modified resin with long-term tank stability and a thermal rating of 155-180°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 high bond strength and/or good moisture and chemical resistance are required.
Polymerization is initiated by the effect of 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® VA 42 are:

- transformers
- stators
- drive in chemical industry
- general use

Properties of cured resin

The tough-hard material shows very good mechanical and dielectric properties even under high temperatures. Windings impregnated with Elmotherm® VA 42 show good bond strength.
In addition, the cured material displays good resistance to the effects of liquid chemicals and their vapours. Owing to the high temperature index of 180 (acc. UL = Underwriters Laboratories USA), Elmotherm® VA 42 can be used for electrical machines from 155°C to 180°C.
UL have registered the product under file E171184 (MW35, TP180 e HC180).

Flow time (viscosity)

Elmotherm® VA 42 is produced with a flow time of 160-200 sec measured with Ford 4 cup at 25°C (acc. ASTMD1200).
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® VA 42 is using as a finishing varnish or as impregnating varnish. The 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 solvent based products Elmotherm® VA 42 should be stirred up carefully before each application.
Elmotherm® VA 42 can be applied by dipping, brushing, with flow time when delivered.
When it is used by spraying, it is recommended to add 10-20% of reducer X2 .
Drying of the varnish will be at ambient temperature normally, time can be shortened by support of heat, for instance with hot air at 70-90°C.
It will be necessary to follow the instructions of the Material Safety Data Sheet (MSDS) for varnish and reducer.

Storage and stability

Under appropriate storage conditions, protected from humidity and solar radiations, Elmotherm® VA 42 and reducer X2 can be stored in unopened containers at 23°C for 24 months.

Properties of varnish as supplied

Property	Value	Unit
Shelf life at 23°C	24	months
Appearance/color	Liquid/red oxide	
Density at 23°C, DIN 51757	960-1020	g/l
Content of binder (1,5 g/1h/135°C), ISO3251	54-60	%
Flow time at 25°C ford 4 cup, ASTM D1200	160-200	sec

Drying condition

Temperature	23°C	80°C
Touch-dry	20 min	5 min
Non slip	2 h	15 min
Fully dried	24 h	2 h

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
Volume resistivity , at elevated temperature Elantas test following IEC 60464 part 2	155°C 180°C	$>10^{11}$ $>10^{11}$	$\Omega \times$ cm
Electrical strength, after water immersion Elantas test following IEC 60464 part 2	Initial value 24 h storing	>140 -	KV/mm
Electrical strength, at elevated temperature Elantas test 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	- > 170 > 180	°C

Effect of liquid chemicals, including water

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

Manufacturing site : ELANTAS Europe S.r.l. via San Martino 6, 15028 Quattordio (AL), Italy
www.elantas.com