Distributeur : JBG-METAFIX

EN

Technical Data Sheet

Elmotherm®

VF 970

UL listed

Epoxy-phenolic varnish - Solvent based - Oven curing

ELANTAS Europe Sales offices:

Collecchio (PR) 43044 - Italy
Strada Antolini n° 1 loc. Lemignano
Tel +39 0521 304777 Fax +39 0521 804410

Hamburg 20539 - Germany
Großmannstrasse. 105
Tel +49 40 78946 0 Fax +49 40 78946 349

Quattordio (AL) 15028 - Italy
Via San Martino, 6
Tel +39 0131 773870 Fax +39 0131 773875

info.elantas.europe@altana.com
www.elantas.com/europe

Product description

Product is a single component epoxy phenolic varnish.
System is viscosity reduced with solvents.
Material is heat curing and is compatible with most commonly used insulation materials and systems.

Areas of application

This product is designed for the coating of all conventional rotating / stationary windings and non electrical parts.

- Transformers
- Motors
- Generators
- Rotating Electrical Equipment
- Electrical Coils
- Non Electrical Metal components

Properties of cured product

The cured product is tough and resilient, with good mechanical and dielectrical properties.
Product shows superior resistance to the effects of liquid chemicals and solvent vapours.
Product is suitable for hermetic applications.
Fully cured material is suitable for use at thermal class 180 (H) temperatures following IEC 60085.
Product is registered by Underwriters Laboratories under file No E 171184.

Processing methods

Typical methods of application are:

- Dipping
- Dip Roll
- Vacuum Impregnation
- Vacuum Pressure Impregnation

Product should be mixed thoroughly before use.
Please refer to ELANTAS Technical Sales for application process specific data for this product.

Storage and stability

When stored correctly in tightly sealed containers the product has a shelf life of 18 months from the date of manufacture.
Resin should be stored between 5°C - 40°C and kept away from direct sunlight and or other sources of heat.
Product stored within process equipment having a replenishment rate higher than 10% per month can be processed almost indefinitely.
The product viscosity / flow time and solids content may be maintained by the addition of ELANTAS Thinner D 133.

Handling precautions

Refer to the safety data sheet and comply with regulations relating to industrial health and waste disposal.

Sales specifications

Properties	Conditions	Test Method	Value	M/U
Solid content	1 g - 1 h - 150 °C	IOR_4.03_09_AP_QT	39 ÷ 41	%
Flow time	25 °C - Ford 4	IOS_1.02_54_AP_QT (ISO 2431)	60 ÷ 80	s

Typical product properties

Properties	Conditions	Test Method	Value	M/U
Appearance		Visual method	Liquid	
Viscosity	25 °C	IOR_4.03_04_AP_QT	200 ÷ 700	mPa·s
Density	23 °C	IO-10-51 (ASTM D 1475)	955 ÷ 975	g/ml

Curing conditions

Properties	Conditions	Test Method	Value	M/U
Suggested curing cycle	hrs	--	2 h at 150°C	

Typical mechanical properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle	150°C	--	2 h at 150°C	
Bond strength (twisted coils)	25 ± 2 °C	IOS 1.02_102_QT (IEC 61033)	297 ÷ 326	N
	90 ± 2 °C		64 ÷ 78	N
	130 ± 2 °C		38 ÷ 44	N
	155 ± 2 °C		30 ÷ 36	N
	180 ± 2 °C		30 ÷ 36	N
Mandrel Bend Test	20 µm - 180 °	IOS 1.02_103_QT (ASTM D 1737)	3	mm
Bond strength (helical coils)	23 ± 2 °C	IOS_1.02_102_QT (IEC 61033)	161 ÷ 209	N
	90 ± 2 °C		51 ÷ 71	N
	130 ± 2 °C		21 ÷ 38	N
	155 ± 2 °C		28 ÷ 37	N
	180 ± 2 °C		8 ÷ 12	N

Temperature index

Properties	Conditions	Test Method	Value	M/U
TI (twisted pair)	1000 V	UL 1446	180	°C
TI (helical coil)	22 N	UL 1446	200	°C

Typical dielectric properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	2 h at 150°C	
Dielectric constant at 50 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	1,9 ÷ 2,6	
Loss factor at 50 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	3,12 ÷ 4,68	$x10^{-3}$
Dielectric constant at 1000 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	1,9 ÷ 2,6	
Loss factor at 1000 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	1,5 ÷ 2,3	$x10^{-3}$
Volume resistivity	25 ± 2 °C	IOS 1.02_94_QT (IEC 60464-2)	$1x10^{15}$ ÷ $1x10^{16}$	Ω·cm
Volume resistivity	90 ± 2 °C	IOS 1.02_95_QT (IEC 60464-2)	$5x10^{14}$ ÷ $5x10^{15}$	Ω·cm
	130 ± 2 °C		$1x10^{11}$ ÷ $1x10^{12}$	Ω·cm
	155 ± 2 °C		$1x10^{10}$ ÷ $1x10^{11}$	Ω·cm
	180 ± 2 °C		$5x10^{9}$ ÷ $5x10^{10}$	Ω·cm
Dielectric strength	25 ± 2 °C	IOS 1.02_88_QT (IEC 60464-2)	130 ÷ 216	kV/mm

Typical resistance to chemicals

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	2 h at 150°C	
Water absorption at 25 ± 2 °C	24 hrs	IOS 1.02_97_QT (ISO 62)	0,55 ÷ 0,74	%
Resistance against vapor of solvents	Acetone - 7 days	IOS 1.02_93_QT (IEC 60464-2)	Resistant	
	Xylene - 7 days		Resistant	
	Methanol - 7 days		Resistant	
	Hexane - 7 days		Resistant	
Effect of liquid chemicals	Toluene	IOS 1.02_92_QT (ISO 175)	Resistant	
	Iso-octane		Resistant	
	Transformer oil		Resistant	
	Detergent		Resistant	
	Ammonia solution 10%		Resistant	
	Sodium hydroxide 1%		Resistant	
	Hydrochloric acid 10%		Resistant	
	Sulfuric acid 30%		Resistant	
	Acetic acid 5%		Resistant	

Product of ELANTAS Europe. Our advice given verbally or in writing is based on the present state of our technical knowledge, but is intended as information given without obligation, also with respect to any protective rights held by third parties. It does not relieve your own responsibility to check the products for their suitability to the purposes and processes intended and in accordance with the technical sheets of the products. The application usage and processing of the product are beyond our control and will completely fall into the scope of responsibility of buyers and users. Should there nevertheless be a case of liability from our side, this will be limited to any damage equivalent to the 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 condition. Product conformity is guaranteed by properties defined in sales specification. Typical properties do not constitute part of the agreed product property or sales specification. Deviation from typical properties does not constitute non-conformity of the product. Typical properties are provided for general information purpose and as a guideline for the choice of the product; they are subject to variation related to i.e. curing cycles, specimen preparation, batch to batch variability, etc. unless specifically agreed with customers.