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Technical Data Sheet

**Elmotherm<sup>®</sup>**  
**2340/70**

Alkyd modified varnish - Water based - One component

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## Product description

Product is a single component modified alkyd varnish. System is viscosity reduced with water and co-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 impregnation and coating of all conventional rotating and stationary windings.

- Transformers
- Motors
- Rotating Electrical Equipment
- Electrical Coils

## Properties of cured product

The cured product is tough and resilient, with good mechanical and dielectrical properties. Product shows good resistance to the effects of liquid chemicals and solvent vapours. 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

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 24 months from the date of manufacture. Resin should be stored below 25°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, pH value and solids content may be maintained by the addition of water and or ELANTAS pH adjuster 823611.

Do not allow material to freeze.

Product should be agitated on a regular basis to maintain a uniform mixture.

## 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
Viscosity	25 °C	IOR_4.03_04_AP_QT	1000 ÷ 3000	mPa·s
Solid content	1,5 g - 3 h - 135 °C	IOR_4.03_09_AP_QT	67 ÷ 70	%

## Typical product properties

Properties	Conditions	Test Method	Value	M/U
Appearance		Visual method	Liquid	
Density	25 °C	IO-10-51 (ASTM D 1475)	1,02 ÷ 1,12	g/ml
pH	21 °C	IOS_1.02_25_AP_QT	8 ÷ 10	

## Curing conditions

Properties	Conditions	Test Method	Value	M/U
Suggested curing cycle		--	3 h at 150°C	

## Typical mechanical properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	3 h at 150°C	
Bond strength (twisted coils)	25 ± 2 °C	IOS 1.02_102_QT (IEC 61033)	157 ÷ 189	N
	90 ± 2 °C		57 ÷ 70	N
	130 ± 2 °C		30 ÷ 35	N
	155 ± 2 °C		22 ÷ 26	N
	180 ± 2 °C		19 ÷ 23	N
Bond strength (helical coils)	25 ± 2 °C	IOS_1.02_102_QT (IEC 61033)	77 ÷ 123	N
	90 ± 2 °C		27 ÷ 76	N
	130 ± 2 °C		28 ÷ 37	N
	155 ± 2 °C		16 ÷ 21	N
	180 ± 2 °C		9 ÷ 18	N

## Temperature index

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

## Typical dielectric properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle	Thin layer	--	3 h at 150°C	
Dielectric constant at 50 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	2,9 ÷ 3,9	
Loss factor at 50 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	7 ÷ 11	x10 <sup>-3</sup>
Dielectric constant at 1000 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	2,9 ÷ 3,9	
Loss factor at 1000 Hz	25 ± 2 °C	IOS 1.02_90_QT (IEC 60250)	7 ÷ 11	x10 <sup>-3</sup>
Volume resistivity	25 ± 2 °C	IOS 1.02_94_QT (IEC 60464-2)	1x10 <sup>15</sup> ÷ 1x10 <sup>16</sup>	Ω·cm
Volume resistivity	90 ± 2 °C	IOS 1.02_95_QT (IEC 60464-2)	1x10 <sup>13</sup> ÷ 1x10 <sup>14</sup>	Ω·cm
	130 ± 2 °C		1x10 <sup>11</sup> ÷ 1x10 <sup>12</sup>	Ω·cm
	155 ± 2 °C		5x10 <sup>10</sup> ÷ 5x10 <sup>11</sup>	Ω·cm
	180 ± 2 °C		1x10 <sup>10</sup> ÷ 1x10 <sup>11</sup>	Ω·cm
Dielectric strength	25 ± 2 °C	IOS 1.02_88_QT (IEC 60464-2)	160 ÷ 265	kV/mm

## Typical resistance to chemicals

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	3 h at 150°C	
Water absorption at 25 ± 2 °C	24 hrs	IOS 1.02_97_QT (ISO 62)	0,29 ÷ 0,49	%
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	

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