SynFlex Elektro GmbH
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Dolphon® XL-2102 1K Resin

Dolphon® XL-2102 is a transparent, low emission, 1K resin based on polyester.

Attributes

Dolphon® XL -2102 is characterised by the following properties:

- Excellent wetting properties
- Approved for railway applications acc. EN 45545-2: HL3 for R22 and R23
- Low weight loss on cure
- Very low odour
- Relatively fast cure cycles

Application

Dolphon® XL-2102 is a proven resin for impregnating stators, rotors, transformers, traction coils and inductances.

Standards

- UL-approved Class H (180 °C), File OBOR2.E317427 and OBJS2.E317429
- UL-System-approved 130 - 220 °C
- EN 45545-2: HL3 for R22 and R23

UL-approved with magnet wire temperature class according to UL 1446:

Magnet wire	Twisted pairs	Helical coils
MW 16-C	220 °C	-
MW 28-C	130 °C	-
MW 35-C	180 °C	200 °C

Delivery forms

Dolphon® XL-2102 is delivered in 25 kg disposable containers, 230 kg barrels and 1000 kg containers.

Storage

Dolphon® XL -2102 can be stored for 18 months at room temperature in a sealed container (max. 30 °C). The dip resin must be stored in a suitable place and protected against direct sunlight, UV radiation and sources of heat.

Always observe general rules and regulations.

Hardening

The curing time commences once the object temperature
has been reached.

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Typical curing time:

at 150 °C - 1 h*

at 130 °C - 3-4 h*

at 120 °C - 5-7 h*

*(Full curing is measured by DSC. The time must be taken after units reach the baking temperature). For objects having to endure high mechanical or chemical stress during service, longer curing times are recommended.

Best results will be achieved at:

150 °C - 2.5 h

160 °C - 2 h

170 °C - 75 min.

Protection

Cured Dolphon® XL-2102 is biologically inactive and safe to health. Always refer to the safety data sheet and implement protective measures when processing the liquid dip resin.

Processing

Exemplary impregnating process suggestion:

1. Preheat the units at 50-60 °C (max.)
2. Dip into the resin for 30-60 min.
3. Drain for 1 h min.
4. Bake 1 h at 150 °C* (see "Curing")

For the VPI application the cycle must be set for each type of machines. Feel free to contact us.

Cleaning

Since the cured dip resin is practically insoluble, the tools have to be cleaned as soon as possible with a suitable solvent. Maintenance and care of impregnating plants, especially cleaning, must be carried out according to operational requirements. Always refer to the user manual of the plant.

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Mechanical	Unit of measure	Conditions	Value	Test method
Gel time	min	100 °C	30-45	
Weight loss	%	10 g cured 1 h at 150°C	< 3.5	
Bond strength	N	at 25 °C	>180	IEC 61033, HC, 1h/150 °C
Bond strength	N	at 80 °C	>90	IEC 61033, HC, 1h/150 °C
Bond strength	N	at 155 °C	>30	IEC 61033, HC. 1h/150 °C

Thermal	Unit of measure	Conditions	Values	Test method
Thermal conductivity	W/mK		0.25-0.30	

Electrical	Unit of measure	Conditions	Value	Test method
Dielectric strength	kV/mm	0.025 mm film	>128	ASTM D-115
Volume resistivity	Ω x cm		>10^15	IEC 60464-2
Volume resistivity	Ω x m	after 7 d water storage	>10^12	IEC 60464-2
Surface resistivity	Ω		>10^15	IEC 60464-2

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Electrical	Unit of measure	Conditions	Value	Test method
Dielectric constant		at 25 °C	3.3	ASTM D-150
Creep resistance		CTI	>600	IEC 60112

Chemical	Unit of measure	Conditions	Value	Test method
Water absorption	%	90 min at 100 °C	<1.5	ASTM D 570
Water absorption	%	24h at 25 °C	<1	ASTM D 570
Resistance		Xylene, Methanol, Hexane	yes	IEC 60464-2
Resistance		10% hydrochloric acid	< 2.5 %	ISO 175 - 7 d storage
Resistance		30% sulfuric acid	< 1.5 %	ISO 175 - 7 d storage
Resistance		transformer oil	< 0.5 %	ISO 175 - 7 d storage
Resistance		unleaded gasoline	< 1.5 %	ISO 175 - 7 d storage
Resistance		cleaning agents	< 1.5 %	ISO 175 - 7 d storage

Liquid phase	Unit of measure	Conditions	Values	Test method

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Liquid phase	Unit of measure	Conditions	Values	Test method
Viscosity	s	at 25 °C	110-170	Ford Cup 4
Specific density	g/cm³	at 25 °C	1.12 ± 0.03	