SynFlex Elektro GmbH
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Voltatex® 4250 1-component-resin

Voltatex® 4250 is a yellow-brown, ready-to-use impregnating 1K dip resin based on unsaturated polyesterimide resins.

Attributes

- single component
- free of styrene and vinyltoluene
- low emission
- minimum exposure to the working area
- no risk of fire and explosion hazards
- not classified as dangerous in the meaning of transport regulations

Voltatex® 4250 is designed for the combined Electrical/UV-process. The product can be cured in conventional ovens as well.
The cured resin compound is characterized by:

- high thermal and mechanical strength, especially under long-term stress
- good resistance to solvent gases
- resistance to refrigerants

Application

- electric motors and large drives
- hermetic motors
- transformers, especially with thick wires and shaped conductors
- suitable for: Insulation systems up to thermal class 220 (R)

Standards

- UL-File-Nr.: E101752 (M) Underwriters Laboratories Inc, USA
- RoHS-compliant 2011/65/EU
- REACh-compliant 2006/121/EU
- Thermal class 220 (R) acc. to IEC 60085:2007
- Temperature Index in acc. with IEC 60455-3-5
- Testing Method in acc. with IEC 60216 Type 220
- **T**emperature class in acc. with UL 1446:

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Twisted Pair	ASTM D2307	MW 30:200
		MW 35:220
Helical Coil	ASTM D2519	MW 30:240
		MW 35:220

Electrical Insulation Systems in acc. with UL 1446:

Class 130	C190HE
	R150HE
	Z130HE
	Z150HE
Class 155	C290HE
	CZ255HE
	R201HE
	R203HE
	Z200HE
Class 180	R342HE
	R342HE2

Delivery forms

Voltatex® 4250 is supplied in one-way-cans containing 25 kg and 200 kg. Additionally 1000 kg containers (returnable) are available (not for oversea export).

Storage

In closed original packaging the resin can be stored for more than 6 months if provided storage temperature does not exceed 25 °C. Opened containers have to be closed immediately to protect the material from daylight!

Hardening

Voltatex® 4250 is a low emission product; nevertheless to minimize evaporation of reactive components while curing the impregnated objects
should be heated up to the curing temperature in the shortest possible time. The air flow in the curing zone should be kept to the minimum permitted by safety considerations.
Dependent on the thermal and mechanical requirements we recommend two successive electrical curing cycles of 10 - 20 min each at 150 – 180 °C and – in parallel to the second curing cycle – a UVA-radiation phase with an output of > 25 mW/cm² for the Electrical/UVprocess.

Protection

Cured Voltatex® 4250 is biologically inactive and not dangerous to health. When processing the liquid resin, please

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refer to the Material Safety Data Sheet (MSDS) for Voltatex® 4250.

Processing

In combination with the Electrical/UV-process Voltatex® 4250 provides a customized adjustment of the impregnating quality paired with maximum material efficiency. As we cannot foresee all possible designs and applications in this Technical Data Sheet please get in contact with our Technical Representatives for further advice and support, such as trials in our technical laboratory as well as our expertise related to equipment design and production scale-up.
Unlimited tank stability with resin Voltatex® 4250 can be achieved as long as the material is kept below 25 °C and at least 20 % of the tank content is used and replaced with fresh resin per month.

Cleaning

Cured Voltatex® 4250 is almost insoluble. Therefore, application equipment should be regularly cleaned with cleaner Voltatex® T050. All equipment cleaning and maintenance should be carried out in accordance with the equipment manufacturer’s instructions.

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Mechanical	Unit of measure	Values	Test method
Bond strength of twisted coils room temperature	N	190 ± 40	IEC 60455-2 Test method A to IEC 61033
Bond strength of twisted coils 130 °C	N	50 ± 10	IEC 60455-2 Test method A to IEC 61033
Bond strength of twisted coils 155 °C	N	40 ± 10	IEC 60455-2 Test method A to IEC 61033
Bond strength of twisted coils 180 °C	N	35 ± 10	IEC 60455-2 Test method A to IEC 61033
Shore D hardness room temperature		68 ± 5	IEC 60455-2 Test method to ISO 868

Thermal	Unit of measure	Values	Test method
Temperature index	°C	220	IEC 60455-3-5, test method acc. IEC 60216
Bond strength IEC 60317-8	°C	MW 30:238	IEC 61033, method B, final point 22 N
Bond strength IEC 60317-13	°C	MW 35:229	IEC 61033, method B, final point 22 N
Testing voltage IEC 60317-2	°C	MW 30:212	IEC 60172
Testing voltage IEC 60317-13	°C	MW 35:222	IEC 60172
Heat conductivity	W(m*k)^-1	0.23	acc. ISO 22007-2.0

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Chemical	Unit of measure	Conditions	Values	Test method
Water absorption	%	after 96h at 23 °C	0.8	company standard Energy Solutions-015
Resistance		Distilled water, transformer oil, 5 % soap-flock-dilution	resistant	company standard Energy Solutions-017
Resistance		R22 Shell 22-12	resistant	Werknorm Energy Solutions - VOLTATEX 019
Resistance		Hexane, methanol, acetone, xylene	resistant	company standard Energy Solutions-019

Liquid phase	Unit of measure	Bedingung	Values	Test method
Impact on enamelled wires			compatible with all common magnet wires	
Curing time	min	150-180 °C	2 x 10-20	Electrical-UV-Process
Reaction process reaction time	min	100 °C	10.5	acc. company standard Energy Solutions-014
Reaction process gel time	min	100 °C	9	acc. company standard Energy Solutions-014
Viscosity	mPas		(2250 ± 350)	at 25 °C acc. DIN 53019

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Electrical	Unit of measure	Values	Test method
Dielectric strength at 23 °C and 50 % r.h.	kV/mm	80	IEC 60455-2 Test method in acc. with IEC 60243-1
Dielectric strength at 155 °C	kV/mm	80	IEC 60455-2 Test method in acc. with IEC 60243-1
Dielectric strength at 23 °C after 96 h storage at 92 % r.h.	kV/mm	65	IEC 60455-2 Test method in acc. with IEC 60243-1
Dielectric strength at 105 °C after 168 h oil immersion	kV/mm	95	IEC 60455-2 Test method in acc. with IEC 60243-1
Specific volume resistance at 155 °C	Ω*cm	1x10^9	IEC 60455-2 Test method in acc. with IEC 60093
Specific volume resistance at 180 °C	Ω*cm	8x10^8	acc. IEC 60455-2, test method acc. IEC 60093
Loss factor cross section 0.2=200x10^-3	°C	65	IEC 60455-2, test method in acc. with IEC 60250