SynFlex Elektro GmbH
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Voltacast 3200 Polyurethane casting resin

Voltacast 3200 is a pigmented, filled and cold-curing two-component polyurethane casting resin with low temperature development while curing, based on hydroxy-functional polyester. The product is available in black or white colour.
The hardener Voltacast H132 is based on aromatic polyisocynate. The product is available in white and black colour.

Attributes

- non-abrasive, filled with chalk
- hard
- resistant to transformer oil and organic solvents and gases such as benzines and carbon hydrides
- good adhesion on most metals and plastics except on anodized, smooth surfaces especially on light metals
- low shrinkage

Application

Voltacast 3200 is suitable for embedding and potting of transformers (in particular small transformers) and electronics.
Voltacast 3200 contains non-abrasive fillers. Therefore it is especially suitable for sensitive mixing and dispensing equipment. To achieve customized properties additional non-abrasive fillers may be added to the product on customers' behalf.

Standards

- Insulation class B
- Electrical Insulation Systems in acc. with UL 1446 (IEC 61858):

Class 130	R150HE Table II
	Z130HE Table II
Class 155	R201HE Table II

Delivery forms

Voltacast 3200 is supplied in non-returnable one-way containers of 20 kg.

Color

Voltacast 3200: White (W) and Black (B)
Voltacast 3200 with Voltacast H132: White (W) and Black (B)

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Storage

In closed original cans and at 25 °C storage temperature maximum the resin can be stored for 12 months. The hardener can be stored for 4 months under the same conditions. Both resin and hardener have to be protected against water and humidity and therefore must not be stored outside. Additionally the respective hardener must be stored and transported frost-protected (above 10 °C).

Hardening

After curing for 48 hours at 20 °C minimum the resin compound can be fully stressed (both mechanically and electro-technically).

Protection

The cured resin compound is biologically inactive and not dangerous to health. When processing the liquid components please refer to the respective Material Safety Data Sheets (MSDS's).

Processing

Due to the contents of fillers which will settle to the ground during a longer storage period Voltacast 3200 needs to be stirred up homogenously (without including foam) prior to use. In any case the resin shall rest for about 2 hours after stirring to allow degasing. The time needed for degasing the resin may be shortened by storing the resin at approx. 60 °C or at a vacuum of approx. 20 mbar. Provided the mixture is consumed very soon, the hardener Voltacast H132 may be added to the warm resin. Otherwise the resin has to cool down to room temperature again in order to avoid a significant shortening of the mixture's pot life.
Casting resin, hardener and mixtures made must be protected against humidity! The temperature in the working area must be above 18 °C!

The same way it is essential to dry the parts the casting resin shall be applied on. An example for best practice is to extract all humidity on and inside the parts used by drying them at approx. 50 °C for about 1 hour, as otherwise the resin may form gas bubbles while curing.

Hardener Voltacast H132 shall be added to the casting resin in the mixing ratio stated above. The mixture has to be stirred homogenously and carefully without including foam. Provided the product shall be blended with extra fillers, these fillers must be completely dried prior to adding them to the casting resin.
Best practice to add fillers to the product is to add the respective amount slowly and to stir the product until a homogenous mixture is ensured. The same way it is useful to heat up the mixture moderately to 60 °C or to establish vacuum in order to accelerate the degasing as mentioned above. Voltacast 3200 can be applied on all common mixing and dispensing equipment with or without applying vacuum.

Cleaning

Once cured the resin compound is almost insoluble. Therefore, application equipment should be cleaned regularly

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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	Conditions	Values	Test method
Shore-D-hardness	after 3 days	52 ± 5	acc. DIN 53505
Shore-D-hardness	after 4 weeks	80 ± 10	acc. DIN 53505
Shore-D-hardness	after 2 months	82 ± 10	acc. DIN 53505
Water absorption	after 96h at 23 °C	0.4 ± 0.02 %	company standard

Thermal	Unit of measure	Value	Test method
Temperature index	°C	130 - 138	20,000-h-value acc. IEC 60216
Dimensional stability under heat	°C	50 ± 5	acc. Martens DIN 53462

Electrical	Unit of measure	Conditions	Values Voltacast 3200 with Voltacast H132	Test method
Dielectric strength at 23 °C and 50 % r.h.	kV/mm		51-63	IEC 60455-2; test method acc. IEC 60243-1
Dielectric strength at 105 °C after 168 h oil immersion	kV/mm		≥ 69	IEC 60455-2; test method acc. IEC 60243-1

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Electrical	Unit of measure	Conditions	Values Voltacast 3200 with Voltacast H132	Test method
Specific volume resistance at 23 °C	Ω*cm		2.5 x 10^15	acc. IEC 60455-2; test method acc. IEC 60093
Specific volume resistance	Ω*cm	at 130 °C	3 x 10^8	acc. IEC 60455-2; test method IEC 60093
Specific volume resistance after 96 h water immersion	Ω*cm		6.9 x 10^14	acc. IEC 60455-2; test method acc. IEC 60093
Creep resistance			CTI 325 M-0.3	DIN IEC 60112
Dielectric constant at 23 °C between 50 Hz and 1 MHz			4 - 5	DIN 53483
Loss factor at 23 °C from 50 Hz and 1 MHz			0.09 - 0.2	DIN 53483
Loss factor cross section 0.2=200x10^-3	°C		90 ± 5	DIN 53483
Dielectric strength at 23 °C after 96 h storage at 90 % r.h.	kV/mm		12-16	IEC 60455-2; test method acc. IEC 60243-1

Liquid phase	Unit of measure	Values Voltacast 3200	Values Voltacast 3200 mit Voltacast H132	Test method

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Liquid phase	Unit of measure	Values Voltacast 3200	Values Voltacast 3200 mit Voltacast H132	Test method
Mixing ratio	Gew-%		100 : 30	
Colour		White / Black	white / black	
Curing time	min		48 h - RT	
Mixture density	g/cm³	W: 1.56 ± 0.05; B: 1.45 ± 0.03	W:1.47 ± 0.05; B:1.37 ± 0.03	acc. DIN 5321, T.5 at 20°C
Viscosity resin + hardener	mPas	1800 ± 300	W: 400 ± 100; B: 450 ± 150	at 25 °C acc. DIN 53019
Volume shrinkage	%		4.7 ± 0.1	after storage at RT for 24 h and 80 °C for 5h
Impact on enamelled wires			Compatible with all common enamelled wires	
Pot-Life	min		W: 90 ± 20 ;B: 110 ± 10	at 23 °C - (100g-test)

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