

VUKOL N33u black



VUKUR POTTING MATERIALS

Characteristics

VUKOL N33u black is a 2-component polyurethane sealant with accelerated hardening. It consists of a polyol component called VUKOL N33u black and hardener VUKIT M. It is a medium-viscous liquid containing inorganic fillers. It does not contain solvents (VOC content < 1 %). It cures at room temperature. It is designed for a wide range of applications. The cured material belongs to the softer, flexible types of polyurethanes.

The following general features characterize it:

- thermal class B
- good dielectric properties
- advantageous mechanical properties, without internal stress
- perfectly withstands sudden temperature changes
- highly water resistant
- allows potting without bubbles
- good workability, material suitable for manual processing as well as for continuous mixing and dosing equipment
- does not contain solvents or halogen compounds
- fire resistance class V2 / 2 mm (according to UL94 standard)
- available in natural (pale yellow) and black versions

Field of application

VUKOL N33u black is suitable for encapsulating or encapsulating electrical equipment, such as small or medium transformers, capacitors, coils, electronics, car batteries, etc. It does not contain abrasive fillers; due to rapid hardening, it is especially suitable for continuous machining (potting devices). It is characterized by good electrical insulating properties and better thermal conductivity, compared to materials without fillers. VUKOL N33u black can be used for a wide range of applications, even outside the field of electrical engineering.

Processing

- VUKIT M is used as the default hardener.
- During mixing, the temperature of the components should be between 15 – 25 °C. At higher temperature, the hardening takes place more rapidly, thus shortening the pot life of the mixture.
- Moisture must be strictly avoided during all steps of work-up, until the resin is hardened. All workpieces and processing tools must be dry before use, possibly stored at ambient temperature, to avoid condensation of air moisture on cold surfaces.
- During storage, slight sedimentation of the fillers in the resin can occur, so VUKOL N33u black should always be stirred up thoroughly before mixing with the hardener.
- The mixing ratio of polyol component VUKOL N33u black and hardener is 100 : 23 (weight mixing ratio).

For manual work-up:

- The amount of resin-hardener mixture prepared at once should be adjusted to the number of the workpieces, as they should be casted/potted within the pot life. As soon as the viscosity of the mixture reaches double to triple of the initial value, it should not be used any more.
- For cleaning of the tools, it is recommended to use VUKI thinner T5.

In case of automatic application:

- According to the device manufacturer/supplier specific instructions.

Detailed instructions for manual processing are available in the document: "VUKOL N - Processing Instructions for PUR compounds.pdf". They are available on the VUKI website within the "Downloads" section.

CAUTION: In case of humidity higher than 55 %, bubbles may arise in castings, therefore application in such conditions is not recommended.

Labor safety and environmental information is detailed in the „Safety data sheets“ of the product. Follow the safety instructions in the Safety Data Sheet during all the works



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Hardening conditions:

- Conventional hardening: **15 – 25 minutes** at 23 °C, humidity: < 55 %
- full hardening: **7 days** at 23 °C (achievement of final parameters)

Properties of components

Parameter	Standard	Condition	VUKOL N33u black	VUKIT M	Unit	Description
Appearance	HZS 003		Viscous liquid	Clear brown liquid		
Density	STN EN ISO 2811-1	25 °C	1,30 – 1,35	1,20 – 1,24	g/cm ³	
Viscosity	STN 67 3014	25 °C	2 000 – 3 000	70 – 250	mPa.s	
Non-volatile content			> 99	> 99	%	
Flash point	STN EN ISO 2592		> 220	> 200	°C	
Shelf life		15 – 25 °C	12	12	months	

Mixing ratio	Weight mixing ratio
VUKOL N33u black : VUKIT M	100 : 23

Properties of mixture

Parameter	Standard	Condition	VUKOL N33u black + hardner	Unit	Description
Final color			Black		other colors possible on request (non-pigmented VUKOL N33u natural)
Initial viscosity of mixture	STN 67 3014	25 °C	1 500 – 2 500	mPa.s	
Processing time: Time to double viscosity Time to triple viscosity	STN 67 3014	25 °C	2,5 – 3,5 3,5 – 4,5	minutes	50 g
Hardening time		23 °C	15 – 25	minutes	humidity: less than 45 – 55 %
Full hardening time		23 °C	7	days	

Parameters of the hardened material (after 7 days at 23 °C)

Parameter	Standard	Condition	Value	Unit	Description
Elongation at break	STN EN ISO 527-2		30	%	4 mm
Tensile strength	STN EN ISO 527-2		5,0	MPa	4 mm



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Hardness	STN EN ISO 868	Shore D	30 – 35		after 7 days at 23 °C
Dielectric strength	STN EN 60243-1	23 °C	25	kV/mm	2 mm thickness sample
Volume resistivity	STN EN 62631-3-1	23 °C after 7 days in water at 23 °C	4,9.10¹² 8.10¹⁰	Ω.m	
Surface resistivity	STN EN 62631-3-2	23 °C after 7 days in water at 23 °C	1.10¹⁵ 1.10¹⁵	Ω	
Thermal class	STN IEC 60 216		B (130 °C)		
Thermal conductivity	STN EN ISO 10456		0,45	W/(m.K)	
Water absorption	ISO 62	25 °C, 24 hours	max. 0,25	%	
Combustivity class	UL 94		V2		2 mm
tg δ	STN EN 60455-2		0,126		
Permittivity	STN EN 60455-2		5,8		
Tg	STN EN ISO 11357-2		0,2	°C	

Packing, storing and manipulation

VUKOL N33u black and VUKIT M are supplied in non-returnable, clean, metal containers. Should be stored in tightly closed containers in a dry, ventilated place at + 5 °C to + 25 °C. When the storage conditions are met, the quality of the unhardened resin is guaranteed 12 months from the date of manufacture.

CAUTION: Prevent the infiltration of moisture or air humidity into the material, it causes degradation!

NOTE

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