



Characteristic

NH 91/u is a single-component impregnating resin based on unsaturated polyester resin dissolved in reactive diallyl-phthalate. It has a clear to slightly cloudy appearance of glowing coloration. There is little emission (VOC) released during curing. Does not pollute the work environment, does not create a fire hazard, with no odor. Waste air does not need to be cleaned.

Impregnation is characterized by the following properties:

- excellent thermal resistance
- resistance to freons and transformer oils
- very good mechanical strength
- the cleanliness of the systems surface after impregnation
- minimum losses during curing
- customizable processing properties according to customer requirements

Field of application

NH 91/u is suitable for applications in temperature class H. It is designed for the impregnation of highly mechanically and thermally stressed windings of electric rotary machines of general use and transformers.

Processing

NH 91/u can be processed on conventional impregnation devices at atmospheric pressure or vacuum by dipping, flooding or widening under rotation. Exact instructions for processing will be provided depending on the customer's processing method.

It can be processed immediately without the need to add additional additives as it is a one-component system. The recommended impregnant change in the tank is 20% of the total volume per month. To achieve the maximum life time of the impregnating resin, its operating temperature is recommended to not exceed 25 °C.

When handling the impregnator, follow the safety instructions in the **Safety Data Sheet**.

To clean the equipment and work tools from undamaged impregnant it is recommended to use VUKI thinner T5.

Hardening

Curing conditions:

- Conventional curing: 2 hours at 130 °C
- Oven has to be equipped with vapor extraction

NH 91/u



VUDAP IMPREGNANTS

Processing properties

Parameter	Standard	Condition	Value	Unit	Description
Density	STN EN ISO 2811-1	20 °C	1130 – 1150	kg/m ³	
Flow time	DIN 53 211 (DIN cup 4)	25 °C	110 – 150	s	value adjustable according to customer request
Stability		25 °C	min. 12	month	
Flash point	STN EN ISO 2592		145	°C	
Saturated steam pressure		25 °C	0,0013	mbar	
Gel time	DIN 16 945	130 °C	10 - 17	min	
VOC			3 – 4,5	%	
Hardening time		130 °C	2	hour	from reaching mentioned temperature in the winding
Effect on enameled wires	STN EN 60851-4,5 STN EN 60317		suitable		compatible with all commonly used wires

Parameters after hardening

Parameter	Standard	Condition	Value	Unit	Description
Drying in thick layer	STN EN 60464-2	4,5 h at 100 °C + 1,5 h at 110 °C + 2 h at 120 °C	I 1.1 S1 U1		sample solid, no cracks and bubbles, surface smooth, non-stick
Layer thickness on AL sheet			-	µm	
Electrical strength	STN EN 60243-1	23 °C	120 – 150	kV/mm	cylindrical electrodes ø 6 mm
Volume resistivity	STN EN 62631-3-1	23 °C 155 °C 180 °C after 96 h in water, 23 °C	10 ¹⁴ 10 ¹¹ 10 ¹⁰ 10 ¹³	Ω.m	
Twisted coil strength	STN EN 61 033 art. 2.1 method A	23 °C 155 °C 180 °C	350 – 400 120 – 150 80 – 100	N	
Helical coil strength	STN EN 61 033 art. 2.1 method B	23 °C 155 °C 180 °C	200 – 250 100 – 120 60 – 90	N	
Temperature index	STN IEC 60 216	helical coils twisted pairs	130 180	°C	





Packing, storing and manipulation

Impregnating resin is supplied in non-returnable, clean, metal drums with weight 10 kg, 25 kg and 200kg. Alternatively, other packaging can be used according agreement. Impregnating resin is 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 impregnating resin is guaranteed 12 months from the date of manufacture.

CAUTION: Extreme heat or contamination may result in the polymerization and deterioration of the impregnant!

Impregnating resin is classified as a dangerous product, class 9, UN: 3082.

Safety

Impregnant contains a reactive solvent diallyl-phthalate, which acts poorly toxic and in direct contact with skin and mucous membrane. Impregnant is Liquid IV. hazard class in accordance with STN 65 0201.

Safety and health instructions are given in the MSDS.

Certificates

- twisted pairs: 180 °C, thermal class H (UL file E233982)
- helical coils: 130 °C, thermal class B (UL file E233982)

NOTE

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