

3. IMPREGNATING RESINS **VUDAC/** Polyesterimide in diacrylate/ **1K-NAH 99/VT/900** **1K-NAH 99/VT/1200**



CABLES



IMPREGNANTS



WIRES



RESEARCH

Application:

Impregnating resin is suitable for impregnation of windings of electrical rotating machines and transformers from big diameter enameled wires and from rectangular wires.

Charakteristics:

Impregnating resin is one component solution of diluted unsaturated polyesterimide in diacryl diluted with small amount of vinyltoluene. Only a small amount of volatile substances (2.3%) avoid during curing. It is resistant to vapor solvents, transformer oils and refrigerator liquids.

Processing data and properties of liquid resin:

			1K-NAH 99/VT/900	1K-NAH 99/VT/1200
Density (DIN 53 217)	20 °C	[kg/m ³]	1020 - 1100	1020 - 1100
Viscosity	25 °C	[mPa.s]	900 - 1500	1200 - 1500
Shelf- life	5 - 25 °C	[months]	min. 6	min. 6
Flash point (Cleveland)		[°C]	> 110	> 110
Gel-time ¹	130 °C	[min]	5 - 10	5 - 10
Reaction time ^{2,3}	130 °C	[min.]	5 - 10	5 - 10
Maximum temperature ^{2,3}	130 °C	[°C]	240 - 280	240 - 280
Curing time ⁴	130 °C	[h]	2,5 - 3	2,5 - 3
Effect of resin on enameled wires ⁵			OK	OK
Pot life of impregnating resin with hardener by 20 % throughput of tank volume per month			Unlimited	Unlimited



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Properties after cure:

		1K-NAH 99/VT/900	1K-NAH 99/VT/1200
Curing of test specimen	150 °C	[h] 1	1
Ability to cure in considerable thickness ^{2,6}	[degree ¹⁰]	S 1 U 1 I 1.1	S 1 U 1 I 1.1
Electric strength ^{2,7}	23 °C 155 °C after 96 hrs at 92 % relative humidity at 23 °C	[kV/mm] 70 – 80 50 – 60 40 – 50	70 – 80 50 – 60 40 – 50
Volume resistivity ²	23 °C 155 °C after immersion in water for 96 hrs at 23 °C	[Ωm] 10 ¹⁴ 10 ⁹ 10 ¹³	10 ¹⁴ 10 ⁹ 10 ¹³
Twisted coil test ⁸ cured 36 min at 170 °C	23 °C 155 °C 180 °C	[N] 200 – 260 50 – 65 40 – 60	230 – 260 55 – 65 50 – 60
Thermal endurance ⁹		[°C] 160 - 180	160 - 180
Thermal endurance Test criterion Breakdown voltage 1500V (Twisted pairs)*		[°C] 180	180

1. DIN 16 945 Method A

2. DIN 46 448 Blatt 1

3. Fe-Ko after ASTM D 2471-71

4. from reached temperature 130 °C in winding

5. STN 67 31 50 part. 11, met. B after 60 min at 60 °C

6. 2 h at 100 °C + 2 h at 130 °C

7. Test specimens A2, cylindrical electrode ø6 mm

8. IEC 61033 met. A,

9. IEC 60216-1,-2

10. : S – smooth

The underside: U - non tacky

The interior: I – hard, free of bubbles

11. UL test 1446 File E233982

Packing a storage:

Impregnating resin is delivered in drums. It have to be stored in tightly closed drums at temperature from +5 °C to +25 °C.

In terms of traffic regulations impregnating resins are not classified as hazardous product.



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