

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



CABLES



IMPREGNANTS



WIRES



RESEARCH

Application:

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

Characteristics:

Impregnating resins are one component solution of diluted unsaturated polyesterimide in diacrylate. Only a small amount of volatile substances avoid during curing. They are resistant to vapour solvents, transformer oils and refrigerator liquids.

Processing data and properties of liquid resin:

Density (DIN 53 217)	20 °C	[kg/m ³]	1050-1150
Viscosity	25 °C	[mPa.s]	2000-2500
Shelf- life	5 - 25 °C	[months]	min. 6
Flash point (Cleveland)		[°C]	112
Gel-time ¹	130 °C	[min]	3-4
Gel-time ¹	100 °C	[min]	8-17
Reaction time ^{2,3}	100 °C	[min.]	9-18
Maximum temperature ^{2,3}	100 °C	[°C]	200-220
Curing time ⁴	130 °C	[h]	2-3
Effect of resin on enameled wires ⁵			OK



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Properties after cure:

	150 °C	[h]	1
Curing of test specimen			
Ability to cure in considerable thickness ^{2,6}		[degree ¹⁰]	S 1 U 1 I 1.1
Electric strength ^{2,7}	23 °C 155 °C after 96 hrs at 92 % relative humidity in water at 23 °C	[kV/mm]	80-100 60-80 40-60
Volume resistivity ²	23 °C 155 °C after immersion in water for 96 hours at 23 °C	[Ω.m]	10 ¹⁴ 10 ⁹ 10 ¹³
Twisted coil test ⁸	23 °C 155 °C 180 °C	[N]	230-260 55-65 50-60
Thermal endurance ⁹		[°C]	160-180
Thermal endurance ¹¹ Test criterion:	Breakdown voltage 1500 V (Twisted pairs)*	[°C]	180

1) DIN 16 945 Method A

2) DIN 464 48 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 Ø 6 mm

8) IEC 61033 met. A,

9) IEC 60216-1,-2

10) The upper side: S – smooth

The underside: U - non tacky

The interior: I – hard, free of bubbles

11) UL test 1446 File E233982

Packing a storage:

Impregnating resins are delivered in drums. They 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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