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Technical Data Sheet
RAKU-PUR® 21-2161-1
Electrical casting resin
Flammability UL 94 V0

Description

RAKU-PUR 21-2161-1 casting resin is polyurethane based, solvent free, two-component system. It consists of a filled resin component A and a MDI hardener component B.

It is characterized by:

- Good thermal endurance
- Low mixing viscosity
- Low water absorption and good hydrolysis resistance
- Good thermal shock resistance
- Flammability UL 94 V0 2mm File E111148
- Low shrinkage and low stress curing due to the weakly exothermic reaction
- The use of non-abrasive fillers enables the processing to be carried out using standard two-component mixing and metering facilities
- RoHS conform

Application

The system is particularly suitable for the encapsulation of electrical or electronic parts e.g. DC/DC, passive components, sensors, electronic circuits.

Processing

Before use, component A should be well stirred, since the filler is somewhat prone to sedimentation. For manual processing, one should ensure careful mixing after introducing the hardener, while preventing the inclusion of air.

Raw material data

		Unit	RAKU-PUR® 21-2161-1 A	RAKU-PUR® 21-2161-1 B
Viscosity at 20 °C	DIN EN ISO 2884-1	mPa*s	12.500 ± 2500	30 ± 10
Spec. density at 20 °C		g/ml	1,71 ± 0,01	1,22 ± 0,01
Color			Black	Brown

Processing data		
	Unit	
Mixing ratio, by weight A : B	PbW	100 : 15
Mixing ratio, by volume A : B	PbV	100 : 21
Mix viscosity at 20 °C (DIN EN ISO 2884-1)	mPa*s	1.800 ± 200
Processing temperature	°C	at least 20
Pot life at 20 °C	minutes	35 - 45

Processing under vacuum

The casting resin is ready to be applied under vacuum. The necessary process parameter must be determined in cooperation with the plant manufacturer.

Hardening conditions

After expiry of the working life, the progressive hardening reaction results first of all in gelling and then in solidification of the casting resin. Finally, a dimensionally stable body is formed, whose mechanical strength allows it to be removed from the mould.

The hardening process is only completed when further hardening time produces no appreciable improvement of e.g. the mechanical properties, or any increase in the second order transition temperature.

Hardening takes place at mould temperatures of 20 - 60 °C. Post curing above the glass transition temperature is necessary to achieve the final material properties.

Mechanical properties			
Spec. gravity	DIN 53 479	g/ml	1,62 ± 0,01
Hardness	DIN 53 505	Shore D	60 - 70
Flexural strength	DIN EN ISO 178	MPa	5,0 - 5,5
Tensile strength	DIN EN ISO 527-2	MPa	9 - 11
Elongation	DIN EN ISO 527-2	%	35 - 40
Impact resistance	DIN EN ISO 179	mJ/mm²	30 - 40
Compression strength	DIN EN ISO 604	MPa	40 - 45 at 30% compression
Flammability	UL 94	Level / mm	V0 / 2mm

at 20°C

Thermal mechanical properties			
Thermal linear coefficient (30 – 80°C)	DIN 53 752	10^{-6}/K	65 - 110
Heat deflection temperature (HDT-B)	DIN 53 458	°C	ca. 39
Glass transition temperature (DSC)	DIN 53 445	°C	ca. 15
Thermal conductivity	THB	W / (m*K)	0,95
Operating temperature		°C	-40 +130

Electrical properties			
Dielectric strength	IEC 243	kV/mm	28
Dielectric constant at 20 °C and 50 Hz	DIN 53 483		5,6
Dielectric loss factor at 20 °C an 50 Hz	DIN 53 483		0,2
Volume resistivity	DIN 53 482	Ω*cm	$1,4*10^{14}$
Superficial resistivity	DIN 53 482	Ω	$4*10^{12}$
Tracking resistance	IEC 112	Stage	CTI 600

Storage

Original packaging can be stored in temperature stabilized rooms (18 °C - 25 °C) for six months. Both components are moisture-sensitive and should therefore be kept tightly closed.

Standard packaging		
	Component A	Component B
Drum	250 kg	225 kg
Pail / Can	30 kg	30 kg

Health and safety at work

Good workplace ventilation is to be ensured during processing. At the same time, the employer's liability insurance association's industrial hygiene safety regulations regarding the handling of reaction resins and their hardeners are to be observed. Please take heed of the appropriate safety data sheets.

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