

Advanced Materials

Arathane® 5816 PO	100 pbw
Arathane® 5816 IS	20 pbw

Polyurethane, halogen free, casting and impregnating system for processing and curing at room temperature. Soft multipurpose polyurethane system, grey color.

Application	Transformers, filters, capacitors etc.
Processing methods	Casting / Impregnating. Manually or with automatic mixing and dosing equipment.
Key Properties	Halogen free system. Good thermal shock resistance. Flammability: UL 94 V-0.

Product Data (Guideline Values)

Arathane® 5816 PO

Polyol, containing mineral filler.

Viscosity at 25°C	ISO 3219	mPa*s	3500 – 8000*
Specific Gravity at 25°C	ISO 2811	g/cm ³	1.48-1.62*
Appearance	Visual		Grey viscous liquid*

Arathane® 5816 IS

Isocyanate.

Viscosity at 25°C	PU / VIS-1	mPa*s	100-160*
Specific Gravity at 25°C	ISO 1675	g/cm ³	1.23
Appearance	Visual		Brown liquid

* Specified range

Processing Data (Guideline Values)

Mix Ratio

			Parts by weight	Parts by volume
Arathane® 5816 PO	Polyol		100	100
Arathane® 5816 IS	Isocyanate		20	22

Gel Time, Viscosity and Curing

Mix Viscosity at 40°C	Arathane® 5816 PO / IS	Rheomat	mPa*s	1400
Gel time at 30°C	Arathane® 5816 PO / IS	ISO 9396	min	15-25*
Pot life	Arathane® 5816 PO / IS	Rheomat	min	8-15
(Time to reach 5000 mPa*s)				
Minimum Curing Cycle		24 hours at RT or 6 hours at 60°C		

* Specified range

Processing and Storage (Guideline Values)

Preparation

Arathane® 5816 PO contains fillers, which tend to settle over time. It is therefore recommended to carefully homogenize the complete contents of the container before use.

In the storage vessels of the production equipment, the pre-filled products should be stirred up from time to time to avoid sedimentation and irregular metering.

Mixing

The casting mix is best prepared by heating the resin up to 40 – 50 °C before stirring in the hardener. Brief degassing of the mix under 5 – 10 mbar vacuum improves the mixture homogeneity and enhances the dielectric properties of the castings.

Curing

To determine whether cross-linking has been carried to completion and the final properties are optimal, it is necessary to carry out relevant measurements on the actual object or to measure the glass transition temperature. Different gel and cure cycles in the customer's manufacturing process could lead to a different degree of crosslinking and thus a different glass transition temperature.

Storage Conditions

Store the components in a dry place according to the storage conditions stated on the label in tightly sealed original containers. Under these conditions, the shelf life will correspond to the expiry date stated on the label. After this date, the product may be processed only after reanalysis. Partly emptied containers should be tightly closed immediately after use.

Arathane® 5816 IS must be protected from moisture. Storage tanks should be blanketed with dry air or nitrogen. Storage at temperatures above 50°C is not recommended, since this can lead to the formation of insoluble solids and also the viscosity build-up increases on extended storage. Storage at low temperature is not recommended because it may lead to some crystallisation. Crystallised material must be melted out immediately by short time heating. For information on waste disposal and hazardous products of decomposition in the event of a fire, refer to the Material Safety Data Sheets (MSDS) for these particular products.

Mechanical and Physical Properties (Guideline Values)

Determined on standard test specimen at 23°C. Cured for 24h/RT + 6h/60°C.

Glass transition temperature	ISO 6721	°C	16
Shear modulus	ISO 6721	MPa	65
Tensile modulus	ISO 527	MPa	26
Tensile strength	ISO 527	MPa	4
Elongation at break	ISO 527	%	44
Thermal linear coefficient α_2	ISO 11359-2	ppm/K	145
Thermal conductivity	ISO 8894-1	W/mK	0.55
Hardness	DIN 53505	邵A/D	90/50
Flammability	UL 94		V-0(6mm)
Water absorption	ISO 62/80		
	1 day at 23°C	% by wt.	0.18

Electrical Properties (Guideline Values)

Determined on standard test specimen at 23°C. Cured for 24h/RT + 6h/60°C.

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm	22
Dielectric loss factor ($\tan \delta$, 50Hz, 25°C)	IEC 60250	%	13
Dielectric constant (ϵ_r , 50Hz, 25°C)	IEC 60250		5.5
Volume resistivity (ρ , 25°C)	IEC 60093	Ω cm	10^{14}
Tracking resistance	IEC 112/79	CTI	> 600

Legal Notice

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