HUNTSMAN

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Advanced Materials

Arathane® CW 5660	**100**	**pbw**
Arathane® HY 5610	**13**	**pbw**

Polyurethane, casting and impregnating system for processing and curing at room temperature. The cured resin system is flexible even at low temperatures, flame retardant and has high thermal conductivity and excellent thermal resistance. It contains non-abrasive fillers and no halogenated flame-retardants.

Application

Solar inverters, modules.
Pressure sensitive devices.

Processing Methods

Casting / Impregnating.
Manually or with automatic mixing and dosing equipment.

Key Properties

Halogen free system.
Excellent flow properties.
Low temperature flexibility.
Non abrasive mineral fillers
Good thermal shock resistance.
Flame retardant UL 94 V-0 (6 mm).
High thermal endurance, UL RTI 160
Temperature range of use: -50 °C to 165 °C

Product Data (Guideline Values)

Arathane® CW 5660

Polyol, containing mineral filler.

Viscosity at 25°C	ISO 2555	mPa*s	2'000 – 5'000*
Specific gravity at 25°C	ISO 2811	g/cm³	1.56 – 1.60*
Appearance	Visual		Black, medium viscous

Arathane® HY 5610

Isocyanate.

Viscosity at 25°C	PU/VIS-1	mPa*s	80 – 120*
Specific gravity at 20°C	ISO 2811	g/cm³	1.23
Appearance	Visual		Brown liquid

*Specified range (provisional)

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight	Parts by volume
CW 5660	Polyol	100	100
HY 5610	Isocyanate	13	17

Gel Time, Viscosity and Curing

Mix Viscosity at 25°C	CW 5660 / HY 5610	Rheomat	mPa*s	2000
Mix Viscosity at 40°C				940
Gel time at 25°C		ISO 9396		470
Gel time at 60°C		ISO 9396	min	93
Pot life at 40°C (Time to reach 5000 mPa*s)		Rheomat	min	60
Minimum Curing Cycle		24 hours at RT or 6 hours at 80°C		

*Specified range

Processing and Storage (Guideline Values)

Preparation

CW 5660 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

Brief degassing of the mix under 2 – 10 mbar vacuum improves the mixture homogeneity and enhances the dielectric properties of the castings. Mixing of the components can be done at room temperature, heating of the polyol is not required.

Curing

To determine whether crosslinking 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.
HY 5610 must be protected from moisture. Storage tanks should be blanketed with dry air or nitrogen. Storage at temperatures above 50°C is not recommeded, since this can lead to the formation of insoluble solids and also the viscosity buid-up increases on extended storage. Storage at low temperature is not recommeded 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℃. Cured for 24h/RT + 6h/80℃.

Glass transition temperature	ISO 11359-2	℃		-16
Modulus in Torsion G' at RT	ISO 6721	MPa		11
Tensile modulus	ISO 527	MPa		17
Tensile strength	ISO 527	MPa		2.4
Elongation at break	ISO 527	%		51
Coefficient of thermal expansion	ISO 11359-2			
alpha 1		ppm/K		44
alpha 2		ppm/K		133
Thermal conductivity	ISO 8894-1	W/mK		0.7
Hardness	DIN 53505	Shore A / D		85 / 29
Flammability	UL 94			V-0 (6 mm)
Relative temperature index RTI	UL 746B	℃	UL File: E96722	160
Water absorption	ISO 62/80			
1 day at 23℃		% by wt.		0.28
10 days at 23℃				0.77
30 min at 100℃				

Electrical Properties (Guideline Values)

Determined on standard test specimen at 23℃. Cured for 24h/RT + 6h/80℃.

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm	19
Dielectric loss factor (tan δ, 50Hz, 25℃)	IEC 60250	%	8.2
Dielectric constant (εr, 50Hz, 25℃)	IEC 60250		9.1
Volume resistivity (ρ, 25℃)	IEC 60093	Ω cm	$1.8\ 10^{12}$
Electrolytical corrosion	IEC 60246	Grade	A-1
Tracking resistance	IEC 60112/79	CTI	> 600

Legal Notice

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