

Advanced Materials

Arathane® CW 5620	100	pbw
Arathane® HY 5610	22	pbw

Polyurethane, halogen free, casting and impregnating system for processing and curing at room temperature. Soft multipurpose polyurethane system for pressure sensitive devices. Available in various colors.

Application

Transformers, filters, capacitors etc.

Processing Methods

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

Key Properties

Halogen free system.
Excellent flow properties.
Good thermal conductivity.
Non abrasive casting system.
Good thermal shock resistance.
Flammability: UL 94 V-0 (6 mm).

Product Data (Guideline Values)

Arathane® CW 5620 Anthrazite

Polyol, containing mineral filler.

Viscosity at 25 °C	ISO 2555	mPa*s	1500 – 3500*
Specific gravity at 25 °C	ISO 2811	g/cm ³	1.42
Appearance	Visual		Anthracite liquid*

Arathane® CW 5620 Blue

Polyol, containing mineral filler.

Viscosity at 25 °C	ISO 2555	mPa*s	1500 – 3500*
Specific gravity at 25 °C	ISO 2811	g/cm ³	1.42
Appearance	Visual		Blue liquid*

Arathane® HY 5610

Isocyanate.

Viscosity at 25 °C	PU / VIS-1	mPa*s	80 – 120*
Specific gravity at 25 °C	ISO 2811	g/cm ³	1.23
Appearance	Visual		Brown liquid*

*Specified range

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight	Parts by volume
CW 5620	Polyol	100	100
HY 5610	Isocyanate	22	25

Gel Time, Viscosity and Curing

Mix viscosity at 25 °C	CW 5620 / HY 5610	Rheomat	mPa*s	1300
Gel time at 25 °C	CW 5620 / HY 5610	Gelnorm	min	70
Pot life (Time to reach 5000 mPa*s)	CW 5620 / HY 5610	Rheomat	min	25
Minimum curing cycle	24 hours at RT or 6 hours at 80 °C			

*Specified range

Processing and Storage (Guideline Values)

Preparation

CW 5620 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 cross-linking 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 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/80 °C.

Glass transition temperature	ISO 6721	°C		20
Shear modulus	ISO 6721	MPa		55
Temperature index TI	IEC 60216	°C		152
Relative temperature index RTI	UL 746B	°C	E96722	130
Thermal class	IEC 60085			B
Tensile modulus	ISO 527	MPa		21
Tensile strength	ISO 527	MPa		7
Elongation at break	ISO 527	%		70
Thermal linear coefficient	ISO 11359-2			
Alpha 1		ppm/K		55
Alpha 2				150
Thermal conductivity	ISO 8894-1	W/mK		0.5
Hardness	DIN 53505	Shore A / D		85 / 40
Glow-wire test (850 °C)	IEC 60695-2-11		VDE 0471	passed
Flammability	UL 94	All colors	E96722	V-0 (6 mm)
Water absorption	ISO 62/80			
1 day at 23 °C		% by wt.		0.15
10 days at 23 °C				0.5
30 min at 100 °C				0.33

Electrical Properties (Guideline Values)

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

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm		25
Dielectric loss factor (tan δ , 50Hz, 25 °C)	IEC 60250	%		11
Dielectric constant (ϵ_r , 50Hz, 25 °C)	IEC 60250			6
Volume resistivity (ρ , 25 °C)	IEC 60093	Ω cm		10^{13}
Electrolytic corrosion	IEC 60426	grade		A/1
Tracking resistance	IEC 112/79	CTI		> 600

Legal Notice

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Products may be toxic and require special precautions in handling. The user should obtain Safety Data Sheets from Huntsman Advanced Materials containing detailed information on toxicity, together with proper shipping, handling and storage procedures, and should comply with all applicable safety and environmental standards.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent on manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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Appearance	Visual		Anthracite liquid*

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Viscosity at 25 °C	ISO 2555	mPa*s	1500 – 3500*
Specific gravity at 25 °C	ISO 2811	g/cm ³	1.42
Appearance	Visual		Blue liquid*

Arathane® HY 5611-1

Isocyanate.

Viscosity at 25 °C	PU / VIS-1	mPa*s	180 – 240*
Specific Gravity at 25 °C	ISO 2811	g/cm ³	1.23
Appearance	Visual		Brown liquid

*Specified range

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight	Parts by volume
CW 5620	Polyol	100	100
HY 5611-1	Isocyanate	22	25

Gel Time, Viscosity and Curing

Mix Viscosity at 25°C	CW 5620 / HY 5611-1	Rheomat	mPa*s	1700
Gel time at 25°C	CW 5620 / HY 5611-1	Gelnorm	min	60
Pot life (Time to reach 5000 mPa*s)	CW 5620 / HY 5611-1	Rheomat	min	20
Minimum Curing Cycle	24 hours at RT or 6 hours at 80°C			

*Specified range

Processing and Storage (Guideline Values)

Preparation

CW 5620 contains fillers, which tend to settle over time. It is therefore recommended to carefully homogenize the complete contents of the container before use.

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HY 5611-1 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.

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Mechanical and Physical Properties (Guideline Values)

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

Glass transition temperature	ISO 6721	°C		30
Shear modulus	ISO 6721	MPa		200
Max. service temperature	IEC 60085			Class B
Relative temperature index RTI	UL 746B	°C	E96722	130
Tensile modulus	ISO 527	MPa		30
Tensile strength	ISO 527	MPa		8
Elongation at break	ISO 527	%		65
Thermal linear coefficient	ISO 11359-2			
Alpha 1		ppm/K		65
Alpha 2				160
Thermal conductivity	ISO 8894-1	W/mK		0.5
Hardness	DIN 53505	Shore A / D		90 / 50
Flammability	UL 94	All colors	E96722	V-0 (6 mm)
Water absorption	ISO 62/80			
1 day at 23 °C		% by wt.		0.15
10 days at 23 °C				0.5
30 min at 100 °C				0.33

Electrical Properties (Guideline Values)

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

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm		25
Dielectric loss factor (tan δ , 50Hz, 25 °C)	IEC 60250	%		11
Dielectric constant (ϵ_r , 50Hz, 25 °C)	IEC 60250			6
Volume resistivity (ρ , 25 °C)	IEC 60093	Ω cm		10^{13}
Electrolytic corrosion	IEC 60426	grade		A/1
Tracking resistance	IEC 112/79	CTI		> 600

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