

Arathane™ Polyurethane Casting System

XW 949-1 Blue	Polyol	100	100	pbw
Arathane™ HY 5611	Isocyanate	50	---	pbw
XB 5610	Isocyanate	---	50	pbw

Polyurethane, halogen free, unfilled casting system for processing and curing at room temperature. Flexible polyurethane system for pressure sensitive devices.

Application

Pressure sensitive devices, modules, proximity switches.

Processing methods

Casting
Manually or with automatic mixing and dosing equipment .

Key Properties

Excellent dielectric properties.
Good thermal shock resistance.
Low glass transition temperature.

Product Data (Guideline Values)

XW 949-1 blue

Polyol, unfilled

Viscosity at 20°C	Brookfield	mPa*s	5500
Specific Gravity at 25°C	DIN 53217	g/cm ³	0.91
Flash point	ISO 1523	°C	> 200
As supplied form	Blue liquid.		

Arathane™ HY 5611

Isocyanate

Viscosity at 25°C	Brookfield	mPa*s	110
Specific Gravity at 25°C	DIN 53217	g/cm ³	1.22
Flash point	ISO 1523	°C	> 200
As supplied form	Brown liquid.		

XB 5610

Isocyanate

Viscosity at 25°C	Brookfield	mPa*s	100
Specific Gravity at 25°C	DIN 53217	g/cm ³	1.23
Flash point	ISO 1523	°C	> 200
As supplied form	Brown liquid.		

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight		Parts by volume	
XW 949-1 Blue	Polyol	100	100	100	100
HY 5611	Isocyanate	50	---	37	---
XB 5610	Isocyanate	---	50	---	37

Gel Time, Viscosity and Curing

Mix Viscosity at 25°C	XW 949-1 / HY 5611 XW 949-1 / XB 5610	Rheomat	mPa*s	2100 2100
Gel time at 25°C / 40°C / 60°C	XW 949-1 / HY 5611 XW 949-1 / XB 5610	Gelnorm	min	34 / 25 / 17 45 / 30 / 23
Pot life at 25°C (Time to reach 5000 mPa*s)	XW 949-1 / HY 5611 XW 949-1 / XB 5610	Rheomat	min	13 15
Minimum Curing Cycle	24 hours at RT or 6 hours at 80°C			

Processing and Storage (Guideline Values)

Preparation

XW 949-1 contains a coloring paste, which tend to separate 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 unfilled products should be stirred up from time to time to avoid separation of the coloring paste and irregular metering.

Mixing and Casting

Polyol and Isocyanate are mixed according to the specified mix ratio using preferably a two component metering and mixing machine. Degassing of the components or mixture is recommended.

Casting under vacuum is preferred, especially for sophisticated devices or if optimal dielectric properties are 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. Arathane Polyurethane casting systems are designed for curing at ambient temperatures, minimum curing time is 24 hours at room temperature. Cure time can be reduced by curing at elevated temperatures.

Storage Conditions

Store the components in a dry place at 18-25°C, 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.

Both components must be protected from humidity.

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

Density	ISO 1183	g/cm ³	1.0
Glass transition temperature	ISO 6721	°C	- 62
Tensile strength	ISO 527	MPa	4.3
Elongation at break	ISO 527	%	37
Elastic modulus	ISO 527	MPa	16.5
Flexural Strength	ISO 178	MPa	2.5
Flexural Strain	ISO 178	%	27
Flexural Modulus	ISO 178	MPa	10.5
Thermal linear coefficient	ISO 11359-2		
Alpha 1		ppm/K	
Alpha 2 (20 – 80°C)			163
Thermal conductivity	ISO 8894-1	W/mK	0.19
Hardness	DIN 53505	Shore A / D	69 / 20
Water absorption	ISO 62/80		
1 day at 23°C		% by wt.	0.33
10 days at 23°C			0.2
30 min at 100°C			0.41

Electrical Properties (Guideline Values)

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

Dielectric strength (2.9 mm specimen)	IEC 60243-1	kV/mm	26.1
Dielectric loss factor (tan δ, 50Hz, 25°C)	IEC 60250	%	1.0
Dielectric constant (εr, 50Hz, 25°C)	IEC 60250		2.9
Volume resistivity (ρ, 25°C)	IEC 60093	Ω cm	4.9 x 10 ¹⁵
Electrolytic corrosion	IEC 60426	grade	A/1
Tracking resistance	IEC 112/79	CTI	> 600

Industrial hygiene

Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding Safety Data Sheets and the brochure "Hygienic precautions for handling plastics products" (Publ. No. 24264/e).

Handling Precautions

Safety precautions at workplace:

protective clothing
gloves
arm protectors
goggles/safety glasses
respirator/dust mask

Yes.
Essential.
Recommended when skin contact likely.
Yes.
Recommended.

Skin protection:
before starting work
after washing

Apply barrier cream to exposed skin.
Apply barrier or nourishing cream.

Cleaning of contaminated skin

Dab off with absorbent paper, wash with warm water and alkali-free soap, then dry with disposable towels. Do not use solvents.

Clean shop requirements

Cover workbenches, etc. with light coloured paper. Use disposable beakers, etc.

Disposal of spillage

Soak up with sawdust or cotton waste and deposit in plastic-lined bin.

Ventilation:
of workshop
of workplace

Renew air 3 to 5 times an hour.
Exhaust fans. Operatives should avoid inhaling vapors.

First Aid

Contamination of the **eyes** by resin, hardener or casting mix should be treated immediately by flushing with clean, running water for 10 to 15 minutes. A doctor should then be consulted.

Material smeared or splashed on the **skin** should be dabbed off, and the contaminated area then washed and treated with a cleansing cream (see above). A doctor should be consulted in the event of severe irritation or burns. Contaminated clothing should be changed immediately.

Anyone taken ill after **inhaling** vapours should be moved out of doors immediately. In all cases of doubt call for medical assistance.

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