Advanced Materials

Electrical Insulation Materials

HUNTSMAN

®Araldite Casting Resin System

Araldite	**CY 1300**	**100 pbw**
Hardener	**XB 3473**	**24 pbw**

Hot curing unfilled epoxy casting and impregnating system

Applications

Encapsulant or impregnant for:

- units operating in environments combining heat and corrosion
- components with high sensitivity to ionisable chlorine

Processing

Casting or impregnating

Properties

Good thermal endurance
Excellent electro-mechanical properties up to 130°C
Excellent moisture and chemical resistance
Chemically inert towards sensitive substrates

Fuel Compatability Report 78-0026-5014

Edition: **September 2003**
Replaces edition: July 2003

Product data

(Guideline values)

Araldite CY 1300

Clear straw-coloured liquid unmodified bisphenol-A epoxy resin

Viscosity (Hoeppler)	at 25°C		mPa s	10 000 – 12 000
Specific gravity	at 25°C		g/cm³	1.15- - 1.2
Flash point		DIN 51 758	°C	>200
Epoxy content			Eq/kg	5.20 – 5.40
As supplied form		Pale yellow to amber liquid		
Hazardous decomposition products		Carbon monoxide, carbon dioxide and other toxic gases and vapours if burned		
Disposal		Regular procedures approved by national and/or local authorities		

Hardener XB 3473

Low viscosity, formulated aromatic amin hardener

Viscosity (Hoeppler)	at 25°C		mPa s	95 - 145
Specific gravity	at 25°C		g/cm³	0.99 – 1.02
Flash point		DIN 51 758	°C	120
As supplied form		Clear yellow to brown liquid		
Hazardous decomposition products		Carbon monoxide, carbon dioxide and other toxic gases and vapours if burned		
Disposal		Regular procedures approved by national and/or local authorities		

Storage

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.

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.

Processing

The resin component should be stirred and homogenized in the original container before use.
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.

Dosing of accelerator DY 062 can be adapted in between 0.5 and 2.5 pbw for 100 pbw of resin.

Mix ratio

	parts by weight	parts by volume
Araldite CY 1300	100	100
Hardener XB 3473	24	27

We recommend that the components are weighed with an accurate balance to prevent mixing inaccuracies which can affect the properties of the matrix system. The components should be mixed thoroughly to ensure homogeneity. It is important that the side and the bottom of the vessel are incorporated into the mixing process. When processing large quantities of mixture the pot life will decrease due to exothermic reaction. It is advisable to divide large mixes into several smaller containers.

Processing data (Guideline values)

Initial viscosity (Hoeppler)	at 25°C	mPa s	5200 - 6000
	at 40°C	mPa s	700 - 900
Pot life (Tecam)	23°C, 65% RH	h	32 - 37
Minimum curing time	h/°C		2/80 + 2/120

Gelation Time

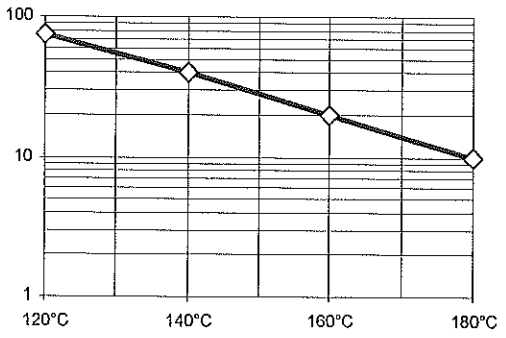

Fig.4.4: **Geltime measured with Gelnorm Instrument as a function of temperature**
(DIN 16945/6.3.1)

Properties

Guideline values determined on standard test specimens cured for 4 h/80°C+16h/120°C

Shore D hardness (4 mm plate)	at 25°C	DIN 53 505		76
Glass transition temperature (DSC, Mettler TA 4000)		DIN 51 005	°C	175 - 185
Tensile strength				
max. tensile stress	at 25°C	ISO/R 527	MPa	85 - 95
elongation at break	at 25°C	ISO/R 527	%	4 - 6
Elastic modulus from tensile test	at 25°C	ISO/R 527	MPa	2700 - 2900
Water absorption				
24h	at 23°C	ISO 62	%	0.16
30 min	at 100°C	ISO 62	%	0.2
Dielectric constant ε_r (50 Hz)	at 23°C	DIN 53 483		3.3
	at 60°C			3.3
	at 80°C			3.3
	at 100°C			3.4
Dissipation factor tan δ (50 Hz)	at 23°C	DIN 53 483	%	0.1
	at 60°C			0.1
	at 80°C			0.1
	at 100°C			0.3
Volume resistivity ρ	at 23°C	DIN 53 482	Ω·cm	$3x10^{16}$
	at 60°C			$2x10^{16}$
	at 80°C			$1x10^{16}$
	at 100°C			$1x10^{16}$
Electrolytic corrosion		DIN 53 489	grade	A-1
Tracking resistance		IEC 112		CTI >600 - 0.2
Electric strength				
20 s for 2 mm plate (50 Hz)	at 23°C	IEC 243	kV/mm	19

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 of Huntsman (Publ. No. 24264/e).

Handling precautions

Safety precautions at workplace:	
protective clothing	yes
gloves	essential
arm protectors	recommended when skin contact likely
goggles/safety glasses	yes
respirator/dust mask	recommended
Skin protection	
before starting work	Apply barrier cream to exposed skin
after washing	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	Renew air 3 to 5 times an hour
of workplace	Exhaust fans. Operatives should avoid inhaling vapours.

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.