HUNTSMAN

Araldite® Epoxy Casting System

Araldite® CW 177	**Resin**	**100**	**pbw**
Aradur® HY 177	**Hardener**	**20**	**pbw**
Hardener HY 956	**Hardener**	**10**	**pbw**
Aradur 943	**Hardener**	**8**	**pbw**
Hardner LC 234	**Hardener**	**10**	**pbw**

Optimally filled casting system for processing and curing at room temperature or slightly higher temperatures.

Application

Transformers, filters, capacitors etc.

Processing methods

Casting / Impregnating.

Manually or with automatic mixing and dosing equipment.

Key Properties

Excellent flow properties.

Good thermal conductivity.

Non abrasive casting system.

Edition
Replaces Edition

June 2005
November 2002

Product Data (Guideline Values)

Araldite® CW 177
Modified epoxy resin, containing mineral filler

Viscosity at 25°C	ISO 2555	mPa*s	22-27000
Specific Gravity at 25°C	ISO 1675	g/cm³	1.7
Flash point	ISO 1523	°C	135
As supplied form	Beige, Grey or Black liquid.		

Aradur® HY 177
Hardener

Viscosity at 25°C	ISO 2555	mPa*s	600-1100
Specific Gravity at 25°C	ISO 1675	g/cm³	0.95-1.0
Flash point	ISO 1523	°C	> 160
As supplied form	Amber liquid.		

Hardener HY 956
Hardener

Viscosity at 25°C	ISO 2555	mPa*s	400-500
Specific Gravity at 25°C	ISO 1675	g/cm³	1.01-1.04
Flash point	ISO 1523	°C	> 175
As supplied form	Pale yellow liquid.		

Aradur® 943
Hardener

Viscosity at 25°C	ISO 2555	mPa*s	3400-5000
Specific Gravity at 25°C	ISO 1675	g/cm³	1.06-1.10
Flash point	ISO 1523	°C	> 110
As supplied form	Pale yellow liquid.		

Hardener LC 234
Hardener

Viscosity at 25°C	ISO 2555	mPa*s	700-1200
Specific Gravity at 25°C	ISO 1675	g/cm³	1.0-1.05
Flash point	ISO 1523	°C	> 100
As supplied form	Amber liquid.		

Processing Data (Guideline Values)

Property	Araldite CW 177 Aradur® HY 177	Araldite CW 177 Hardener HY 956	Araldite CW 177 Aradur® 943	Araldite CW 177 Hardener LC 234
Mix Ratio	100 : 20 pbw 100 : 33 pbv	100:10 pbw 100:18 pbv	100 : 8 pbw 100 : 12 pbv	100 : 10 pbw 100 : 18 pbv
Gel time at 25°C 100ml	65-75 minutes	40-50 minutes	22-27 minutes	60-70 minutes
Initial Mix density	1.50-1.56	1.60-1.64	1.63-1.68	1.60-1.64
Initial Mix viscosity (mPa.s)	9-10000	10-12000	20-25000	14-15000
Peak Exotherm 500ml, °C,	97 after 73 min.	132 after 40min.	138 after 30 min.	110 after 70 min.

Processing and Storage (Guideline Values)

Preparation

CW 177 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 resin will lower viscosity but will shorten pot life.

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 at RT, 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.
Storage of Araldite® CW 177 at temperatures above 35°C is not recommeded, since this can lead to settling/sedimentation of the fillers which will necessiatate stirring to regain homogenity of the resin.
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

Property	Araldite CW 177 Aradur® HY 177	Araldite CW 177 Hardener HY 956	Araldite CW 177 Aradur® 943	Araldite CW 177 Hardener LC 234
Compressive Strength MPa	80	130	130	131
Tensile strength (MPa) - ISO 527/95	31	46	40-45	32
Flexural strength MPa	55	54	69	50
Glass Transition temp. (°C) by TMA	38	58	53-58	63
Coefficient of linear expansion (x10^{-6}K-1) to Tg	77.5	41	50-60	40
Thermal Conductivity W/m.K (ISO 8894/90)	0.4342	0.4950	0.4950	0.4950
Water absorption (% w/w) @ 22°C after 7 days @ 100°C after 30 minutes	 0.28 0.29	 0.23 0.19	 0.23 0.19	 0.15 0.19
Shore D hardness	87	92	95	95
Flammability UL 94 (4mm)	HB	HB		

Electrical Properties (Guideline Values)

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

Property	Araldite CW 177 Aradur® HY 177	Araldite CW 177 Hardener HY 956	Araldite CW 177 Aradur® 943	Araldite CW 177 Hardener LC 234
Dielectric strength (IEC 60243-1)	22 kV/mm	22 kV/mm	21 kV/mm	22 kV/mm
Dielectric constant at 50HZ, 25°C	4.1	3.6	3.6	4.1
Volume resitivity - (IEC 60250)	1.00 .10^{15} Ωcm	2.00 .10^{15} Ωcm	2 .10^{15} Ωcm	2.5 .10^{15} Ωcm
Tracking resistance (IEC 60112) Without wetting agent With wetting agent	 > 600 0.2 > 600M 0.1	 > 600 0.2 > 600M 0.1	 > 600 0.2 > 600M 0.1	 > 600 0.2 > 600M 0.1
Electrolytic corrosion (IEC 60426)	A-1	A-1	A-1	A-1

Note: tests are to ISO and DIN standards

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".

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 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.

Note

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APPROVED TO ISO 9000 ff

Huntsman Advanced Materials (Australia) Pty Limited, ABN 93 091 627 879
Gate 3, Ballarat Road, Deer Park, VIC 3203, Tel: +61 3 9361 6060, Fax: +61 3 9361 6066