

Advanced Materials

Araldite[®] CW 1312	100	pbw
Aradur[®] HY 1300	9	pbw

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

Application

Inductive components, transformer
Generator and motors.
Pressure-sensitive components.

Processing Methods

Casting / vacuum casting.

Key Properties

High thermal conductivity.
Good thermal shock resistance.
Flammability UL 94 V-0 (3.2 mm).
Railway certified EN45545-2 R22/23 HL1/HL2

Product Data (Guideline Values)

Araldite® CW 1312

Modified, solvent free epoxy resin with inorganic filler.

Viscosity at 25 °C	ISO 2884-1	Pa*s	15 – 22*
Specific Gravity at 25 °C	ISO 2811	g/cm ³	1.86
Appearance	Visual		Beige viscous paste*

Aradur® HY 1300

Formulated, medium viscosity polyamine hardener.

Viscosity at 25 °C	ISO 12058	mPa*s	150 – 190*
Specific Gravity at 20 °C	ISO 2811	g/cm ³	0.990 – 1.005*
Appearance	Visual		Clear, yellowish liquid*

*Specified range

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight	Parts by volume
CW 1312	Resin	100	100
HY 1300	Hardener	9	16

Gel Time, Viscosity and Curing

Mix Viscosity at 40 °C	CW 1312 /HY 1300	Rheomat	mPa*s	3500
Gel time at 60 °C		Gelnorm	min	37
Gel time at 80 °C		ISO 9396	min	12 – 16*
Pot life at 40 °C (Time to reach 15000 mPa*s)		Rheoma t	min	50
Standard Cure Cycle		24 hours at RT + 6 hours at 60 °C		
Minimum Curing Cycle		48 hours at 25 °C		

*Specified range

Processing and Storage (Guideline Values)

Preparation

CW 1312 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.

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.

Glass transition temperature	ISO 6721	°C		21
Modulus in Torsion G' at RT	ISO 6721	MPa		100
Thermal Class	IEC 60085			B
Tensile modulus	ISO 527	MPa		75
Tensile strength	ISO 527	MPa		5
Elongation at break	ISO 527	%		12
Flexural Strength	ISO 178	MPa		6
Thermal linear coefficient	ISO 11359-2			
Alpha 1		ppm/K		32
Alpha 2				140
Thermal conductivity	ISO 8894-1	W/mK		1.1
Hardness	DIN 53505	Shore D		57
Flammability	UL 94		File E96722*	V-0 (3.2 mm)
Water absorption	ISO 62			
1 day at 23°C		% by wt.		0.34
30 min at 100°C				0.39
Railway certification	EN 45545-2	Requirements		R22, R23
		Hazard level		HL 1, HL2

Electrical Properties (Guideline Values)

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

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm		15
Dielectric loss factor (tan δ , 50Hz, 25°C)	IEC 60250	%		18
Dielectric constant (ϵ_r , 50Hz, 25°C)	IEC 60250			8
Volume resistivity (ρ , 25°C)	IEC 60093	Ω cm		10^{11}
Tracking resistance CTI	IEC 60112	grade		> 600
Electrolytic corrosion	IEC 60426	grade		A-1.2

Legal Notice

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