

Advanced Materials

Araldite® CY 221	100	pbw
Aradur® HY 2966-2	23	pbw

**Low viscosity, unfilled epoxy casting resin system, curing at room temperature.
High filler addition possibility.**

Application Encapsulating or potting of low voltage and electronic components.

Processing Methods Casting; vacuum casting.

Key Properties

- Good heat resistance.
- Good resistance to atmospheric and chemical degradation.
- Good crack resistance.
- Flammability: UL 94 HB (6 mm).

Product Data (Guideline Values)

Araldit® CY 221

Modified, low viscous solvent free epoxy resin.

Viscosity at 25°C	ISO 12058	mPa*s	355 – 475*
Specific gravity at 25°C	ISO 1675	g/cm ³	1.15
Appearance	Visual		Clear liquid*
Epoxy index	ISO 3001	Eq/kg	3.95 – 4.20*

HY 2966-2

Formulated, low viscosity polyamine hardener.

Viscosity at 25°C	ISO 12058	mPa*s	300 – 600*
Specific gravity at 25°C	ISO 1675	g/cm ³	0.97
Appearance	Visual		Orange to red clear liquid*

*Specified range

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight	Parts by volume
Araldit CY 221	Resin	100	100
HY 2966-2	Hardener	23	27

Gel Time, Viscosity and Curing

Mix viscosity at 25°C		mPa*s	700
Mix viscosity at 40°C		mPa*s	205
Pot life at 25°C	Time to reach 15000 mPa*s	min	110
Pot life at 40°C	Time to reach 15000 mPa*s	min	65
Gel time at 25°C	Gelnorm	min	190
Gel time at 45°C	Gelnorm	min	50
Gel time at 60°C	Gelnorm	min	11
Minimum curing cycle	24 - 48 hours at RT or 4 h at RT + 4 h at 60°C		

Processing and Storage (Guideline Values)

Mixing

Measure (by weight or volume) the Araldite resin and the hardener. Add the hardener to the Araldite resin; making sure that the required amount of hardener is transferred to the resin. Stir thoroughly until mixing is complete. Air entrainment during mixing results in pores in the cured resin. Mixing under vacuum or in a metering-mixing machine is the most effective way to prevent air entrainment. Alternatively, the static resin – hardener mixture may be de-aerated in a vacuum chamber – allowing at least 200 % ullage for the foam to expand.

Curing

The chemical reaction initiated by mixing resin and hardener results in the generation of exothermic heat. The peak temperatures attained are determined by the starting temperature and the size and shape of the casting. Unfilled resin systems are suitable only for manufacturing castings weighing up to about 500 grams. Mineral filler should be added to dissipate heat and damp the exothermic reaction when producing large castings.

There is very little exothermic reaction when producing very small castings or thin layers as the heat generated is rapidly dissipated. Cure is consequently delayed, and the surfaces of castings may remain tacky. In such cases an infrared heater or oven at 40°C – 60°C should be used to effect full cure.

When casting thick sections special care is needed to avoid excessive exothermic temperature rise. Short high-temperature curing schedules should not be used unless preliminary trials with castings manufactured to the specific design, and in the specified molds, produce no unacceptable exothermic effects.

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 6 hours at RT + 6 hours at 60°C.

Glass transition temperature	ISO 6721	°C		30
Thermal class	IEC 60085			B
Storage Modulus G'	ISO 6721	MPa		79
Tensile modulus	ISO 527	MPa		20
Tensile strength	ISO 527	MPa		10
Elongation at break	ISO 527	%		65
Thermal conductivity	ISO 8894-1	W/mK		0.2
Hardness	DIN 53505	Shore D		37
Flammability	UL 94	NC	E96722	HB (6mm)
Water absorption	ISO 62/80			
at 23°C / 1 day		% by wt.		0.63
at 23°C / 10 days				1.87
at 100°C / 30 min				1.45

Electrical Properties (Guideline Values)

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

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm		48
Dielectric loss factor (tan δ , 50Hz, 25°C)	IEC 60250	%		7.5
Dielectric constant (ϵ_r , 50Hz, 25°C)	IEC 60250			5.75
Volume resistivity (ρ , 25°C)	IEC 60093	Ω cm		$2.7 \cdot 10^{13}$
Comparative tracking index CTI	IEC 60112			> 600
Electrolytic corrosion	IEC 60426	grade		A1

Legal Notice

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