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Advanced Materials

Araldite® LY 5085 / Aradur® 22962

Araldite® LY 5085 is an epoxy resin
Aradur® 22962 is a cycloaliphatic polyamine

APPLICATIONS

Industrial composites

PROPERTIES

Reactive diluent free laminating system. Due to the high reactivity, short cure cycles can be realized.

PROCESSING

- Wet lay-up
- Pressure Moulding
- Resin Transfer Moulding (RTM)

KEY DATA

Araldite® LY 5085		
Aspect (visual)	clear liquid	
Viscosity at 25 °C (ISO 12058-1)	7000 - 9000	[mPa.s]
Density at 25 °C (ISO 1675)	1.15 - 1.20	[g/cm^3]
Flash point (ISO 2719)	> 200	[°C]
Storage temperature (see expiry date on original container)	2 - 40	[°C]

Aradur® 22962		
Aspect (visual)	clear liquid	
Viscosity at 25 °C (ISO 12058-1)	5 - 20	[mPa s]
Density at 25 °C (ISO 1675)	0.89 - 0.90	[g/cm^3]
Flash point (ISO 2719)	≥ 110	[°C]
Storage temperature (see expiry date on original container)	2 - 40	[°C]

STORAGE

Provided that Araldite® LY 5085 or Aradur® 22962 are stored in a dry place in their original, properly closed containers at the storage temperatures mentioned in the MSDS they will have the shelf lives indicated on the labels. Partly emptied containers should be closed immediately after use.

Aradur® 22962 can crystallize at low temperature and adverse conditions. This crystallization effect is reversible if the material is heated up above 30 - 40 °C for a certain time. There is no change in chemical composition or suitability as hardener for epoxy resins.

PROCESSING DATA

MIX RATIO

Components	*Parts by weight*	*Parts by volume*
Araldite® LY 5085	100	100
Aradur® 22962	24	32

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.

INITIAL MIX VISCOSITY	*[°C]*	*[mPa s]*
(HAAKE VT 500, DIN 53 019)	at 40	220 - 260

VISCOSITY BUILD-UP	*[°C]*	*[mPa s]*	*[min]*
(HAAKE VT 500, DIN 53 019)	at 40	to 500	12 - 16
		to 1500	31 - 35

POT LIFE	*[°C]*	*[min]*
(TECAM, 100 ML, 65 % RH)	at 23	110 - 125

GEL TIME	*[°C]*	*[min]*
(HOT PLATE)	at 80	16 - 20
	at 100	8 - 11
	at 120	3 - 5

The values shown are for small amounts of pure resin/hardener mix. In composite structures the gel time can differ significantly from the given values depending on the fibre content and the laminate thickness.

TYPICAL CURE CYCLES

30 min 120°C
or 15 min 120°C + 2 h 150 °C

The optimum cure cycle has to be determined case by case depending on the processing and the economic requirements.

PROPERTIES OF THE CURED, NEAT FORMULATION

GLASS TRANSITION TEMPERATURE (IEC 1006, DSC, 10 K/MIN)	*Cure:*		*T_G [°C]*
	30 min 120°C		120-130
	15 min 120 °C + 2 h 150 °C		150-160
FLEXURAL TEST (ISO 178)		*Cure:*	*15 min 120 °C + 2 h 150 °C*
	Flexural strength	[MPa]	130-140
	Ultimate elongation	[%]	7.5-9
	Flexural modulus	[MPa]	2750 – 2950
FRACTURE PROPERTIES BEND NOTCH TEST (PM 258-0/90)		*Cure:*	*15 min 120 °C + 2 h 150 °C*
	Fracture toughness K_{1C}	[MPa√m]	0.65 - 0.75
	Fracture energy G_{1C}	[J/m²]	130 – 160

PROPERTIES OF THE CURED, REINFORCED FORMULATION

INTERLAMINAR SHEAR STRENGTH (ASTM D 2344)	Samples: 12 layers E-glass fabrics UD (425 g/m²) Laminate thickness = 3.1 - 3.25 mm Fibre volume content: 59 - 63 % Cure: 15 min 120 °C + 2 h 150 °C		
	Shear strength	[MPa]	63 -69

HANDLING PRECAUTIONS

Personal hygiene

Safety precautions at workplace	
protective clothing	yes
gloves	essential
arm protectors	recommended when skin contact likely
goggles/safety glasses	yes
Skin protection	
before starting work	Apply barrier cream to exposed skin
after washing	Apply barrier or nourishing cream
Cleansing 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
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 workplaces	Exhaust fans. Operatives should avoid inhaling vapours

FIRST AID

Contamination of the *eyes* by resin, hardener or 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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