Laminating System

Araldite LY 5138-2 Resin with HY 5138 Hardener

Low-viscosity, unfilled, epoxy system

Key Properties

- Low viscosity
- Contains neither solvent nor reactive diluent
- Very low colour
- Long pot life
- No tackiness even after curing at room temperature
- Thermal stability at 70 - 80ºC with appropriate post curing

Applications

- General mould and tool making, where increased thermal stability is required

Typical product data

Property		Araldite LY 5138-2	HY 5138 Hardener
Appearance		slightly opaque liquid	clear liquid
Viscosity at 25 °C	MPa s	1,700 - 2,200	10 - 25
Density at 25 °C	g/cm³	1.10 - 1.15	0.90 - 0.95
Flash point (DIN 51 758)	°C	137	113
Shelf life at 18 - 25 °C		1 year	1 year

Processing

Mix ratio	Parts by weight
Araldite LY 5138-2	100
Hardener HY 5138	23

Resin and hardener are mixed thoroughly at 20 - 25ºC, then used to impregnate each layer of glasscloth as it is laid up to construct the laminate. Laminating moulds or working models should be treated with a release agent prior to commencing lay up in order to facilitate subsequent demoulding.

A gelcoat resin or coupling layer should still be tacky when lay up is commenced in order to ensure good adhesion to laminate. A finished laminate should as a rule be 5 - 8 mm thick.

Curing is at room temperature. It may, however, be accelerated by application of heat. Post-curing at higher temperature will improve final properties, notably heat distortion resistance.

Properties

Resin / Hardener mix at 25ºC

Appearance		colourless
Mixing viscosity	mPa s	500 - 700
Pot life (500 g batch)	min	60 - 90
Demouldable after	h	20 - 24
Minimal cure time prior to use	h	24 - 36

After curing

Test piece: laminate thickness 4 mm
reinforcement: 16 layers glasscloth IG 91745

Curing conditions	Standard	Unit	7 days/RT	8h/80ºC
Reinforced				
Flexural strength	ISO 178	N/mm^2	460 - 490	500 - 540
E-modulus	ISO 178	N/mm^2	18,600 - 21,700	18,400 - 21,500
Non-reinforced				
Tensile strength	ISO 527	N/mm^2	55 - 58	67 - 74
Elongation at break	ISO 527	%	2.2 - 2.9	7.3 - 7.7
E-modulus	ISO 527	N/mm^2	3,150 - 3,250	3,100 - 3,200
Flexural strength	ISO 178	N/mm^2	82 - 97	125 - 127
E-modulus	ISO 178	N/mm^2	3,100 - 3,200	3,050 - 3,250
Impact strength	ISO 179	kJ/m^2	20 - 24	25 - 45
Tg (TMA)		ºC	52 - 56	78 - 88
Heat resistance	ISO 75	ºC	50 - 55	75 - 80

Storage

The resin and hardener described in this instruction sheet have the shelf lives shown provided they are stored in a dry place at 18°C - 25°C and in the original sealed containers.

Handling precautions

Caution
Ciba Specialty Chemicals' products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in Ciba Specialty Chemicals publication No. 24264/3/e Hygienic precautions for handling plastics products of Ciba Specialty Chemicals and in the Ciba Specialty Chemicals Material Safety Data sheets for the individual products. These publications are available on request and should be referred to for fuller information.

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