

LAPOX® ARF-11 | K-918 | K-13

Technical Data Sheet | Polymers Business



Hot cure epoxy system

Lapox ARF-11	100	pbw
Lapox K-918	85	pbw
Lapox K-13	0.1 - 2.0	pbw

Description

Lapox ARF-11 is a liquid, unmodified epoxy resin of low viscosity which can be used with various hardeners for making fiber reinforced composites. Epoxy curing agent Lapox K-918 is based on liquid carboxylic acid anhydride. Both the resin and hardener being in liquid form they are very easy to mix. Gel time and viscosity rise with time can be controlled to suit the application process by variation in dosage of accelerator Lapox K-13.

Application

Cured system exhibits excellent mechanical, electrical and thermal properties and good chemical resistance.

Processing

Filament winding
Pultrusion
Resin transfer moulding (RTM)

Typical specifications

Lapox ARF-11

Properties	Unit	Test method	Values
Appearance	-	Visual	Clear, viscous liquid
Colour	GS	ASTM D1544	Max 4
Viscosity at 25°C	m Pas	ASTM D2196	2,000 - 5,000
Epoxy value	Eq/kg	ASTM D1652	5.71 - 6.25
Density at 25°C	g/cm ³	ISO 1183	1.1 - 1.2

Lapox K-918

Properties	Unit	Test method	Values
Appearance	-	Visual	Clear liquid
Colour	GS	ASTM D1544	Max 2
Viscosity at 25°C	m Pas	ASTM D2196	50 - 80
Density at 25°C	g/cc	ASTM D792	1.20 - 1.25

Lapox K-13

Properties	Unit	Test method	Values
Appearance	-	Visual	Clear liquid
Colour	GS	ASTM D1544	Max 2
Viscosity at 25°C	m Pas	ASTM D2196	<10
Density at 25°C	g/cm ³	ISO 1183	0.88 - 0.92

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Processing properties

Properties	Unit	Test method	Values
Mixing ratio (by weight)	-	Visual	Resin: 100 Hardener: 85 Accelerator: 1
Initial mix viscosity at 25°C	m Pas	ASTM D2196	300 - 500
Pot life at 25°C	hr	ASTM D2471	>8hr
Gel time at 120°C	Minutes	DIN 16945 / 6.3.1	8 - 11
Curing schedule	°C / hours	-	100°C / 2 hours + 140°C / 2 hours

Typical properties of neat cured system

Curing schedule: 100°C / 2 hours + 140°C / 2 hours
Determined on standard test specimen at 25°C

Properties	Unit	Test method	Values
Tensile strength	MPa	ISO 527	75 - 85
Elongation at break	%	ISO 527	4 - 5
Elastic modulus in tension	GPa	ISO 527	3.0 - 3.2
Flexural strength	MPa	ISO 178	120 - 140
Flexural elongation at break	%	ISO 178	6 - 10
Elastic modulus in flexural	GPa	ISO 178	3.0 - 3.2
Glass transition temperature (DSC)	°C	ISO 11357 - 2	130 - 140
Co-efficient of linear thermal expansion (Mean value for temperature range 20°C - 60°C)	K ⁻¹	DIN 53752	55 - 57 x 10 ⁻⁶
Water absorption 25°C / 24 hours	% w/w	ISO 62	Max 0.15

Typical properties of cured, reinforced system

Properties	Unit	Test method	Values
Tensile strength	MPa	ISO 527 - 2	345 - 375
Tensile elongation at break	%	ISO 527 - 2	1 - 2
Tensile modulus	GPa	ISO 527 - 2	25 - 27
Flexural strength	GPa	ISO 14125	520 - 550
Flexural elongation at break	%	ISO 14125	2.0 - 2.2
Flexural modulus	GPa	ISO 14125	15 - 17
ILSS	m Pa	ISO 14130	70 - 80

Note: Test carried out on E-glass, 360 gsm, silane finish fabric. Fiber volume in sample is 67%, specimen thickness of 4 mm.

Packaging

Lapox ARF-11 is available in 30 kg, 110 kg and 240 kg carboys. Lapox K-918 and Lapox K-13 is available in 1 kg HDPE bottles. Other packing may be considered on request.

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Storage and handling

Lapox ARF-11, Lapox K-918 and Lapox K-13 have a shelf-life of at least 2 years if stored in its original container away from humidity and excessive heat. Hardener is sensitive to moisture. Container must be closed properly immediately after use. Care must be taken to avoid direct contact with skin as far as possible. If contact does occur, then wash off immediately with soap and warm water. Please refer to the Safety Data Sheet (SDS) for detailed instructions on storage and handling.

Safety

Wear personal protective equipment (PPE). Avoid contact with the eyes and skin. In case of direct contact and irritation, the resin should be washed off immediately with soap and warm water. Avoid breathing vapours, mist or gas. Please refer to the SDS for detailed safety instructions.

Spills and disposal

In case of spills, sweep up and shovel the spilled material. Keep spilled material in suitable, closed containers for disposal. Soak up with an absorbent such as clay, sand or other suitable material. Flush area with water to remove trace residue. Do not allow the product to reach the sewage system. Waste must be disposed of in accordance with federal, state or local regulations, as applicable.

Contact

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Note

Lapox[®] is a registered trademark of Atul Ltd.

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