

Hot setting epoxy adhesive

Description

Lapox A-16 is an unmodified liquid epoxy resin based on bisphenol A. Lapox K-5 is an off-white to beige coloured aromatic amine in form of pastilles. It is hot setting epoxy adhesive specially designed for joints capable of withstanding an operating temperature of 160°C. When resin and hardener are used in appropriate ratio, it provides excellent mechanical, electrical and thermal properties. Appropriately cured mass can able to provide glass transition temperature up to 160 °C.

Advantages

Excellent chemical resistance
Excellent electrical properties
High glass transition temperature

Applications

Adhesives

Typical specifications

Test	Unit	Reference	Value	
			Resin	Hardener
Description	-	Visual	Clear viscous liquid	Off-white to brown pastille
Colour	GS	ASTM D1544	Max 1	Max 6 ¹
Viscosity at 25°C ²	m Pas	ASTM D2196	10,000 - 12,000	-
Epoxy value	Eq/kg	ASTM D1652	5.20 - 5.50	-
Melting point	°C	ISO 3146	-	88 - 92
Density	g/cc	ASTM D792	1.1 - 1.2	1.04 - 1.08

¹Colour of solution: 30 g Lapox K-5 dissolved in 25 ml acetone.

²Viscosity by Brookfield viscometer

Mix properties

Test	Unit	Reference	Value
Mixing ratio (resin : hardener)	By weight	-	100 : 27
Gel time at 80°C ¹	Minutes	ASTM D2471	60 - 90

¹Gel time of 12 g mix mass at 80 ± 1°C in glass test tube by 'Gelnorm' gel timer.

Cured properties

Test	Unit	Reference	Value
Hardness ¹	Shore D	ISO 868	Min 80
Martins value ²	°C	-	Min 140
Glass transition temperature ³	°C	ISO 11357-2	Min 160
Lap shear strength ⁴	Kg/cm ²	ASTM D 1002	Min 200
Coefficient of linear thermal expansion	°C	ISO 11359-2	65 x 10 ⁻⁶ /°C
Modulus of elasticity	Kg/cm ²	ISO 527-2	2.75 x 10 ⁴

¹Properties evaluate after 7 days of curing at 25°C.

²Molten Lapox K-5 dissolved in Lapox A-16 and cured at 140°C/4 hours.

³By Differential Scanning Calorimetry.

⁴ Aluminium-to-aluminium lap joint (sand blasted) cured at 80°C/ 2 hours followed by 180°C/1 hour.

Application

Curing agent Lapox K-5 does not dissolve in the resin at room temperature. In order to dissolve, it should first be melted and then added to the resin pre-heated to 60°C. Alternatively, the resin can be heated to about 100°C. The solid hardener is added at this temperature with stirring till it gives clear solution. It is recommended to cool the mix mass to 40°C to 50°C after dissolution of hardener to obtain a reasonably long working time.

Cure: The mix adhesive (as prepared by above method) is applied by means of spatula or stiff brush on the surface of the substrate and the joint is assembled with contact pressure so as to obtain a glue line thickness of Max 175 microns. The assembled joint is then cured in a thermostatically controlled oven. To obtain best results, one of the following cure schedule adopted. It is however, desirable to post cure joints at higher temperature to achieve high glass transition temperature. 30 minutes at 100°C or 20 minutes at 150°C or 10 minutes at 180°C

Packaging

Lapox A-16 is available in 240 kg carboy and metal drums and Lapox K-5 is available in 25 kg woven bag. Other packing may be considered on request.

Storage and handling

Lapox A-16 and Lapox K-5 should be stored in a cool and dry place, preferably in a sealed packing and should not be exposed to direct sunlight. Lapox K-5 has tendency to pick up colour from off-white to brown during storage. The darkening of colour may be due to exposure with humidity, sunlight and oxygen. No liability can be accepted with respect to dark coloured material. Lapox A-16 has shelf-life of at least two years while Lapox K-5 has shelf-life of one year, if stored in its original container between 2°C and 40°C away from humidity, sunlight, air and excessive heat. 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, it 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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