

## Ambient cure, low viscous epoxy system for civil engineering

**Description** Lapox B-47 is reactive diluent modified epoxy resin based on bisphenol-A. Lapox AH-713 HS is medium viscosity polyamide curing agent. When resin and Curing agents are used in appropriate ratio, this provides excellent adhesion to the substrate with high mechanical strength. Low mix viscosity of system permits high filler loading and used in multipurpose civil engineering applications.

**Advantages**

- Excellent adhesion
- Good chemical resistance
- Good vibration resistant
- High mechanical strength
- Very low shrinkage

**Applications**

- Foundation grout
- Screed and mortars

Typical specifications	Test	Unit	Reference	Value	
				Resin	Curing agent
	Description	-	Visual	Clear liquid	Yellowish brown liquid
	Colour	GS	ASTM D1544	Max 1	Max 9
	Viscosity at 25°C <sup>1</sup>	m Pas	ASTM D2196	450 - 650	12,000 - 18,000
	Epoxy value	Eq/kg	ASTM D1652	5.2 - 5.50	-
	Amine value	Eq/kg	ASTM D2073	-	350 - 400
	Density	g/cc	ASTM D792	1.15 - 1.17	0.97 - 0.99

<sup>1</sup>Viscosity by Brookfield viscometer

Mix specifications	Test	Unit	Reference	Value
	Mixing ratio (resin : Curing agent)	By weight	-	100 : 50
	Mix viscosity at 25°C	m Pas	ASTM D2196	3,500 - 4,500
	Specific gravity (mix mass)	-	ISO 1183	1.08 - 1.10
	Pot life at 25°C <sup>1</sup>	Minutes	ASTM D2471	110 - 130
	Lap shear strength at 25°C <sup>2</sup>	kg/cm <sup>2</sup>	ASTM D1002	75 - 100
	Surface dry <sup>3</sup>	Hours	ASTM D5895	2 - 3
	Touch dry <sup>3</sup>	Hours	ASTM D5895	4 - 6

<sup>1</sup>Pot life of 100 g mix mass at 25 ± 1°C in plastic disposable cup by 'Gardco' gel timer

<sup>2</sup>Lap shear strength on prepared aluminum strips after 24 hours curing

<sup>3</sup>Drying time of 200 micron film on glass plate at 25± 1°C

**Recommended formulation and performance properties for grouting**

Component	Unit	Self-leveling
Resin Lapox B-47	Parts by weight	100
Curing agent Lapox AH-713 HS	Parts by weight	50
Defoamer K - 210	Parts by weight	1 - 2
Quartz sand mix number 10	Parts by weight	400
Specific gravity	-	1.8
Consistency of mix mass	-	Flowable
Compressive strength, after 7 days	kg/cm <sup>2</sup>	700 - 800
Flexural strength, after 7 days	kg/cm <sup>2</sup>	400 - 500
Flexural Strength	kg/cm <sup>2</sup>	Parts by weight
Area coverage	kg/m <sup>2</sup> per mm	1.8 - 2.0

**Recommended formulation and performance properties for mortar**

Component	Unit	Self-leveling	Screed
Resin Lapox B-47	Parts by weight	100	100
Curing agent Lapox AH-713 HS	Parts by weight	50	50
Defoamer K - 210	Parts by weight	1 - 2	1 - 2
Quartz sand mix number 10	Parts by weight	400	700
Specific gravity	-	1.8	2.0
Consistency of mix mass	-	Flowable	Trowellable
Compressive strength, after 7 days	kg/cm <sup>2</sup>	700 - 800	600 - 700
Flexural Strength, after 7 days	kg/cm <sup>2</sup>	400 - 450	350 - 450
Area coverage	kg/m <sup>2</sup> (per mm)	2.0	2.2

**Sieve analyses of quarts sand mix number 10**

B. S. Sieve number	Retained, %
36	10
52	25
72	20
100	10
150	15
240	20

## Application procedure for Crack filling and Repairs

Ensure concrete surface is dry, clean and free from oil, grease and other contaminants.

Remove loose particles and dust by Wire Brush or any suitable mechanical tools.

Mix Resin Lapox B-47 and curing agent Lapox AH-713 HS in specified proportion in disposable bowl thoroughly.

If cracks are minor (< 2 mm) and concrete has not lost its integrity, then sealing of cracks can be done with epoxy system by means of gravity method.

If cracks are in the magnitude of >2mm width, then crack must be open by making 'V' groove and through cleaning by compressed air to remove dirt. Mix Resin and curing agent thoroughly followed by addition of quartz sand to achieve homogeneous consistency. Pour the mixer into cracks.

Allow to cure for minimum 24 hours and 7 days for optimum properties.

## Foundation grouting

The installation of heavy machines like compressors, generators, laths and presses, drilling and milling equipment, large pumps, pulveriser and mobile crane tracks requires the leveling of bearings on a concrete foundation. The gap between the foundation and the bearings is commonly filled with a cement mortar which takes several days to cure and acquire the necessary strength before the machine gets into operation. Lapox B-47 with Lapox AH-713 HS facilitate this installation. Not only they reduce installation time but also offers number of advantages like excellent adhesion to metal and concrete, very low shrinkage contributing to good dimensional stability, high mechanical strength, and good vibration damping properties along with resistance to oils, fuels and mild chemicals.

## Method of application - Foundation grouting

To obtain good results, it is essential that both the concrete and the steel surfaces be clean and free of oil. Sandblasting is the most effective. If, however, this is not possible, vigorous wire-brushing or roughening with coarse emery paper is sufficient. Degreasing with solvent like acetone or methyl ethyl ketone is carried out.

Mixing of resin, curing agent and quartz sand may be carried out manually with metal rod. Alternatively, an improvised mechanical agitator can be used by using a drill motor with a suitable stirrer attached in place of drill bit. A mechanical planetary mixer has been found to be particularly effective. Since good wetting of the surface is required to obtain high bond strength, the unfilled resin-curing agent system is first applied on the metal and concrete surfaces as primer coat. Before this primer coat sets, the grout mix is poured or troweled into the gap between the machine and the foundation. Then it is tamped to avoid the formation of air pockets. Since curing of the mix is exothermic reaction, a few precautions should be taken to avoid excessive heat build-up and consequent stresses in the cured resin.

- For filling shallow spaces up to about 30 mm depth, the entire operation can be done in a single layer application without any problem unless the ambient temperature is in excess of 40°C.
- For filling deeper spaces, it is advisable to cast or trowel in layers, each layer not exceeding about 25 mm at a time. This is particularly necessary at peak summer temperature in excess of 40°C.
- In cold winters (temperature of ~ 20°C), it is recommended to add 1-3 parts by weight Lapox AC-14 (accelerator) to speed up cure reaction. Otherwise, the surface may remain tacky and complete curing may take too long time.

The rate of curing is strongly dependent on ambient temperature. As a rough guide, about 50% of strength development is achieved within 24 hours, 95% in about 72 hours and full cure in 7 days at ambient temperature of ~ 30°C.

## Application procedure for Mortar | Screed

Ensure concrete surface is dry, clean and free from oil, grease and other contaminants.  
Remove loose particles and dust by Wire Brush or any suitable mechanical tools.  
Widen the cracks by making “V” grooves and clean dust/loose concrete with high pressure air or any suitable means. In case of pot holes loosen the concrete and clean.  
Prepare mixer of resin and curing agent as per above guideline formulation for mortar.  
Mix all ingredients thoroughly with trowel to achieve homogeneous consistency. Pour the mixer into crack | pot hole.  
Press the mortar gently so that pot | crack is uniformly filled.  
Apply seal coat after 8 to 10 hours.  
Allow to cure for minimum 48 hours to 72 hours for optimum results.  
Full curing will be achieved after 7 days of application.

## Troubleshooting

Problem	Cause
Uncured after 24 hours to 48 hours	Wrong mix ratio or low ambient temperature (< 20°C)
Sticky   greasy   hazy surface	High humidity. Lapox AC-14 (accelerator) is recommended.
Air bubbles entrapped	Mixing was too fast and did not have time to release air. Lapox K-210 (air release additive) is recommended.

## Packaging

Lapox B-47 and Lapox AH-713 HS is available in 200 kg carboy. Other packing may be considered on request.

## Storage and handling

Lapox B-47 and Lapox AH-713 HS should be stored in a cool and dry place, preferably in a sealed container and should not be exposed to direct sunlight. Lapox B-47 has shelf-life of two years while Lapox AH-713 HS has shelf-life of one year, if stored in its original container between 2°C and 40°C away from humidity 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 Safety Data Sheet (SDS) of Lapox B-47 and Lapox AH-713 HS for detailed safety instructions. 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

E-mail: [polymers@atul.co.in](mailto:polymers@atul.co.in)  
Website: [www.atul.co.in](http://www.atul.co.in)

## Note

Lapox<sup>®</sup> is a registered trademark of Atul Ltd.

# LAPOX<sup>®</sup> B-47 | AH-713 HS

Technical Data Sheet | Polymers Business



## **Manufacturing site**

Atul 396 020, Gujarat, India

Telephone: (+91 2632) 230000 | 233261

E-mail: [contact@atul.co.in](mailto:contact@atul.co.in)

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