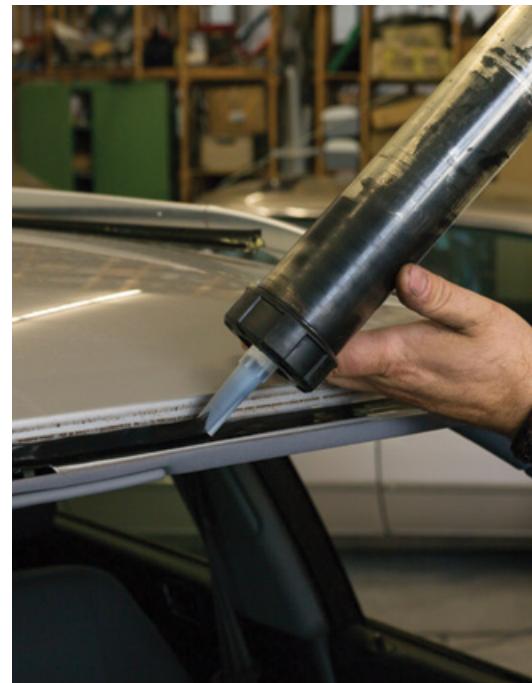


## Epoxy systems for construction and adhesives applications





bird's eye view of the first site of Atul

#### Legacy

Founded in 1947 by a legendary Indian, Mr Kasturbhai Lalbhai, Atul Ltd (Atul) is the first private sector company of the country to be inaugurated by the first Prime Minister, Pandit Jawaharlal Nehru.

#### About us

Atul is one of the largest integrated chemical companies of India with annual revenue of about ₹ 5,000 cr. The Company manufactures about 900 products (such as para-Cresol and derivatives, resorcinol and derivatives, vat dyes, sulphur dyes, herbicides, fungicides, tissue cultured date palms, active pharma ingredients and intermediates, epoxy resins, reactive diluents, etc) and 400 formulations and owns 140 brands. It serves a wide range of customers belonging to over 30 industries in around 90 countries and has established subsidiary companies in Brazil, China, Ireland, the UAE, the UK and the USA. The Company offers a wide range of products and applications used in Agriculture, Adhesives, Animal Feed, Automobile, Composites, Construction, Cosmetic, Defence, Dyestuff, Electrical and Electronics, Footwear, Food, Fragrance and Flavour, Glass, Home Care, Horticulture, Hospitality, Paint and Coatings, Paper, Personal Care, Pharmaceutical, Rubber, Soap and Detergent, Sport and Leisure, Textile, Tyre and Wind Energy industries.

The production facilities of Atul and its associate, joint venture and subsidiary entities are at Ambernath, Ankleshwar, Jodhpur, Panoli, Tarapur and Valsad in India and Somerset in the UK. The first manufacturing site of the Company in Atul, Gujarat is spread over 1,250 acres. The Company has its registered office in Ahmedabad and head office at Atul, both in Gujarat, India. Its shares are listed both at National Stock Exchange and at Bombay Stock Exchange.

#### Polymers - Performance Materials Business

Epoxy resins, reactive diluents and curing agents are manufactured and marketed under the trade name Lapox by the Polymers - Performance Materials Business of Atul. It has received ISO 9001:2008 and ISO 14001 certification and has a NABL accredited laboratory for epoxy testing and analysis. The Company is in this business since 1960.

#### Product range

**Resins:** Bisphenol-A and Bisphenol-F based resins, Modified and formulated resins, Cycloaliphatic resins, Epoxy phenol novolac resins, Multifunctional resins, Benzoxazine resins, Bismaleimide resins, Brominated resins and Dimer acid based resins

**Curing agents:** Aromatic amines and adducts, Aliphatic amines and adducts, Cycloaliphatic amines and adducts, Phenalkamines, Polyamides, Polyamidoamines and Sulfones - 3,3'-Diaminodiphenyl sulfone and 4,4'-Diaminodiphenyl sulfone

**Reactive diluents:** Aliphatic (monofunctional, difunctional and trifunctional), Aromatic (monofunctional and difunctional) and Cycloaliphatic (difunctional)

#### Accelerators, catalysts and flexibilisers



## Floor coating Primer systems

Epoxy primer system act as interface between concrete and screed. Atul offers systems that are VOC-free and have low odour, resulting in improved indoor air quality during application, meeting the highest standards for industrial floor coatings.



### Features

- solvent and phthalate free
- high penetration into concrete pores
- excellent adhesion to concrete
- good adhesion even to wet surfaces
- cures at low temperature (upto 5 °C)
- offers long working time
- ready-to-use
- USFDA, 21 CFR 175.300 compliant\*
- may be applied by brush | roller

### Applications

- natural | kota stones, metal surfaces, old and new concrete



### Application process

- 1  Ensure surface is clean, dry and free from foreign contaminants.
- 2  Fill hollow portions and cracks with mortar mixed with primer system.
- 3  Mix primer system thoroughly as per the recommended ratio and apply on concrete surface.
- 4  Allow to cure primer into semi-cure stage. Start application of mortar | screed when primer is slightly tacky.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight	mPa s	Minutes	Gardner	
<b>Low viscosity</b>					
ARB-32   AH-714	100 : 50	400-600	140-160	Resin: 1 GS Curing agent: 8 GS	Very low viscosity system for good wetting of non-porous substrates.
B-47   AH-714	100 : 50	500-700	140-180	Resin: 1 GS Curing agent: 8 GS	Low viscosity system for general purpose applications.
<b>Medium viscosity</b>					
ARB-32   AH-713	100 : 50	3,000-4,000	120-140	Resin: 1 GS Curing agent: 9 GS	Flexible system suitable for various substrates. Faster curing can be achieved by adding 3-5% of AC-14.
B-47   AH-713*	100 : 50	3,500-4,500	110-130	Resin: 1 GS Curing agent: 9 GS	Recommended for multiple substrates. Faster curing can be achieved by adding 3-5% of AC-14.
B-11   AH-714	100 : 50	7,500-9,500	110-130	Resin: 1 GS Curing agent: 8 GS	Suitable for high porosity concrete surface and provides high thickness of coatings.
<b>Primer for wet   damp surfaces</b>					
ARB-32   AH-747	100 : 60	450-650	50-70	Resin: 1 GS Curing agent: 12 GS	Flexible system for application on metal and concrete surface.
B-47   AH-747	100 : 60	500-700	50-70	Resin: 1 GS Curing agent: 12 GS	Fast curing system with excellent adhesion to wet   damp surfaces.
B-47   XH-80	100 : 67	1,500-2,500	60-80	Resin: 1 GS Curing agent: 15 GS	Low temperature curing system. Cures under high humidity and damp conditions.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass | Note: B-11 and AR-101 are Bis-A based liquid epoxy resins

## Floor coating

### Mortar and screed systems

A thick layer of about 3-6 mm of mortar is laid on top of partially cured primer to achieve load bearing properties of flooring. Atul offers a wide range of mortar and screed systems for general purpose and heavy duty floorings.



#### Features

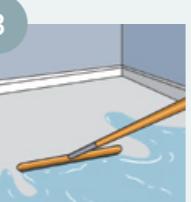
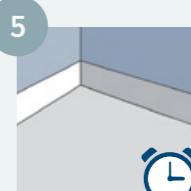
- solvent and phthalate free
- high compressive strength
- very low shrinkage
- excellent adhesion to primed surface
- excellent stability under static and dynamic load
- offers long working time
- may be applied by hand trowel | power trowel

#### Applications

- anti-skid flooring for parking lots, garages, walk-ways, warehouses and ramps



#### Application process

- 1  Mix resin and curing agent thoroughly in specified ratio.
- 2  Add quartz sand mix no.10 into resin mixture.
- 3  Ensure that the primed surface is slightly tacky before application of mortar. Spread uniformly to achieve desired thickness by notch trowel.
- 4  Level uniformly using hand | power trowel.
- 5  Allow to cure for minimum 24 hrs to get optimum strength.

#### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight				
<b>Mechanical strength</b>					
B-47   AH-713	100 : 50	3,500-4,500	110-130	Resin: 1 GS Curing agent: 9 GS	Standard system for screed lining.
B-11   AH-714	100 : 50	7,500-9,500	110-130	Resin: 1 GS Curing agent: 8 GS	System with high mechanical strength for load bearing applications.
<b>Chemical resistance</b>					
ARPN-58   AH-351	100 : 30	5,000-8,000	25-35	Resin: 3 GS Curing agent: 4 GS	Epoxy phenol novolac (EPN) system with excellent chemical resistance to concentrated acids and alkalis. Able to withstand 98% sulphuric acid.
ARPN-58   K-41   K-42	100 : 65	12,000-16,000	65-85	Resin: 3 GS Curing agent: >18 GS	EPN system with excellent chemical resistance to concentrated acids and alkalis.
ARPN-58   K-49	100 : 65	8,000-10,000	100-130	Resin: 3 GS Curing agent: 13 GS	Low viscosity EPN system with excellent chemical resistance to concentrated acids and alkalis. Enables higher filler loading.
B-47   K-41   K-42*	100 : 60	1,000-7,000	150-300	Resin: 1 GS Curing agent: >18 GS	Low viscosity system for excellent chemical resistant tank lining and screeds.
B-11   K-41   K-42*	100 : 60	8,000-15,000	50-140	Resin: 1 GS Curing agent: >18 GS	Standard system for excellent chemical resistant tank lining and screeds.
B-11   K-49	100 : 60	7,000-10,000	110-150	Resin: 1 GS Curing agent: 13 GS	Standard low viscosity system for good chemical resistant tank lining and screeds.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass | Note: B-11 and AR-101 are Bis-A based liquid epoxy resins | Use ARPN-59 in place of ARPN-58 for low mixed viscosity | \*Combination of two curing agents in specified ratio provides flexibility in working time

## Floor coating Self leveling systems

Self leveling systems from Atul provides high glossy and maintenance-free seamless coating. They offer high mechanical properties and protects the floor from chemical attack.



### Features

- solvent-free
- good compatibility with additives
- aesthetically appealing
- scratch and stain resistant
- high mechanical properties and good chemical resistance
- USFDA, 21 CFR 175.300 compliant\*
- may be applied by notch trowel | spike roller

### Applications

- operation theaters, pharmaceutical plants, food industry, shopping malls, shopfloors and basement parking



### Application process

- 1  Mix resin and curing agent thoroughly in the specified ratio. This is called resin premix.
- 2  Mix silica flour, pigment paste and additive in resin premix.
- 3  Mix all contents thoroughly with stirrer.
- 4  Apply uniformly on the floor using notch trowel.
- 5  Apply spike roller to remove air bubbles from topcoat.
- 6  Allow curing for 24 hours to get optimum result.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight	mPa s	Minutes	Gardner	
<strong>High gloss</strong>					
B-47   AH-416*	100 : 60	400-600	50-60	Resin: 1 GS Curing agent: 1 GS	Standard system for high gloss top coats. Low mixed viscosity offers high filler loading for improved mechanical properties.
B-47   K-302*	100 : 50	400-500	30-40	Resin: 1 GS Curing agent: 2 GS	Fast curing system with excellent resistance to amine blush.
ARB-22   AH-416*	100 : 60	600-800	50-60	Resin: 1 GS Curing agent: 1 GS	Allows long working time and improved mechanical properties.
ARB-22   AH-428*	100 : 45	300-500	60-70	Resin: 1 GS Curing agent: 1 GS	Fast curing system with low mixed viscosity for high filler loading.
<strong>Specialty</strong>					
ARB-26   AH-416	100 : 60	400-600	60-70	Resin: Milky white liquid Curing agent: 1 GS	Provides good wetting of pigments and facilitates air release during application for excellent surface finish.
ARB-26   K-302	100 : 50	300-500	30-40	Resin: Milky white liquid Curing agent: 2 GS	Fast curing system with excellent resistance to amine blush.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass

## Grouting systems

Atul provides grouting systems which are an efficient and economical means to install heavy machinery. They offer high compression strength and resistance to vibrations.



### Features

- low viscosity and high filler loading
- low exotherm while curing
- very low shrinkage
- resistant to shock, impact and vibrations
- high compressive strength and load bearing property
- resistant to oils, fuels and mild chemicals
- creates a solid barrier against water penetration

### Applications

- foundation grouts for heavy machines
- injection grouts for structural strengthening
- tile grouts for decorative purposes



### Application process



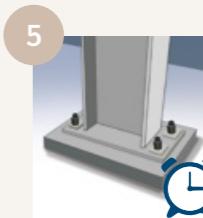
Clean the concrete surface thoroughly using wire brush | hand tool.



Pour the epoxy grouting mortar in the specified area.



Fill surface defects | undulations using epoxy mortar | paste.



Leave it for a minimum of 24 hours to achieve optimum strength.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight				
<b>Foundation grouts</b>					
B-47   AH-713	100 : 50	3,500-4,500	110-130	Resin: 1 GS Curing agent: 9 GS	Multipurpose system that provides excellent adhesion and high compressive strength.
<b>Injection grouts</b>					
B-47   AH-714	100 : 50	500-700	140-180	Resin: 1 GS Curing agent: 8 GS	Low viscosity system with long working time.
ARB-38   AH-744	100 : 30	300-400	40-60	Resin: 1 GS Curing agent: 8 GS	Low viscosity fast reactive system for excellent adhesion with concrete and superior mechanical properties.
<b>Tile grouts</b>					
ARB-22   AH-714   AC-14	100 : 50 : 2	600-800	120-150	Resin: 1 GS Curing agent: 8 GS Accelerator: 6 GS	Low viscosity system with long working time; provides excellent adhesion to tiles and concrete.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass

## Concrete structure strengthening systems

Atul provides systems with variable pot life, glass transition temperature and curing time. Variable pot life makes it suitable for small to very large jobs. Excellent mechanical properties such as tensile, flexural, shear and compressive strength can be achieved if the epoxy is applied with glass or carbon fiber reinforcement on concrete surfaces.



### Features

- solvent-free
- variable viscosities and setting time
- high penetration in concrete surfaces
- low shrinkage
- excellent adhesion to concrete
- creates a solid barrier against water penetration
- maintains structural integrity and extends life
- may be applied by gravity pouring | injection grouting

### Applications

- old structures like bridges, beams, columns, buildings and road cracks



### Application process

- 1 Clean the concrete surface thoroughly using wire brush | hand tool.
- 2 Fill surface defects | undulations using epoxy mortar | paste.
- 3 Apply epoxy primer on the surface.
- 4 Mix resin and curing agent. Stir well.
- 5 Apply fibre on the primed surface when it is slightly tacky. Start application by brush | roller and ensure thorough impregnation of fibre with epoxy system.
- 6 Leave it for a minimum of 24 hours to achieve optimum strength.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight				
<b>Fast cure</b>					
ARL-135   AH-334	100 : 32	700-1,200	25-35	Resin: 2 GS Curing agent: 4 GS	Fast curing low viscosity system for quick impregnation of glass and fibres for high mechanical strength.
<b>Medium cure</b>					
ARL-135   AH-335	100 : 32	500-700	50-60	Resin: 2 GS Curing agent: 4 GS	Moderate pot life and low viscosity system with good impregnation capability and mechanical strength.
<b>Slow cure</b>					
ARL-135   AH-336	100 : 32	500-700	80-100	Resin: 2 GS Curing agent: 4 GS	Long pot life and low viscosity system allows adequate working time for large structural repair jobs.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass | Note: Recommend use of B-47 | AH-713 primer system before application

## Repair and crack filling systems

Atul offers epoxy systems for injection grouting and crack filling. Add silica flour | sand to achieve thixotropic properties to avoid sagging on vertical surfaces.



### Features

- solvent-free
- variable setting time
- low viscosity and high penetration
- excellent adhesion to concrete
- low shrinkage
- may be applied by gravity pouring | injection grouting

### Applications

- old structures like bridges, beams, columns, buildings and road cracks



### Application process

- 1 Clean concrete surface thoroughly using wire brush | hand tool.
- 2 Widen the crack using V-grooving in case of large cracks.
- 3 Apply epoxy primer thoroughly into the cracks.
- 4 Mix resin and curing agent. Stir well. If required, add silica flour | sand.
- 5 Fill the cracks using spatula | trowel.
- 6 Allow curing for 24 hours to get optimum results.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight	mPa s	Minutes	Gardner	
<b>Small cracks (&lt;2mm)</b>					
B-47   K-48	100 : 18	300-500	25-35	Resin: 1 GS Curing agent: 4 GS	Fast cure system for small cracks.
B-47   K-6	100 : 10	300-500	30-40	Resin: 1 GS Curing agent: 3 GS	Low viscosity system for micro cracks. Faster reactivity helps quick setting.
B-47   AH-714	100 : 50	500-700	140-180	Resin: 1 GS Curing agent: 8 GS	Excellent adhesion and long working time suitable for large repair jobs.
<b>Medium cracks (2mm-5mm)</b>					
B-47   AH-713	100 : 50	3,500-4,500	110-130	Resin: 1 GS Curing agent: 9 GS	Long working time with good adhesion to concrete substrates.
<b>Large cracks (&gt;5mm)</b>					
ARB-28   AH-714	100 : 50	1,000-1,500	130-150	Resin: 1 GS Curing agent: 8 GS	Long working time with good adhesion to concrete substrates. Addition of silica sand gives desired consistency for filling large cracks.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass

## Chemical resistant systems

Atul offers solvent free coating systems for protection against corrosive chemicals on metal and concrete surfaces. They protect floor | substrate from chemicals including acids, alkalis and solvents.



### Features

- solvent-free
- very high chemical resistance
- USFDA, 21 CFR 175.300 compliant\*
- may be applied by notch trowel | power trowel, brush and roller

### Applications

- floor coatings in chemical industry, acid resistant linings, tile joints, gap filling in tank farms and glass-filled coating surfaces



### Application process

- 1 Ensure surface is clean, dry and free from foreign contaminants.
- 2 Fill surface defects | undulations using epoxy mortar | paste.
- 3 Apply chemical resistant coat on slightly tacky primed surface.
- 4 Mix resin and curing agent in specified ratio. This is premix resin.
- 5 Add quartz sand mix no. 10 into premix resin.
- 6 Apply chemical resistant mortar using notch trowel. Allow curing for 24 hours.
- 7 Apply two sealer coats using brush | roller.
- 8 Allow curing for 24 hours to get optimum results.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight	mPa s	Minutes	Gardner	
<b>Tank lining</b>					
ARPN-58   AH-351	100 : 30	5,000-8,000	25-35	Resin: 3 GS Curing agent: 4 GS	EPN system for very high chemical resistance to concentrated acids and alkalis. Offers resistance upto 98% sulphuric acid.
ARPN-58   K-41   K-42 <sup>#</sup>	100 : 65	9,000-10,000	65-85	Resin: 3 GS Curing agent: >18 GS	EPN system with excellent chemical resistance to concentrated acids and alkalis..
ARPN-58   AH-651   AH-652 <sup>*</sup>	100 : 65	9,000-10,000	65-85	Resin: 3 GS Curing agent: 16 GS	EPN system with excellent chemical resistance to concentrated acids and alkalis.
ARPN-58   K-49	100 : 65	9,000-10,000	100-130	Resin: 3 GS Curing agent: 13 GS	EPN with low mixed viscosity with excellent chemical resistance.
B-11   K-49	100 : 60	7,000-10,000	110-150	Resin: 1 GS Curing agent: 13 GS	Standard low viscosity system for good chemical resistance for screed   mortar, secondary containment and tank linings.
B-11   K-41   K-42	100 : 60	8,000-15,000	50-140	Resin: 1 GS Curing agent: > 18 GS	Standard system for excellent chemical resistant tank lining and screeds.
B-47   K-41   K-42 <sup>*</sup>	100 : 60	1,000-7,000	150-300	Resin: 1 GS Curing agent: >18 GS	Low viscosity system for excellent chemical resistant tank lining and screeds.
<b>Secondary containment lining</b>					
ARB-33   AH-416	100 : 60	300-500	40-50	Resin: 1 GS Curing agent: 1 GS	Low viscosity system with cycloaliphatic amine curing agent for good chemical resistance and high gloss.
ARB-33   K-302	100 : 50	300-500	30-40	Resin: 1 GS Curing agent: 2 GS	Fast curing system for high gloss coating with excellent resistance to amine blush.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass | Note: B-11 and AR-101 are Bis-A based liquid epoxy resins | Use ARP-59 in place of ARP-58 for low mixed viscosity | <sup>\*</sup>Combination of two curing agents in specified ratio provides flexibility in working time

## Allied application systems

Atul offers various speciality systems for water proofing, fibre reinforced plastic (FRP) rebars, clear casting system for table tops and coal tar coating.



## Allied application systems



Water proofing



FRP rebars



Clear casting-table top



Coal tar

## Features

- water proofing - variable pot life and viscosity variants with excellent bonding to concrete surfaces
- FRP rebars - light weight, durable, non-corrosive properties with high thermal and excellent mechanical strength
- clear casting - exceptionally transparent system for decorative table top applications
- coal tar coating - mild to moderate chemical resistance for effluent treatment plant (ETP) and sewerage lines



## Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight				
<b>Water proofing</b>					
B-47   AH-713	100 : 50	3,500-4,500	110-130	Resin: 1 GS Curing agent: 9 GS	Multipurpose water proofing system for good adhesion and sealing capability on concrete surfaces.
B-47   AH-714	100 : 50	500-700	140-180	Resin: 1 GS Curing agent: 8 GS	Low viscosity water proofing system for good wetting and penetration in concrete and natural stones.
B-47   XH-80	100 : 67	1,500-2,500	60-80	Resin: 1 GS Curing agent: 15 GS	Low temperature curing system for curing under high humidity and damp conditions that gives excellent adhesion to metal and concrete substrates.
<b>FRP rebars</b>					
L-12   K-918   Accelerator*	100 : 85	600-900	5-12 <sup>#</sup>	Resin: 1 GS Curing agent: 2 GS	Superior fibre impregnation with excellent thermal and mechanical properties in static and dynamic conditions.
<b>Clear casting-table top</b>					
ARC-44   AH-384	100 : 30	500-1,000	660-960	Resin: 1 GS Curing agent: 1 GS	Long pot life system with low exotherm for glossy transparent casting. Suitable for decorative table top and decoupage applications.
<b>Coal tar</b>					
ARB-28   K-105	100 : 100	2,500-3,500	20-30	Resin: 1 GS Curing agent: Black	Ambient curing system with high reactivity and good chemical resistance to mild acids and alkalis. Suitable for coatings in ETP, drainage pipes and sewerage lines.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass | Note: \*Use accelerator AC-14 | K-13 | AC-18 for different gel-time and Tg requirements |

\*Gel time at 120 °C with 1% accelerator

## Adhesive systems

Atul offers epoxy adhesive systems with variable viscosities and pot life to suit a variety of processes and applications. They provide excellent thermal stability, electrical resistance and high mechanical properties alongwith high bond strength.

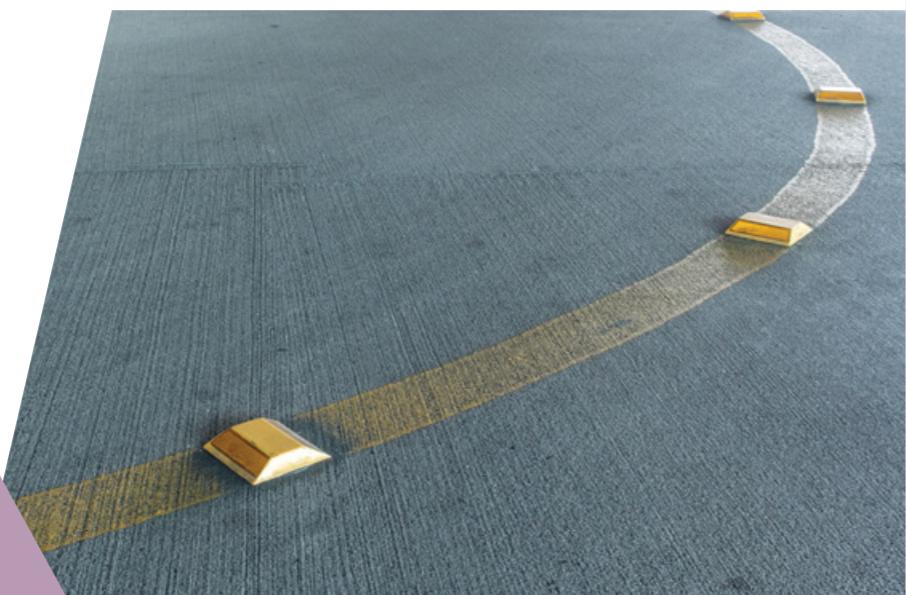
### Features

- thixotropic and non-sagging
- fast curing
- excellent adhesion to metal, FRP and ABS substrates
- resistant to shock, impact and vibrations
- complies to Research Design and Standards Organisation (RDSO) specification for railways\*

### Applications

Bonding of -

- automotive and general engineering components
- fish plates on railway tracks
- marble to granite, marble to glass and wood to marble
- flexible cable joints and FRP pipes
- abrasive flap wheels



### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight	mPa s	Minutes	Gardner	
<b>Multipurpose</b>					
A-31   K-31	100 : 80	25,000-40,000	40-80	Resin: off white viscous liquid Curing agent: 8 GS	Multipurpose ambient curing system for bonding metal, glass, wood, FRP and natural stones that provides high bond strength and toughness.
<b>Ambient cure</b>					
A-16   AH-801	100 : 100	10,000-14,000	3-5 <sup>#</sup>	Resin: 1 GS Curing agent: 2 GS	Rapid cure system that offers 5 minutes cure for bonding multiple substrates.
A-16   K-6	100 : 10	5,000-8,000	30-40	Resin: 1 GS Curing agent: 3 GS	Fast reactive system for natural stone fittings and crack sealing in concrete structures.
XR-110   XH-68	100 : 100	3,000-4,000	25-35	Resin: 5 GS Curing agent: 18 GS	Suitable for flexible cable joints.
ARA-45   AH-346	100 : 10	30,000-40,000	25-35	Resin: grey thixotropic paste Curing agent: 8 GS	Suitable for bonding abrasive flaps with metal core of small to large grinding wheels.
<b>Heat resistant</b>					
A-38   K-99	100 : 40	50,000-1,00,000	60-110	Resin: Beige thixotropic paste Curing agent: Off white paste	Ambient curing thixotropic system with high temperature resistance upto 120 °C. Suitable for bonding a wide variety of substrates.
<b>Hot cure</b>					
A-16   K-5	100 : 27	-	170-190	Resin: 1 GS Curing agent: Off white to brown solid	System with high temperature endurance upto 165 °C that provides excellent resistance to concentrated acids and alkalis.
A-35   K-35	100 : 30	400-500	> 1 Month	Resin: 3 GS Curing agent: 2 GS	System with high temperature endurance upto 120 °C that provides excellent bond strength for metals and composite substrates. Recommended for bonding metal inserts in electrical casting applications.
<b>Road reflector</b>					
ARA-19   AH-725	100 : 50	7,000-9,000	45-55	Resin: 1 GS Curing agent: 8 GS	Fast reactive system for bonding road reflectors using silica fillers.
<b>Insulated rail joint adhesive</b>					
A-83   K-83*	100 : 40	18,000-22,000	60-80	Resin: Off white paste Curing agent: Off white paste	Ambient cure high performance system for fabrication of glued insulated rail joints, approved by RDSO, Indian railways.
<b>Structural adhesive</b>					
ARA-32   AH-735	100 : 45	Thixotropic paste	120-180 (@ 30°C)	Resin: Yellow paste Hardener: Blue paste	Thixotropic structural system for FRP, metal, glass and wood substrates, Germanischer Lloyd (GL) approved for wind turbine blades applications.
<b>FRP pipe joint adhesive</b>					
ARA-44   AH-386	100 : 27	30,000-40,000	20-30	Resin: Off white viscous paste Curing agent: Off white viscous paste	Ambient curing thixotropic system with high temperature resistance upto 150°C. Suitable for bonding various metals, FRP and aluminum honeycomb structures.
<b>Putty formulations</b>					
B11   AH-342   AH-350	100 : 100 : 10	10,000-20,000	15-25	Resin : 1 GS Curing agent: 8 GS	Ambient cure system for putty formulations.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass | Note: B-11 and AR-101 are Bis-A based liquid epoxy resins

## Battery adhesive system

Atul offers epoxy adhesives for battery lid and terminal sealing including flame retardant (FR) and pigmented systems. They provide very high chemical resistance and excellent adhesion to plastic substrates.



### Features

- solvent-free
- fast curing
- resistant to strong acids
- excellent adhesion to ABS substrates
- available in red and black colours
- UL94 V0 compliant\*

### Applications

- battery lid and terminal sealing

## Application process



Fill resin and curing agent in volumetric dosing system.



Dispense the material in battery for lid and terminal sealing.



Allow to cure battery shell at elevated temperature as per process parameters of production line.

### Technical details

Lapox systems	Mixing ratio (resin : curing agent)	Mixed <sup>1</sup> viscosity @ 25 °C	Pot life <sup>2</sup> @ 25 °C	Colour	Recommendations
	Parts by weight	mPa s	Minutes	Gardner	
<b>Battery lid and terminal sealing - non pigmented system</b>					
ARB-44   AH-685	100 : 50	1,500-2,500	8-13	Resin: 1 GS Curing agent: 15 GS	Fast reactivity and excellent adhesion to ABS substrates that provides excellent resistance to battery acid.
ARA-46   AH-690*	100 : 50	1,000-1,500	6-13	Resin: 1 GS Curing agent: 15 GS	FR system complies to UL-V0 rating with good impact resistance.
C-51   K-6	100 : 10	300-500	30-50	Resin: 1 GS Curing agent: 3 GS	General purpose system for small batteries.
<b>Battery lid and terminal sealing - pigmented system</b>					
ARA-47   AH-696	100 : 50	400-600	25-30	Resin: Red and Black Curing agent: 6 GS	Pigmented (red and black) for casting applications in battery terminals.

<sup>1</sup>Brookfield viscosity | <sup>2</sup>Pot life of 100g mixed mass

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