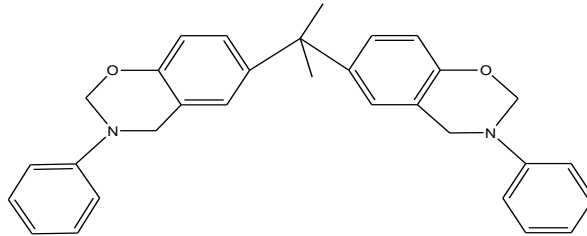


Description

Lapox ARBZ-11 is bisphenol-A based difunctional and halogen free, benzoxazine thermoset resin. This can be homopolymerised or co-cured with epoxy, phenol or suitable catalyst resulting in polymers with excellent thermal and mechanical properties. It is suitable for high performance applications due to very low water absorption and curing shrinkage along with high glass transition temperature.

Chemical structure



Advantages

- Excellent chemical and thermal resistance
- Excellent electrical properties
- Good moisture resistance
- High dimensional stability
- High glass transition temperature
- Low shrinkage

Applications

- Advanced composites
- Electronic components
- Encapsulations
- High performance coatings
- High performance structural adhesives
- Laminates for printed wiring boards
- Moulding compounds

Typical specifications

Properties	Unit	Test method	Values
Appearance	-	Visual	Yellowish solid
Viscosity at 125°C	m Pas	ASTM D4287	50 - 500
Gel time at 220°C	Seconds	DIN 16945	250 - 550
Softening point	°C	Atul	60 - 80
*Glass transition temperature (Tg)	°C	DSC	160 - 170

* Cure schedule: 2 hours at 180°C + 2 hours at 200°C

Typical properties of cured system

Sample preparation for casting:

Heat the benzoxazine resin between 120°C and 130°C and transfer it to vacuum oven. Remove volatiles (if any) by maintaining temperature between 120°C and 140°C for 15 to 20 minutes under 650 to 700 mm Hg vacuum. Ensure that foaming has stopped and volatiles are removed. Hot degassed molten resin should be poured into preheated moulds and cured for 2 hours at 180°C + 3 to 4 hours at 200°C.

Test description	Condition	Test standard	Unit	Typical values
Tensile strength	25°C	Iso 527	Mpa	55 - 65
Tensile elongation at break	25°C	ISO 527	%	0.7 - 1.0
Tensile modulus	25°C	Iso 527	Mpa	6,500 - 6,700
Flexural strength	25°C	Iso 178	Mpa	115 - 130
Flexural modulus	25°C	Iso 178	Mpa	5,300 - 5,500
Glass transition temperature (Tg) by DMA	-	-	°C	170 - 180
Glass transition temperature (Tg) by DSC	-	ISO 11357-2	°C	160 - 170
Weight loss by TGA	At 300°C	-	%	1.42
	At 350°C	-	%	10.91
	At 400°C	-	%	30.11

Catalysts for Benzoxazine Formulations

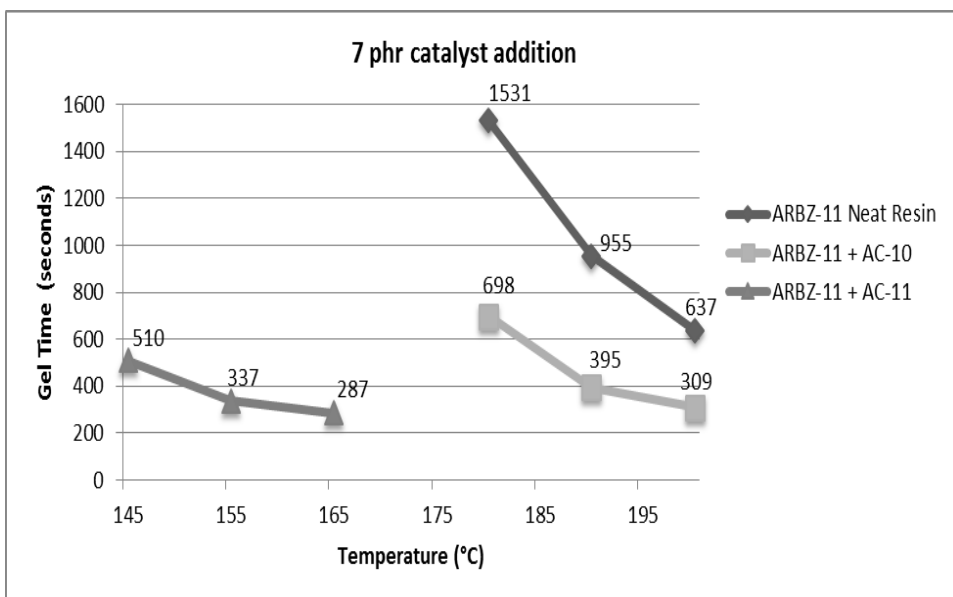
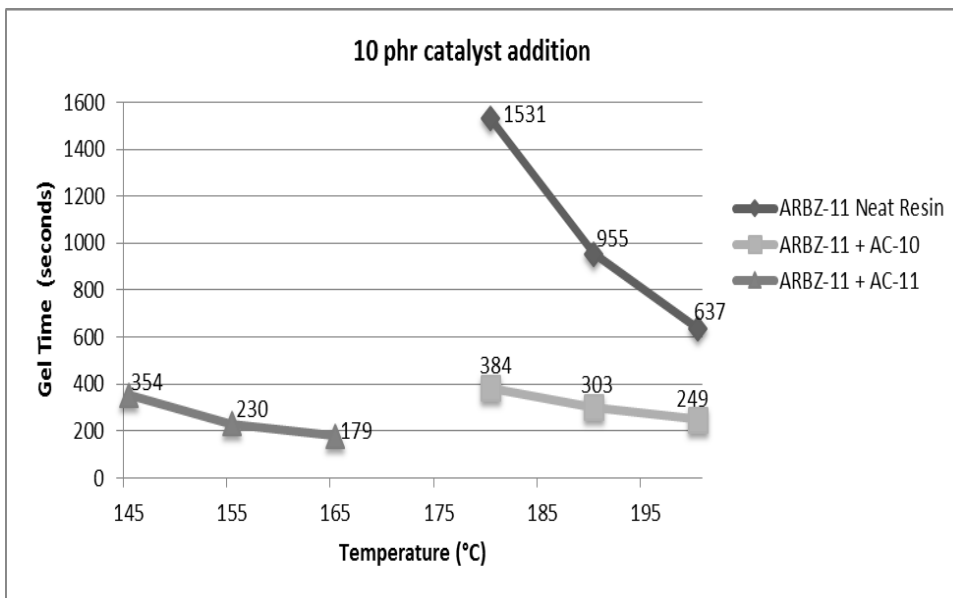
Reactivity of Benzoxazine resins can be enhanced by using various catalysts or accelerators. Usage of accelerator Lapox AC-10 and Lapox AC-11 helps in increase of reactivity and faster production. The selection of catalyst and its loading quantities are decided according to the requirements of cure temperature, cure time, and other additives being incorporated.

Lapox AC-10 and Lapox AC-11 has shelf life of 1 year from the date of manufacturing if stored between 25°C and 30°C in a sealed air tight container.

Typical specifications of AC-10 and AC-11

Properties	Unit	Test method	Values (AC-10)	Values (AC-11)
Appearance	-	Visual	White crystal	White crystal
Melting point	°C	ASTM D2703	154 - 156	127 - 134
Assay	%	HPLC	Min 98	Min 98

The below graphs show the effect on reactivity of Lapox ARBZ-11 resin with the addition of 10 phr and 7 phr each of both the catalysts.



Packaging

Lapox ARBZ-11 is semi-solid and available in 25 kg MS drums. Other packing may be considered on request.

LAPOX[®] ARBZ-11

Technical Data Sheet | Polymers Business



Storage and handling Lapox ARBZ-11 must be stored between 2°C and 40°C in a sealed container. Storage at high temperature may adversely impact its properties. Keep away from direct sunlight, warm areas, particularly near heat sources. Shelf life of this product is 1 year from the date of manufacturing, if it is stored between 2°C and 40°C. Solid lumps of this resin can be dissolved in suitable solvent or resins can be heated in original container up to maximum 90°C to convert into liquid form for easy 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 Safety Data Sheet (SDS) of Lapox ARBZ-11 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
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Note Lapox[®] is a registered trademark of Atul Ltd.

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