

MECHSTER

3180

Modified Bisphenol Based Polyester Resin

Mechster designates a variety of unsaturated polyester resins synthesized at **Mechemco Industries**. These resins are specially engineered to meet the most diverse needs of fibreglass reinforced plastic moulding industry. Our R & D is geared to tailor **Mechster Resins** for the customers' most specific end applications. In fact we take pride in suitably formulating the resin to improve your production efficiency as also the field performance of the FRP product.

Mechster 3180 is a modified bisphenol based unsaturated polyester resin.

Mechster 3180 is a high performance resin specially designed for improved alkali resistance in addition to high chemical resistance and good mechanical properties.

Mechster 3180 is a medium reactivity, high molecular weight polyester resin synthesized from high molecular weight glycol, namely modified bisphenol A. **Mechster 3180** is formulated to contain bare minimum ester linkages in its molecular chain. Further these ester linkages are structurally protected from an environmental attack. Hence cured **Mechster 3180** has excellent hydrolytic stability and excellent chemical resistance to a wide range of corrosive chemicals even at elevated temperatures. The hydrolytic stability of **Mechster 3180** particularly enhances resistance to alkalies and make it most suited for alkaline exposure.

Mechster 3180 is designed to have :

- excellent wetting and adhesion to glass fibres
- higher glass to resin ratio
- rapid and complete cure
- fast moulding cycles
- high heat deflection temperature
- superior resistance to water, most inorganic and organic acids, alkalies, salt solutions, solvents and many other chemicals even at elevated temperatures.

Fibreglass reinforced **Mechster 3180** laminates display excellent physical, mechanical, heat ageing and high temperature chemical resistance properties.

Physical Properties

Appearance	:	Clear pale yellow liquid
Specific Gravity @ 25°C	:	1.04 ± 0.01
Viscosity @ 25°C, Brookfield Viscometer, cP	:	450 ± 50
Acid Value, mg KOH/g	:	8 ± 2
Volatile Content, (w/w) %	:	50 ± 2

Curing Behaviour

Gel time, minutes @ 25°C with 1.5% v/w promoter, (P 125) ¹ 1.5% v/w accelerator (A 103) ² 1.5% v/w catalyst (C 109) ³	:	10 - 15
Peak Exotherm Temperature, °C	:	175 - 180

Typical Properties of Cured Mechster 3180

	Cast ⁴	Laminate ⁵
Glass Content, (w/w) %	—	35 - 40
Specific Gravity @25°C	1.12	1.44
Tensile Strength, MPa	60	115
Tensile Modulus, MPa	3200	7900
Elongation at Break, %	2.2	1.7
Flexural Strength, MPa	110	175
Flexural Modulus, MPa	3340	9400
Compressive Strength, MPa	105	180
Izod Impact Strength kJ/m ² (unnotched)	13	70
Heat Deflection Temperature, °C	120	—
Volume Shrinkage, %	~7-8	—
Barcol Hardness	40	—
Coefficient of Linear Thermal Expansion, (0-60°C), m/m • °C	110x10 ⁻⁶	30x10 ⁻⁶
Water Absorption, (w/w) % @ 25°C		
1 day	<0.10	0.10
7 days	0.10	0.15
28 days	0.16	0.20
Electrical Volume Resistivity, Ohm-cm	>10 ¹⁶	>10 ¹⁵

¹P125 : Solution of Tertiary Amine in Styrene monomer ²A 103 : Cobalt Octoate solution containing 3% Cobalt

³C 109 : Methyl Ethyl Ketone Peroxide containing 9% active Oxygen ⁴Unfilled ⁵Reinforced with fibreglass CSM

The cast and glass reinforced laminates were prepared from **Mechster 3180** catalysed with 1.0% v/w promoter (P 125), 1.0% v/w accelerator (A 103) and 1.5% v/w catalyst (C 109). The specimens were first allowed to cure at room temperature for 24 hours and subsequently post-cured at 80°C for six hours.

The mechanical properties of the glass reinforced **Mechster 3180** laminates can be greatly improved by ensuring complete wetout and incorporation of directional reinforcements like rovings, woven rovings, glass cloth etc.

(Test Methods : IS 6746/1972, ASTM and BS where IS not available)

Uses

Mechster 3180 is specially designed for corrosion resistant process equipments, storage and transportation tanks, pipes, ducts, hoods etc. particularly used in handling of

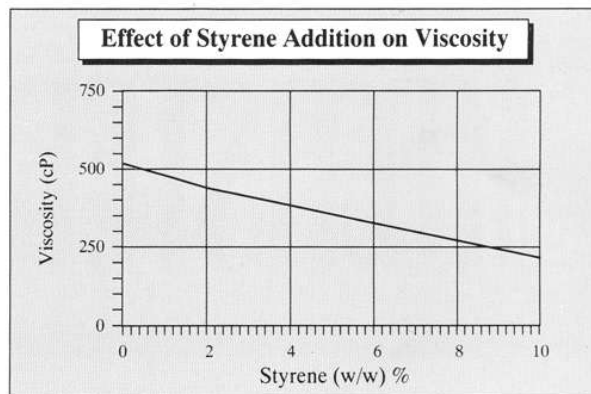
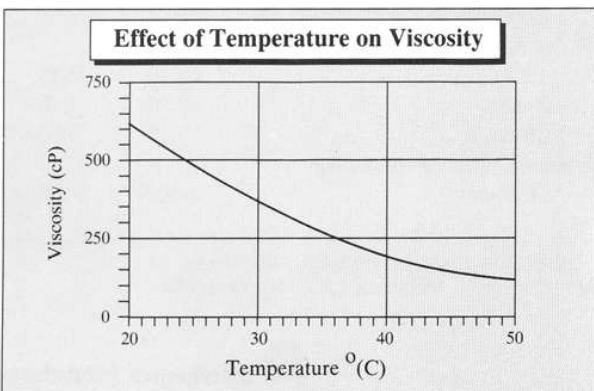
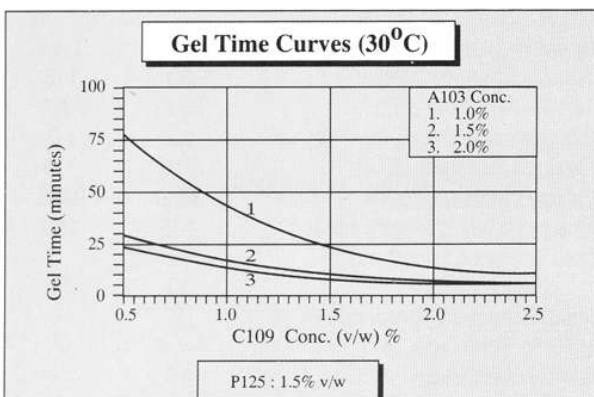
- alkalies
- most mineral & organic acids
- wide range of inorganic and organic chemicals
- salt solutions
- chemical fumes, etc.

Mechster 3180 can be used in any of the following moulding processes,

- Hand lay-up
- Resin transfer moulding
- Filament winding
- Pultrusion, etc.

Packing

Mechster 3180 is supplied in non-returnable M.S. drums containing 200 kgs. net and HDPE carboys containing 30 kgs. net.



Storage

Mechster 3180 should be stored in a cool and dry place away from sunlight, preferably below 25°C. Under these conditions, the shelf life is 3 months. The storage stability could be further improved by aerating the resin stored in barrels at an interval of about a fortnight.

Handling

Mechster 3180 has a flash point of 34°C and is classified as flammable. Containers should be kept in a cool and ventilated place away from sunlight and sources of ignition. "No Smoking" rules should be strictly enforced. In case of fire, use dry chemical, foam, carbon dioxide or water spray to extinguish the flame.

Spillages may be absorbed onto sand or earth and shovelled off and disposed according to local disposal regulations.

Caution

Store catalyst and accelerator separately. Do not allow them to come in contact with each other as they form an explosive mixture. Carry out separate addition of accelerator and catalyst to the resin mix for avoiding accidents.

Physiological & Toxicological behaviour of Mechster 3180

Skin contact and vapour inhalation should be avoided during moulding because of the presence of styrene monomer. In case of irritation in the eye or skin, wash with copious amount of water. In extreme case, seek immediate medical advice. The moulding area should be sufficiently ventilated for reducing the vapour levels in the air while moulding.

The above information is based on extensive research and experience in the field of Applied Engineering and is provided as a general guidance in the application of our product. The user should verify the suitability of our product for their end use. We do not warrant or assume any liability for the information provided.



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Commitment To Quality & Consistency

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