

MECHSTER

5310(N)

Vinyl Ester Resin (Superior)

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 5310(N) is a superior grade of vinyl ester resin developed specifically for the manufacture of reinforced plastic components having high temperature chemical resistance.

Mechster 5310(N) is based on a polymer which has an epoxy phenolic backbone with ethylenic unsaturation. Upon curing, the resultant highly crosslinked epoxy-novolac structure of **Mechster 5310(N)** offers superior resistance to thermo-oxidative degradation and resistance to corrosive chemicals at elevated temperatures over general purpose vinyl ester resin, i.e., **Mechster 5310**.

Mechster 5310(N) 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

Fibreglass reinforced **Mechster 5310(N)** laminates display excellent physical, mechanical, heat ageing and high temperature chemical resistance properties.

Articles moulded out of Mechster 5310(N) are :

- heat resistant
- chemical resistant specifically to many acids, alkalies and solvents, particularly chlorinated solvents even at a higher temperature
- dimensionally stable at elevated temperature
- hydrolytically stable
- light weight

Physical Properties

Appearance	: Reddish Brown clear liquid
Specific Gravity @ 25°C	: 1.07 ± 0.01
Viscosity @ 25°C	
Brookfield Viscometer, cP	: 225 ± 25
Acid Value, mg KOH/g	: 8 ± 2
Volatile Content, (w/w) %	: 36 ± 2

Curing Behaviour

Gel time, minutes @ 25°C with	: 15 - 20
1.5% v/w promoter, (P 125) ¹	
1.5% v/w accelerator (A 103) ²	
1.5% v/w catalyst (C 109) ³	

Peak Exotherm Temperature, °C	: 175 - 180
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Typical Properties of Cured Mechster 5310(N)

	Cast ⁴	Laminate ⁵
Glass Content, (w/w) %	—	35 - 40
Specific Gravity @ 25°C	1.15	1.47
Tensile Strength, MPa	65	130
Tensile Modulus, MPa	3600	8300
Tensile Elongation at Break, %	2.8	1.9
Flexural Strength, MPa	120	215
Flexural modulus, MPa	3500	12000
Compressive Strength, MPa	115	230
Izod Impact Strength, kJ/m ² (unnotched)	12	70
Heat Deflection Temperature, °C	145	—
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	0.20	0.23
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 5310(N)** 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 5310(N)** 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 5310(N) is specially suitable for high performance chemical resistant process equipments, storage and transportation tanks, pipes, ducts, hoods, etc. particularly used in handling of

- alkalis
- chlorinated compounds and solvents
- oxidising acids
- wide range of inorganic and organic corrosive chemicals

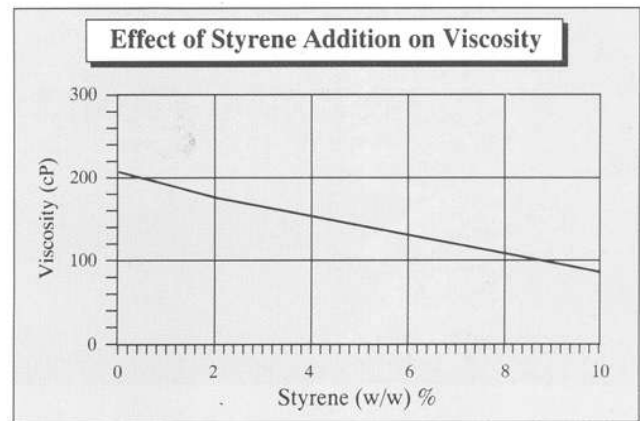
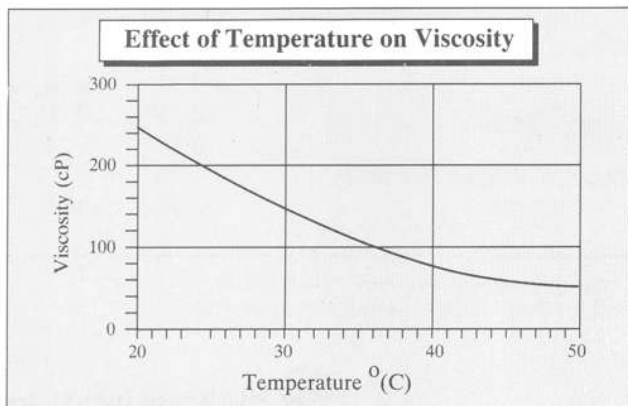
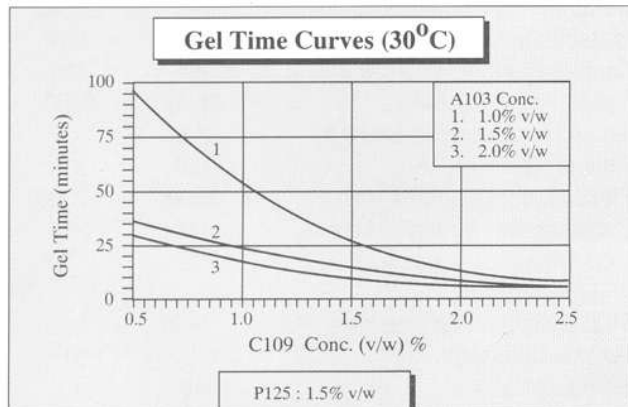
Mechster 5310(N) is an ideal choice for high temperature corrosive environment, also recommended as a material for flooring in chemical industries.

Mechster 5310(N) can be used in any of the following moulding processes,

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

Packing

Mechster 5310(N) is supplied in non-returnable M.S.



drums containing 200 kgs. net and HDPE carboys containing 30 kgs. net.

Storage

Mechster 5310(N) should be stored in a cool and dry place away from sunlight, preferably below 25°C. Under these conditions, the shelf life is 2 months. The storage stability could be further improved by aerating the resin stored in barrels at an interval of about a fortnight.

Handling

Mechster 5310(N) 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 5310(N)

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.



Mechemco industries
 Commitment To Quality & Consistency

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