Technical Data Sheet

Polyester Resin
Polyethylene terephthalate-based polyester resin

DESCRIPTION

MMS™ Premium Marine Polyester resin is a pre-promoted, thixotropic polyethylene terephthalate (PET) based unsaturated polyester resin. It has been designed to give rapid wetting and good reinforcement impregnation. It has been formulated for room temperature cure with Methyl Ethyl Ketone based peroxides (MEKP). It can be used by big or small users according to their production requirement and applied by spray – up or hand lay-up process.

APPLICATIONS

- General purpose glass fiber reinforced parts
- Septic tanks
- Vehicle and Vanity applications
- Glass fiber reinforced polyester (GRP) tanks

LIQUID RESIN PROPERTIES AT 77°F/25°C

Property	Unit	MIN	MAX	Method
Appearance	Cloudy Green	-	-	ASTM D2090
Brookfield Viscosity	cP	300	500	ASTM D2196
Thixotropic Index	-	2.4	6.0	ASTM D2196
Solids	% nvm	53	55	ASTM D2196
Styrene Content	%	45	47	ASTM D1259
Gel Time @ 25* C/77* F	Min	15	17	ASTM D2471
Peak	Min	35	47	ASTM D2471
Peak Exotherm	F/C	320/160	374/190	ASTM D2471

USE RECOMMENDATIONS

- Curing Process

Given that the resin is pre-promoted, only the addition of initiator is required to carry out the curing process. MEKP initiators such as Norox® 9, Norox® 900 and Norox® 925H or others with similar characteristics are recommended. The selection is highly dependent on the room temperature conditions and specified curing cycles. Cyclohexanone based peroxides such as Norox® MEC may also be used. When the room temperature is between 68°F (20°C) to 77°F (25°C), the following cold curing formulation is recommended:

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	Parts in weight
MMS Polyester resin	100
MEKP (9% Active oxygen)	1.0 to 2.5

The curing process should be made at temperatures above 59°F (15°C) to ensure appropriate reticulation activation energy. Below 59°F (15°C) the mechanical behavior and reactivity may be affected. Processor must achieve tests required according to its needs.

At room temperature, satisfactory laminates are obtained, but in some cases good mechanical strength and heat resistance are reached after some period of time. If optimum mechanical properties and heat resistance are required, CRISTALAN® 1836 should be post-cured at 176°F (80°C) during 3 hours. Although a longer period at a lower temperature will give comparable results. The heat used for post-curing should be hot dry air or an oven.

Given that the resin has a relatively high peak exotherm, care must be taken to avoid a high print-through on the gelcoat. When high quality surface is desired, the use of special veils or print-through blockers at the back prior to the structural laminate should be incorporated.

TYPICAL REINFORCED PROPERTIES

Property	Test Method	Unit	Value	Unit	Value
Tensile					
Strength	ASTM D638	MPa	58	psi	8412
Modulus	ASTM D638	GPa	3.8	Kpsi	519
Elongation	ASTM D638	%	2.2	%	2.2
Flexural					
Strength	ASTM D790	MPa	100	psi	14504
Modulus	ASTM D790	GPa	3.7	kpsi	537
Other Properties					
Volumetric Shrinkage		%	8.50	%	8.5
HDT @ 264 ps1 (1.82 MPa)	ASTM D648	C	85	F	185
Barcol Hardness (934-1)	ASTM D2583	Barcol	38	Barcol	38
Water Absorption (24h a 23 C)	ASTM D570	%	0.18	%	.018

Typical values for cast mechanical properties and reinforced mechanical properties are based on laboratory testing and should not be used as a guaranteed analysis and the results may vary batch to

batch. These results should not be used for design purposes. Processor must achieve tests and specific certifications in order the guarantee the final use of the composite material.

Typical Cast Mechanical Properties

Property	Test Method	Unit	Value	Unit	Value
Tensile					
Strength	ASTM D638	MPa	100	psi	14504
Modulus	ASTM D638	GPa	8.2	Kpsi	1189
Elongation	ASTM D638	%	1.7	%	1.7
Flexural					
Strength	ASTM D790	MPa	200	psi	29008
Modulus	ASTM D790	GPa	7.9	kpsi	1146

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HANDLING AND STORAGE

Detailed information regarding safe handling for this product can be found in the "Material Safety data Sheet". MMS Resin is subjected to highly flammable liquids and liquefied petroleum gases according to NFPA 30 (division 3.3.25.2). It has a flash point below 90°F (32°C) in closed cup; therefore it must be kept away from open flames. It has a shelf life of forth (4) months from the date of fabrication, provided always the product is stored in the original container at 77°F (25°C) or less and at 60% relative humidity. Different storage conditions may affect the stability. It is delivered in 500 lb (227 kg) metallic containers or in plastic totes of 2200 lb (1000 kg). The resin needs to be mixed before use to guarantee homogeneity.

* This material is for professional use only. Use adequate ventilation and protection from eye and skin exposure. Any information supplied with this material is given in good faith and must be verified by the end user, as is the sustainability of the material for their application. The warranty of this material shall be limited to the replacement of defective material.