

CRYSTIC[®] LS 451PA

Low Styrene Content Polyester Resin

Introduction

Crystic LS 451PA is a pre-accelerated thixotropic resin suitable for brush or spray application.

Applications

Crystic LS 451PA is suitable for use in the marine industry and for all general moulding requirements.

Features and Benefits

Crystic LS 451PA typically contains 25% to 30% styrene. It therefore has a lower styrene emission than standard LSE resins and during the laminating phase, styrene emissions are typically 20% to 30% lower than conventional LSE resins.

The use of Crystic LS 451PA can significantly reduce the occurrence of print through, to produce mouldings with an enhanced surface finish.

Approvals

Crystic LS 451PA is approved by Lloyds Register of Shipping for use in the construction of craft under their survey.

Formulation

Crystic LS 451PA should be allowed to attain workshop temperature (18°C to 20°C) before use. It requires only the addition of a catalyst to start the curing reaction. The recommended catalyst is Catalyst M (or Butanox M50) which should be added at 2% into the resin and thoroughly dispersed, shortly before use. The geltime of the resin can be approximately determined from the table below:

Pot Life

Cure System	Temperature	Pot Life in Minutes
2% Catalyst M (Butanox M50)	25°C	20

The resin, mould and workshop should be at, or above, 15°C before curing is carried out.

Additives

The addition of certain pigments, fillers or extra styrene may adversely affect the properties of Crystic LS 451PA. Users should seek advice from our Technical Service Department before making any additions.

Typical Properties

The following tables give typical properties of Crystic LS 451PA when tested in accordance with BS 2782.

Property		Liquid Resin
Appearance		Blue
Viscosity at 25°C 37.35 sec ⁻¹	poise	4.0 – 6.0
Viscosity at 25°C 4500sec ⁻¹	poise	2.0 – 2.4
Volatile Content	%	30
Acid Value	Mg KOH/g	20
Stability at 20°C	months	3
Geltime at 25°C using 2% Catalyst M	minutes	18 - 22
Property		Fully *Cured Resin (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		38
Deflection Temperature under load † (1.80 MPa)	°C	58
Water Absorption 24 hrs at 23°C	mg	14.6
Tensile Strength	MPa	46
Tensile Modulus	MPa	2660
Elongation at Break	%	2.5

* Curing Schedule 24 hours at 20°C, 16 hours at 40°C

† Curing Schedule 24 hours at 20°C, 16 hours at 40°C

Property		CSM** Laminate
Glass Content	%	26
Tensile Strength	MPa	89
Tensile Modulus	MPa	6800
Elongation at Break	%	1.8
Flexural Strength	MPa	175
Flexural Modulus	MPa	5700
Compressive Strength	MPa	161
Compressive Modulus	MPa	6400

** Made with 4 layers 450g/m CSM
Curing Schedule 24 hours at 20°C, 16 hours at 40°C

Post Curing

Satisfactory laminates for many applications can be made from Crystic LS 451PA by curing at workshop temperature (20°C). Some increase in properties may be obtained by post curing. The laminate should be allowed to cure for 24 hours at 20°C, and then be oven cured for 16 hours at 40°C or 3 hours at 80°C.

Storage

Crystic LS 451PA should be stored in the dark in suitable closed containers. It is recommended that the storage temperature should be less than 20°C where practical, but should not exceed 30°C. Ideally, containers should be opened only immediately prior to use.

Packaging

Crystic LS 451PA is supplied in 25kg and 225kg containers.

Health and Safety

Please see separate Material Safety Data Sheet.

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