

CRYSTIC[®] 783PA

Polyester Resin for Resin Transfer Moulding

Introduction

Crystic 783PA is a pre-accelerated, isophthalic polyester resin, designed for use in RTM. A non-accelerated version of this resin is available, as Crystic 783.

Applications

Crystic 783PA was developed primarily as a Resin Transfer Moulding resin, but its properties make it suitable for use in other, similar techniques. It is recommended for the manufacture of mouldings for use in structural, high performance applications.

Features and Benefits

Crystic 783PA is a versatile resin, with good mechanical properties and impact resistance. Fully cured laminates made with Crystic 783PA have excellent strength retention in wet environments.

Formulation

Crystic 783PA should be allowed to attain workshop temperature (18°C — 20°C) before use. It requires only the addition of a catalyst to start the curing reaction. The recommended catalyst is Trigonox 44B (acetyl acetone peroxide), which should be added at 1-2% into the resin. Trigonox 524, an acetyl acetone peroxide/tert-butyl peroxybenzoate mixture developed specifically to obtain a more efficient cure in RTM, can also be used. Geltimes of Crystic 783PA can be approximately determined from the Table below.

Pot Life

Temperature	Pot Life in minutes using Trigonox 44B		
	1.0%	1.5%	2.0%
Pot life in minutes at 20°C	-	-	22
Pot life in minutes at 25°C	-	-	14
Pot life in minutes at 40°C	8	6.5	4
Pot life in minutes at 50°C	-	-	2

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

Additives

The addition of pigment pastes, fillers or other additives can adversely affect the Resin Transfer Moulding process and the properties of the cured laminate. Users should consult Scott Bader's Technical Service Department before making any such additions.

Post Curing

For optimum properties, laminates made using Crystic 783PA should be post cured before being put into service. The laminate should be allowed to cure for 24 hours at 20°C, and then be oven cured for a minimum of 3 hours at 80°C.

Typical Properties

The following tables give typical properties of Crystic 783PA when tested in accordance with the appropriate BS or BS EN ISO test method.

Property		Liquid Resin
Appearance		Mauvish
Viscosity at 25 °C	Poise	2.5
Volatile Content	%	45
Specific Gravity at 25 °C		1.08
Stability at 20 °C	months	3
Geltime at 20 °C using 2% Trigonox 44B	minutes	13.5
Property		Fully Cured* Resin (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		40
Deflection Temperature under load † (1.80 MPa)	°C	80
Water Absorption	mg	20
Tensile Strength	MPa	74
Tensile Modulus	MPa	3800
Elongation at Break	%	3.0
Specific Gravity at 20°C		1.20

* Curing schedule – 24 hours at 20 °C, 3 hours at 80°C

† Curing schedule – 24 hours at 20 °C, 5 hours at 80°C, 3 hours at 120°C

Property		C.S.M** Laminate
Glass Content	%	20
Tensile Strength	MPa	84.5
Tensile Modulus	GPa	5945
Elongation at Break	%	1.6
Flexural Strength	MPa	191
Flexural Modulus	MPa	6980
Notched Izod Impact Strength	kJ/m ²	82
Charpy Impact Strength	kJ/m ²	44

** Made with 1 layer Rovicore 600 D3 600
Curing schedule – 24 hours at 20°C, 16 hours at 40°C

Storage

Crystic 783PA 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 783PA is supplied in 25kg, 200kg and 1 tonne containers. Bulk supplies can be delivered by road tanker.

Health & Safety

Please see separate Material Safety Data Sheet.

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