

# CRYSTIC<sup>®</sup> 397PA

## Introduction

Crystic 397PA is a pre-accelerated, isophthalic/neopentyl glycol polyester resin, with a high heat deflection temperature and good water and chemical resistance. It is recommended for the fabrication of high performance laminates for critical applications in aggressive environments. Crystic 397PA is suitable for contact moulding and filament winding processes.

## Approvals

Crystic 397PA is approved by Wine Laboratories Ltd for vessels to contain Wines and sheries up to 25% alcohol content.

## Formulation

Crystic 397PA 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 catalysts are Catalyst M (or Butanox M50) or, where mouldings are to be used with foodstuffs, Catalyst O (or Interlox LA3). Either catalyst should be added at 2% into the resin and thoroughly dispersed.

N.B. For applications involving foodstuffs, thorough catalyst dispersion is vital, as any undercure in the laminate is a potential source of tainting.

Geltimes of Crystic 397PA can be approximately determined from the table below.

## Pot Life

Parts of Catalyst to 100 Parts Resin	M (or M50) 2.0	O (or LA3) 2.0
Pot life in Minutes at 15°C	40	90
Pot life in Minutes at 20°C	20	45
Pot life in Minutes at 25°C	8	14

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

## Applications

Surfaces in contact with aggressive environments should be made resin rich by incorporating a surfacing tissue, or a layer of Crystic Gelcoat 69PA. Alternatively, fabric backed polypropylene (e.g. Celmar®) or certain grades of uPVC can be used, backed with glass fibre reinforced Crystic 397PA.

Performance figures for fully cured Crystic 397PA laminates, in more than 200 chemical environments, are shown in Technical leaflet No. 145 "Safe Chemical Containment".

## Additives

Crystic 397PA may be pigmented by the addition of up to 5% Crystic Pigment Paste. Certain pigments, fillers or extra styrene can adversely affect the food taint, toxicity and chemical resistant properties of Crystic 397PA. Customers should therefore satisfy themselves that any additions made will give the performance required.

## Post Curing

Satisfactory laminates for many applications can be made with Crystic 397PA by curing at workshop temperature (20°C). However, for optimum chemical, water and heat resistant properties, laminates must be post cured before being put into service. Mouldings should be allowed to cure for 24 hours at 20°C and then be oven cured for 3 hours at 80°C.

Mouldings which are to be used with foodstuffs should be allowed to cure for 24 hours at 20°C and then be oven cured for a minimum of 3 hours at 85°C. They should be thoroughly wet-steam cleaned for at least one hour prior to use. If wet-steam cleaning is not practical, suitably shaped mouldings can be filled with hot water (60°C- 80°C) containing non-perfumed detergent. After 2 hours, they should be emptied and thoroughly rinsed with several batches of clean hot water. These precautions are essential to avoid the tainting of foodstuffs.

## Typical Properties

The following tables give typical properties of Crystic 397PA when tested in accordance with BS 2782.

Property		Liquid Resin
Appearance		Pinkish, mauve
Viscosity at 25°C 37.35 sec <sup>-1</sup>	poise	5.0
Viscosity at 25°C 4500sec <sup>-1</sup>	poise	2.4
Specific Gravity at 25°C		1.05
Volatile Content	%	49
Acid Value	mg KOH/g	13
Shelf life from date of manufacture when stored in accordance with storage recommendations	months	6
Geltime at 25°C using 2% Catalyst M	minutes	8
Property		Fully *Cured Resin (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		44
Deflection Temperature under load † (1.80 MPa)	°C	117
Water Absorption 24 hrs at 23°C	mg	19
Tensile Strength	MPa	60
Tensile Modulus	MPa	3300
Elongation at Break	%	2.5
Specific Gravity at 25°C		1.16
Volumetric Shrinkage	%	9.5

\* 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		CSM** Laminate
Glass Content	%	31
Tensile Strength	MPa	92
Tensile Modulus	MPa	7500
Elongation at Break	%	1.5
Flexural Strength	MPa	172
Flexural Modulus	MPa	6600

\*\* Made with 4 layers 450g/m<sup>2</sup> PB CSM  
Curing Schedule 24 hours at 20°C, 16 hours at 40°C

Property		CSM*** Laminate
Glass Content	%	30
Tensile Strength	MPa	95
Tensile Modulus	MPa	7000
Elongation at Break	%	1.7
Flexural Strength	MPa	170
Flexural Modulus	MPa	6400

\*\*\* Made with 4 layers 450g/m<sup>2</sup> PB CSM  
Curing Schedule 24 hours at 20°C, 3 hours at 80°C

### **Storage**

Crystic 397PA should be stored between 5°C and 25°C in the original, unopened container in a dry, well ventilated place. Protect from freezing and direct sunlight. Avoid contact with oxidising agents. If stored outside of these recommendations, shelf life will be significantly reduced.

### **Packaging**

Crystic 397PA is supplied in 25kg and 200kg containers. Bulk supplies can be delivered by road tanker.

### **Health and Safety**

Please see separate Material Safety Data Sheet

Group Tech class     R50007  
Version                Crystic\_397PA\_resin\_EN\_Jul 18

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