

CRYSTIC[®] 625PA

Isophthalic Resin for Large Structures

Introduction

Crystic 625PA is an unsaturated isophthalic polyester resin supplied as a solution in monomeric styrene, which has been specially designed for the manufacture of large structures. Laminates made from this resin have excellent long-term water and weather resistance and their high rigidity and strength are retained at elevated temperatures up to 120°C. For marine applications where good heat resistance combined with long term water resistance are essential, e.g., GRP structures operating under load in tropical climates, Crystic 625PA can be used with confidence.

Formulation

Crystic 625PA should be allowed to attain workshop temperature (18°C - 20°C) before use. Stir well by hand, or with a low shear mixer to avoid aeration, and then allow to stand to regain thixotropy. Crystic 625PA requires only the addition of a catalyst to start the curing reaction. The recommended catalyst is Andonox[®] KP9, which should be added at 1% into the resin. Norox[®] MEKP-925H will increase the pot life. The catalyst should be thoroughly incorporated into the resin, with a low shear mechanical stirrer where possible. Crystic 625PA is formulated for room temperature curing applications. It requires only addition of the correct amount of catalyst to start the curing reaction. The recommended formulations are given in Table 1:

Table 1

Component	Parts by weight
Crystic 625PA	100
Catalysts Andonox [®] KP9 or Norox [®] MEKP-925H	1.0 - 3.0

Andonox[®] KP9 catalyst is suitable for general purpose use.
Norox[®] MEKP-925H catalyst is recommended where extended pot life is required.

N.B. Peroxide catalysts are highly reactive and may decompose with explosive violence, or cause fires, if they come into contact with flammable materials, metals or accelerators. For this reason they must never be stored in metal containers or be mixed directly with accelerators.

The catalyst must be stirred thoroughly into the resin shortly before use. Curing should not be carried out at temperatures below 15°C. Scott Bader (Pty) Ltd. will not be liable for problems caused by use at lower temperatures than recommended. The resin must be allowed to attain workshop temperature (15-30°C) before being formulated for use.

Post Curing

Satisfactory laminates for many applications can be made from Crystic 625PA by curing at workshop temperature (20°C). However, in order to develop optimum heat and chemical resistance, laminates made with this resins must be post cured. After release from the mould, laminates should be allowed to mature for 24 hours at workshop temperature (20°C). They should then be post cured for a minimum of three hours at 80°C, or 15 hours at 50°C. When laminates are required to withstand temperatures between 50 and 100°C in service, the post-curing temperature should always be at least as high as that at which the laminate is required to operate. The post cure is most effective if it is carried out immediately after the 24 hour maturing period.

Chemical Resistance

Crystic 625PA is suitable for use in process engineering chemical environments and has equal properties to those of Crystic 491PA. Performance figures for GRP laminates made with this resin in more than 200 different chemical environments are contained in Scott Bader Technical Leaflet No. 145.3, "Safe Chemical Containment", available on request.

Additives

Crystic 625PA can be pigmented with up to 5% Crystic Pigment Paste. Since the addition of certain pigments may affect the chemical resistant properties of laminates, users should seek advice from our Technical Service Department before making any additions.

Typical Properties

The following tables give typical properties of Crystic 625PA when tested in accordance with BS2782.

Table 2: Typical properties of liquid and fully cured* Crystic 625PA.

Property	Units	Liquid resin
Appearance		cloudy mauvish
Viscosity at 25°C 100 rpm, Brookfield RVT	centipoise	700
Thixotropic index	ratio	1.6
Specific Gravity 25°C		1.13
Volatile Content	%	40
Stability at 20°C	months	3
Geltime at 25°C using 1% Andonox® KP9 catalyst	minutes	20
Property	Units	Fully cured* resin (unfilled casting)
Barcol Hardness (GYZJ 934-1)		46
Deflection Temperature under load † (1.80 MPa)	°C	110
Water Absorption 24hrs at 23°C	mg	20
Volumetric shrinkage	%	8
Tensile Strength	MPa	70
Tensile Modulus	MPa	3400
Elongation at Break	%	3.0

*Curing schedule - 24hrs at 20°C, 3hrs at 80°C

†Curing schedule - 24hrs at 20°C, 5hrs at 80°C, 3hrs at 120°C

Storage

Crystic 625PA 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. Where they have to be stored outside, it is recommended that drums be kept in a horizontal position to avoid the possible ingress of water. Wherever possible, containers should be stored under cover.

Packaging

Crystic 625PA is supplied in 25kg kegs, 225kg drums, and 1125kg intermediate bulk containers. Bulk supplies can be delivered by road tanker.

Health and Safety

Please see the applicable Material Safety Data Sheets, depending on the curing system used.

Technical Leaflet No. SBPTY019.9

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