

CRYSTIC GELCOAT 65PA

Isophthalic Brush Gelcoat with Excellent Water Resistance

Introduction

Crystic Gelcoat 65PA is a pre-accelerated, isophthalic gelcoat. It has been formulated for brush application, but spray versions are available. Crystic Gelcoat 65PA is available in a wide range of colours and the information contained in this technical data sheet also applies to these pigmented versions. A non-accelerated version, Crystic Gelcoat 65, can also be supplied.

Applications

Crystic Gelcoat 65PA is designed for use in the marine, building and transport industries. It is also suitable for general moulding requirements.

Features and Benefits

Crystic Gelcoat 65PA has excellent water and weather resistance.

Approvals

Crystic Gelcoat 65PA is approved by Lloyd's Register of Shipping for use in the construction of craft under their survey.

When backed with Crystic 356PA, it is capable of obtaining a Class 1 certificate to BS476 Part 7 and of satisfying the requirements of the Building Regulations for a Class O structure. The same laminate can also achieve an M1 rating to the French Epiradiateur NFP 92-501 test.

Formulation

Crystic Gelcoat 65PA 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 Gelcoat 65PA requires only the addition of catalyst to start the curing reaction. The recommended catalyst is Butanox M50 (or other equivalent catalyst), which should be added at 2% into the gelcoat. (Please consult our Technical Service Department if other catalysts are to be used). The catalyst should be thoroughly incorporated into the gelcoat, with a low shear mechanical stirrer where possible.

Pot Life

Temperature	Pot Life in Minutes
15°C	24
20°C	15
25°C	9

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

Application

For normal moulding, the application of Crystic Gelcoat 65PA should be controlled to 0.4-0.5 mm (0.015-0.020 inch) wet film thickness. As a guide, approximately 450-600 g/m² of gelcoat mixture (depending on pigment) will give the required thickness when evenly applied.

Additives

Crystic Gelcoat 65PA is supplied in a wide range of colours. This eliminates the potential for mixing errors with small quantities of pigment paste. The addition of fillers or pigments can adversely affect the water and weather resistance of the cured gelcoat. Crystic Gelcoat 65PA can be used as a topcoat provided that 2% Crystic Solution MW is added to overcome the normal tackiness.

Recommended Testing

It is recommended that customers test all pigmented gelcoats before use under their own conditions of application to ensure the required surface finish is achieved.

Typical Properties

The following tables give typical properties of Crystic Gelcoat 65PA when tested in accordance with SB, BS, EN or BS EN ISO test methods.

Property		Liquid Gelcoat
Appearance		mauvish, cloudy
Viscosity @ 25°C		thixotropic
Specific Gravity @ 25°C		1.11
Volatile Content	%	34
Geltime at 25°C using 2% Butanox M50 (or other equivalent catalyst)	minutes	9
Stability @ 20°C	months	3

Property		Fully cured* (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		42
Water Absorption 24hrs @ 23°C	mg	18
Deflection Temperature under load (1.80MPa)†	°C	75
Elongation at Break	%	3.0
Tensile Strength	MPa	75
Tensile Modulus	MPa	3500

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

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

Post-Curing

Satisfactory laminates for many applications can be made with Crystic Gelcoat 65PA by curing at workshop temperature (20°C). However, for optimum properties, laminates must be post-cured before being put into service. The moulding should be allowed to cure for 24 hours at 20°C, and then be oven-cured for 3 hours at 80°C.

Storage

Crystic Gelcoat 65PA should be stored in its original container and out of direct sunlight. 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 Gelcoat 65PA is supplied in 25kg and 225kg containers.

Health and Safety

See separate Material Safety Data Sheet.

CRYSTIC 2-8500PA

Introduction

Crystic 2-8500PA is a low styrene emission, pre-accelerated, orthophthalic polyester resin, which rapidly wets out reinforcements. It is a general purpose resin and has been specifically designed for non-critical and industrial applications. It is not suitable for boat construction, chemical resistance or mouldings in contact with food products. Crystic 2-8500PA is available in several colours and the information contained in this leaflet also applies to these pigmented versions.

Product Characteristics

FORMULATION

Crystic 2-8500PA 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 2-8500PA requires only the addition of catalyst to start the curing reaction. The recommended catalyst is Catalyst M (or Butanox M50), which should be added at 1% into the resin. (Please consult our Technical Service Department if other catalysts are to be used). The catalyst should be thoroughly incorporated into the resin with a low shear mechanical stirrer where possible.

POT LIFE

Temperature	Pot Life In Minutes
15°C	42
20°C	22
25°C	17

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

APPLICATION

Crystic 2-8500PA is designed for hand laminating and would normally be used with chopped strand mat. Higher specification reinforcements are not recommended.

ADDITIVES

The addition of filler or pigments can adversely affect the hardening of the resin. Users should evaluate the effect of any potential additives before use.

POST CURING

Satisfactory laminates for most non-critical applications can be made with Crystic 2-8500PA by curing at workshop temperature (20°C).

TYPICAL PROPERTIES

The following tables give the minimum expected properties of Crystic 2-8500PA when tested in accordance with BS 2782.

Property		Liquid Resin
Appearance		Greenish blue
Viscosity @ 25°C		Thixotropic
Specific Gravity @ 25°C		1.12
Volatile Content	%	43
Stability in the dark @ 20°C	months	3
Geltime @ 25°C using 1% Catalyst M (or Butanox M50)	minutes	17

Property		Fully Cured* Resin (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		42
Deflection Temperature under load † (1.80 Mpa)	°C	67
Water Absorption 24 hours at 23°C	mg	15
Tensile Strength	MPa	50
Tensile Modulus	MPa	3800
Elongation at Break	%	1.5

* Curing Schedule - 24 hrs @ 20°C, 3 hrs @ 80°C

† Curing Schedule - 24 hrs @ 20°C, 5 hrs @ 80°C, 3 hrs @ 120°C

Property		CSM** Laminate
Tensile Strength	MPa	98
Tensile Modulus	MPa	7600
Flexural Strength	MPa	190
Flexural Modulus	MPa	7400
Elongation at Break	%	1.7

**Made with 4 layers 450g/m² PB CSM

Curing Schedule - 24 hrs @ 20°C, 16hrs @ 40°C.

Storage

Crystic 2-8500PA 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 they are kept in a horizontal position to avoid the possible ingress of water.

CRYSTIC 474PA

Heat and Chemical Resistant Polyester Resin

Introduction

Crystic 474PA is a thixotropic, pre-accelerated orthophthalic polyester resin with good heat and chemical resistant properties. A non-thixotropic, non-accelerated version of this resin is available as Crystic 198.

Applications

Crystic 474PA was developed for use in a wide range of applications throughout the chemical industry, and is suitable for the construction of tanks, pipes and fumestacks to operate in environments where heat and chemical resistance are both required. It is ideally suited to the fabrication of heat resistant, dimensionally stable moulds for cold and heat assisted contact moulding and hot press moulding processes. Crystic 474PA is a versatile resin suitable for use in contact moulding and automated processes such as pultrusion.

Features & Benefits

Crystic 474PA can be used in conjunction with glass fibre backed polypropylene (Celmar®), and suitably treated uPVC, to produce dimensionally stable composites with high heat and chemical resistance.

Approvals

Crystic 474PA meets the requirements of BS 3532:1990, for a Type C (heat resistant) polyester resin.

Product Characteristics

FORMULATION

Crystic 474PA should be allowed to attain workshop temperature (18°C - 20°C) before use. It needs only the addition of a catalyst to start the curing reaction. The recommended catalyst is Catalyst M (or Butanox M50). The catalyst should be added at 2% into the resin shortly before use, and thoroughly dispersed. The geltime of the resin can be approximately determined from the table below.

POT LIFE

Parts of Catalyst M to 100 parts of Resin	2.0
Pot life in minutes at 15°C	40
Pot life in minutes at 20°C	22
Pot life in minutes at 25°C	12

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

ADDITIVES

Crystic 474PA can be pigmented by the addition of up to 5% of Crystic Pigment Paste. However, fillers and pigments can adversely affect the heat and chemical resistance of Crystic 474PA, and customers should satisfy themselves that the required properties will be obtained before any large scale use.

When reduced fire hazard laminates are required, up to 20% by weight of Crystic 474PA can be replaced by Crystic Prefil F.

CHEMICAL RESISTANCE

Performance figures for Crystic 474PA laminates in over 200 chemical environments are contained in the current edition of Technical Leaflet 145.3 - Safe Chemical Containment.

POST CURING

In order to develop optimum heat and chemical resistance, Crystic 474PA 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. Where laminates are to withstand higher service temperatures than 80°C, a further period of post cure at the operating temperature should be given.

TYPICAL PROPERTIES

The following tables give typical properties of Crystic 474PA when tested in accordance with BS 2782.

Property		Liquid Resin
Appearance		Cloudy, mauvish
Viscosity @ 25°C 37.35 sec ⁻¹	poise	5.3
Viscosity @ 25°C 4500 sec ⁻¹	poise	3.4
Specific gravity @ 25°C		1.10
Volatile content	%	38
Acid value	mg KOH/g	23
Stability in the dark @ 20°C	months	6
Geltime @ 25°C using 2% Catalyst M	minutes	12

Property		Fully cured* Resin (unfilled casting)
Barcol hardness (Model GYZJ 934-1)		48
Deflection temperature under load † (1.80 MPa)	°C	112
Water absorption 24hrs @ 23°C	mg	28
Tensile strength	MPa	57
Tensile modulus	MPa	3700
Elongation at break	%	1.8
Specific gravity @ 25°C		1.22
Volumetric shrinkage	%	8.2

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

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

Property		CSM **Laminate
Glass Content	%	27
Tensile Strength	MPa	75
Tensile Modulus	MPa	6500
Elongation at Break	%	1.7
Flexural Strength	MPa	156
Flexural Modulus	MPa	5800

** Made with 4 layers 450g/m² EB CSM
Curing schedule 24 hrs @ 20°C, 16 hrs @ 40°C

Storage

Crystic 474PA 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 474PA is supplied in 25kg and 200kg containers. Bulk supplies can be delivered by road tanker.

Health & Safety

Please see separate Material Safety Data Sheet.