

CRYSTIC[®] PD 10031PA-01

ISO – NPG Resin for Solid Surface Casting

Introduction

Crystic PD 10031PA-01 is an acrylic modified, uv stabilized, high quality isophthalic neopentyl glycol unsaturated polyester resin. Crystic PD 10031PA-01 has been developed specifically for the casting of Solid Surface where the applications can range from sanitary ware to vanity units to worktops. Crystic PD 10031PA-01 is a low colour, polyester resin designed to accept the maximum level of Filler i.e. Aluminium Trihydride (ATH) and coloured chips or ground natural stone.

Applications

The Solid Surface applications at present using the Crystic PD 10031PA-01 are high performance, sanitary ware, vanity units, and worktops in kitchens, bathrooms and commercial premises including fast food restaurants, pubs, offices and airports.

Features and Benefits

- Solid Surface is made from Crystic PD 10031PA-01 polyester, using Aluminium Trihydride and polyester chips, using either continuous or batch mixing equipment which must have a vacuum facility. Whilst it is not essential most people also use vibration on the moulds when the Solid Surface is being cast.
- Solid Surface employs no gel coat, is homogeneous through out and can easily be repaired during production or in service i.e. scratches can be polished out and holes filled in and abraded back to match the particular colour and finish.
- The use of vacuum during mixing eliminates any air bubbles created in mixing and so the surface can successfully be abraded and polished if so required.
- The inclusion of coloured polyester chips produces the aesthetic appeal of Solid Surface i.e. numerous and varied granite/ marble finishes which are now fashionable.
- The benefit of using the Aluminium Trihydride (ATH) is three-fold, it produces the translucency required, imparts fire retardancy and is resistant to most cleaning chemicals.

Curing

Crystic PD 10031PA-01 requires the addition of only catalyst to start the curing reaction. The recommended dosage of catalyst is 1 – 2 % based on the resin.

Geltime

The ambient temperature and the temperature of the mould, control the gel time of the resin at a given catalyst level.

The following would be typical gel times at 25° C of Crystic PD 10031PA-01.

Butanox M50	Gel time
1.5%	20 minutes
2.0%	15 minutes

Note

The type and level of Aluminium Trihydride (ATH) could have an accelerating or retarding effect on the mixture and this should be checked out before proceeding.

Typical Properties

The following tables give typical properties of Crystic PD 10031PA-01.

Property		Liquid Resin
Appearance		Clear, light pinkish to water white
Brookfield Viscosity at 25°C	cps	1050 - 1150
Volatile Content	%	33 - 35
Acid Value	Mg KOH/g	17 - 20
Volatile Content	%	28 - 32
Geltime at 25°C using 1.5% Butanox M50	minutes	20
Property		Fully Cured Resin (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		44
Water Absorption 24 hours at 23°C	%	0.11
Deflection Temperature under load (1.80 MPa)	°C	80
Elongation at Break at 20°C	%	2.5
Tensile Strength	MPa	75
Tensile Modulus	MPa	3500

Solid Surface Formulation

Formulation	Typical Solid Surface Mix
35%	Crystic PD 10031PA-01PA
(60% -65 %)	Aluminium Trihydride (ATH) (*1)
10%	Polyester Chips (*2)

Mixed in Vacuum Assisted Mixer, Catalysed with 1.0 -2.0% Catalyst M50, poured into GRP Moulds treated with Release Agent and vibrated to assist the flow of the material in the mould.

*1 Recommended grade Alcan Chemicals FRF LV 12

*2 Recommended grades would be from the Chromat (UK) Chromat range.

Casting Notes

• Exotherm

The exothermic temperature developed in the Crystic PD 10031PA-01PA filled Solid Surface after gelation and curing is related to the level of Catalyst used, the ambient temperature, the mould design and the bulk of the casting. Excessive temperature rise can result in serious cracking distortion and/or internal stresses in a casting. Care must be taken around critical areas eg. drainage points in sinks and vanity units. Usually it is possible to control the peak temperature by varying one of the above factors to suit the casting conditions.

• Demoulding the Solid Surface Castings

The demoulding process should be done when most of the shrinkage has occurred and the casting is strong enough to be removed to a flat table or jig prior to the post cure process. Typical times experienced are 2-4 hours after the gel time of the Solid Surface casting has been recorded .

• Post Curing Requirements

Post curing of Solid Surface at elevated temperatures is recommended particularly in applications involving exposure to hot and cold water to develop the full service life of the finished product. When optimum dimensional stability is required castings should be allowed to mature for a period of at least 24 hours at ambient temperature followed by 3 hours at 80° C post cure.

Storage

Crystic PD 10031PA-01 should be stored in the dark in suitable closed containers. It is recommended that the storage temperature should be less than 25°C where practical, but should not exceed 30°C. Ideally, containers should be opened only immediately prior to use. The storage shelf life of the resin is 3 months when stored in dark below 25°C.

Packaging

Crystic PD 10031PA-01 is supplied in 225kg drums. Bulk supplies can be delivered by road tanker.

Health and Safety

Please see separate Material Safety Data Sheet.

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