

CRYSTIC[®] STONECAST R936PA

Polyester Resin for Solid Surface Casting

Introduction

Crystic Stonecast 936PA is a pre-accelerated high performance isophthalic neopentyl glycol unsaturated polyester resin developed specifically for the casting of Solid Surface products for both interior and exterior applications, where improved UV resistance is required.

Crystic Stonecast 936PA is a high clarity, low colour resin and is supplied at a low to medium viscosity in order to accept the maximum level of fillers such as Aluminium Tri-Hydrate (ATH) and coloured chips or natural stone.

Applications

The Solid Surface applications at present using Crystic Stonecast R936PA 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 Stonecast R936PA polyester, using Aluminium Tri-hydrate 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 gelcoat, is homogeneous throughout and can easily be machined and polished during production or in service i.e. scratches can be polished out and holes filled in and abraded back to match the particular finish.
- The use of vacuum during mixing eliminates any air bubbles created in mixing and this enables the surface to be successfully abraded and polished if required.
- The inclusion of coloured polyester chips, such as the Poly Stone 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 Trihydrate (ATH) is threefold. It produces the translucency required, imparts fire retardancy and is resistant to most cleaning chemicals.

Approvals

Fully cured Solid Surface based on Crystic 936PA meets the following criteria:

- Tested by FIRA to BS EN438. 1991 (Full certificate available on request)
- Class I rating to BS476 Part 7 1987
- Class O rating to BS476 Part 6 1989
- M2 F0 rating to the Epiradiateur NFF – 16-101 Test

Formulation

Crystic Stonecast R936PA should be allowed to attain workshop temperature of 15-20°C before use. The recommended catalyst is Andonox[®] KP9 which should be added at the level of 2%.

The recommended starting formulation for the casting of Crystic Stonecast solid surface is given in Table 1:

Table 1: Starting formulation for Crystic Stonecast

Component	Mix 1*	Mix 2†
Crystic Stonecast R936PA	40%	35%
Aluminium Tri-Hydrate (ATH) - Martinal® ON936#	48%	53%
Chips - ACS Poly Stone chips	12%	12%

* To meet Class I rating to BS476 Part 7 1987

† To meet Class O rating to BS476 Part 6 1989

Other grades of ATH such as Eggerding® M15LF may be used, but the fire ratings were achieved using Martinal® ON936.

Pot Life

The pot life of the above Crystic Stonecast mix varies with temperature and the relationship between temperature and pot life is given in Table 2:

Table 2: Variation in pot life with temperature for Crystic Stonecast Mix 1 above. All formulations contain 2% Andonox® KP9 catalyst calculated on the weight of the Crystic Stonecast R936PA.

Temperature	Pot Life in Minutes
15°C	27.5
20°C	20
25°C	12
30°C	9

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

The catalyst must be stirred into the mix after the filler and chips have been mixed in, to allow as long a pot life as possible. 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.

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.

Casting

In brief, the Crystic Stonecast is mixed in a vacuum assisted mixer. Catalysed with 2% Catalyst M, the addition is calculated on the weight of Crystic Stonecast R936PA in the mix. It is then poured into a mould treated with suitable release agents and, if necessary, vibrated to remove any remaining bubbles. The casting is then demoulded at a time when most of the shrinkage has occurred and it is strong enough to be removed. Finally the casting will need to be post cured to ensure that the full properties of the Crystic Stonecast Solid Surface are developed.

For more details on the casting method, please refer to the Application Guide for the casting of Crystic Stonecast Solid Surface.

Typical Properties

The following tables give typical properties of Crystic Stonecast R936PA.

Property	Units	Liquid Resin
Appearance		Clear, slightly pink
Viscosity at 25°C (ICI Cone & Plate)	centipoise	600
Volatile content	%	37
Acid Value	mg KOH/g	17
Stability at 25°C	months	3
Geltime at 25°C using 2% Andonox [®] KP9 catalyst	minutes	10
Property	Units	Cured Resin (unfilled casting)
Barcol Hardness (Model GYZ 934-1)		44
Water Absorption 24hr at 23°C	mg	24
Deflection Temperature under load (1.80MPa)	°C	105
Elongation at Break at 20°C	%	2.2
Tensile Strength	MPa	60
Tensile Modulus	MPa	3000

* Curing Schedule. 24hrs at 20°C, 3 hrs at 80°C

† Curing Schedule. 24hrs at 20°C, 5 hrs at 80°C, 3hrs at 120°C

Storage

Crystic Stonecast R936PA 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 Stonecast R936PA is supplied in 25kg and 225kg steel containers.

Health and Safety

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

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