

CRYSTIC[®] 15PA(S)

High Performance Vinylester Spray Tooling Gelcoat

Introduction

Crystic Gelcoat 15PA(S) is designed for use in the manufacture of high quality, FRP composite tooling. It is a pre-accelerated Spray gelcoat specially formulated from a vinyl ester base resin and is available in a restricted range of colours. The information contained in this leaflet also applies to pigmented versions.

Features and Benefits

Crystic Gelcoat 15PA(S) is heat resistant with high impact strength and good resistance to chemical attack. It is extremely resilient and can be polished to a high gloss.

Application

Crystic Gelcoat 15PA(S) is a tooling gelcoat and the application should be controlled at 0.4 - 0.6 mm wet film thickness. As a guide, approximately 500 - 750 gm⁻² of gelcoat (depending on pigment) will give the required thickness when evenly applied. If left for prolonged periods, Crystic Gelcoat 15PA(S) will cure to an almost tack-free finish, but this has no adverse effect on the adhesion of the backing laminate.

Crystic Gelcoat 15PA(S) 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).

15PA Spray mould dos and don'ts

DO

- Ensure that the workshop temperature, mould and gelcoat are between 18 and 20 °C
- Gently stir the gelcoat (un-catalysed) before use, by hand or with a low shear mixer and allow to recover for 10 minutes
- Spray at the minimum pressure to achieve an acceptable spray pattern. (Colder conditions will lead to the pressure having to be higher which could cause porosity, hence the need for the minimum temperature above) Please consult our Technical Service Department for further information if required.
- Apply the gelcoat in thin even passes, in a horizontal and vertical pattern building up the wet film thickness to 0.4 – 0.6 mm
- Ensure adequate mould ventilation especially in deep recesses

DON'T

- Exceed a wet film thickness of 0.8 mm or drainage may occur
- Allow vapour to be retained in deep mould sections as this will slow the cure process
- Apply excessive gelcoat in corners of moulds as this can cause pre-release
- Lower the catalyst level as this will affect the cure

Additives

Crystic Gelcoat 15PA(S) is supplied in a restricted range of colours. This eliminates the potential for mixing errors with small quantities of pigment paste. The post addition of fillers or pigments can adversely affect the durability of the mould, in use. For details of approved systems please contact our Technical Service team.

Recommended Testing

It is recommended that customers evaluate all gelcoats using a test panel made under local workshop conditions. The test panel should be representative of the final application.

Typical Properties

The following tables give typical properties of Crystic Gelcoat 15PA(S) when tested in accordance with appropriate SB, BS EN or BS EN ISO test methods.

Property		Liquid Gelcoat
Appearance		Yellowish, cloudy
Viscosity @ 25°C		thixotropic
Stability in the dark @ 20 °C	months	3
Gel time @ 25 °C using 2 % Catalyst M (Butanox M50)	minutes	10
Potlife @ 18°C – 20°C	minutes	7 - 12

Property		Fully cured *Gelcoat (unfilled casting)
Barcol Hardness (model GYZJ 934-1)		45
Deflection Temperature under load† (1.80 MPa)	°C	106
Elongation at Break	%	2.7
Tensile Strength	MPa	78
Tensile Modulus	MPa	3900

* 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

For optimum life, a mould constructed using Crystic Gelcoat 15PA(S) should be fully cured before being put into use. This can be achieved by placing the mould in an oven at 40 °C for 30 hours. If this is not practical, the mould should be left in warm conditions (20 °C) for 2 – 3 weeks prior to use, as high residual styrene content may encourage stick ups.

Where a mould is likely to experience elevated temperatures during cycling (e.g. due to high exotherm temperatures within backing laminates), it should be post cured at a temperature in excess of the cycling temperature. Contact our Technical Service department for advice.

Mould Release System

When a new mould is manufactured, traces of residual monomer (styrene) remain within the tooling gelcoat. Although post curing at 80 °C will reduce this to an insignificant level, exposing a new mould to this temperature is not always practical or desirable. The first release from a new mould is, therefore, likely to be the most difficult, particularly if a mould which is not post cured is subjected to elevated temperatures during its initial use. These temperatures could arise from the exotherm of the laminate contained within the mould, or from the mould itself being passed through a heated curing area during use. The following procedure was developed to combat release problems on new moulds manufactured and cured at workshop temperature (18 °C – 20 °C). It demonstrates an excellent release performance on new moulds and is equally effective on moulds of any age:

1. Before first use, allow the mould to mature for a minimum of 7 days at 18 °C or above.
2. Clean the mould thoroughly with Frekote PMC.
3. Apply 2 coats of Frekote FMS (mould sealer), allowing a minimum of 10 minutes between coats.
4. Apply 4 coats of Frewax, allowing a minimum of 10 minutes between coats. (Separate TDS for Frekote products are available on request)
5. Optional – apply 1 coat of a hard wax such as Mirroglaze. This will reduce any tendency to de-wet or pre-release when the mould is used.
6. After the first release, use a masking tape test to check that the release agent remains on the mould surface. If so, apply 1 coat of Frewax or a hard wax. If not, repeat steps 2 to 4.
7. Continue as 6 until the release performance becomes predictable and easy then re-apply 1 coat of release agent as and when required.

Storage

Crystic Gelcoat 15PA(B) 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. Depending on storage and the container size, the gelcoat can take up to 5 days to achieve the correct application temperature. Ideally, containers should only be opened immediately prior to use.

Packaging

Crystic Gelcoat 15PA(S) is supplied in 25 kg containers.

Health and Safety

Please see separate Material Safety Data Sheet.

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