GELCOATS

Crystic® Gelcoat 15PA (B)

High Performance Vinyl Ester Brush Tooling Gelcoat

Product Description

Crystic® Gelcoat 15PA (B) is a pre-accelerated brush gelcoat specially formulated from a vinyl ester base resin.

Crystic® Gelcoat 15PA (B) has been developed to have excellent gloss retention alongside impact, heat and chemical resistance. The viscosity profile ensures even coverage with minimal drainage and low film porosity.

Crystic® Gelcoat 15PA (B) is recommended for use in the manufacture of high quality FRP composite tooling.

Features and Benefits

Features	Benefits
Vinyl ester base resin	Excellent chemical and heat resistance
	Good impact resistance
	Excellent surface finish – can be polished to high gloss
Matched tooling system	Reduces reinforcement print-through

Brush Application

Do	Don't
Ensure the gelcoat has attained workshop temperature of 15°C - 25°C before use.	Stir the gelcoat with high shear mixers as this will temporarily break down the thixotropy leading to drainage.
Add 2% Butanox® M-50 or equivalent catalyst.	Exceed a wet film thickness of 800 microns as thick films encourage air retention.
Gently stir the gelcoat by hand or low shear stirrer.	Apply excessive thickness in corner areas as this can cause pre-release.
Use long brush strokes and even pressure to apply the gelcoat in an even film across the mould surface	Apply backing laminate before the gelcoat has reached an appropriate degree of cure.
Brush through the gelcoat in multiple passes until the recommended wet film thickness of 600-800 microns is reached.	Catalyse more gelcoat than can be applied before it starts to gel.
Apply the first layer of laminate within 24 hours of the gelcoat.	Allow vapour to be retained in deep mould sections as this can cause slow curing.

Additives and Variants

The information contained in this technical data sheet applies to all pigmented versions. Crystic® Gelcoat 15PA (B) is available in a limited range of colours.

Incorporation of additional material may affect the working, weathering or cured properties of the gelcoat as well as the durability of the mould. Please check with Scott Bader's Technical Service department before using the gelcoat outside of specified parameters.

Post-Curing

For optimum life, a mould constructed using Crystic® Gelcoat 15PA (B) 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. Where a mould is likely to experience severe conditions (e.g. due to high exotherm temperatures within backing laminates), it should be post cured at an elevated temperature. Contact our Technical Service department for further advice.

Mould Release System

When a new mould is manufactured, traces of residual monomer 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 area during use. The following procedure was developed to combat release problems on new moulds manufactured and cured at workshop temperature. 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 polyester mould cleaner.
3. Apply a polyester mould sealer according to manufacturer's instructions.
4. Apply semi-permanent release agent according to manufacturer's instructions.
5. Optional – apply 1 coat of a hard wax such as Mirrorglaze. 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.
7. If so, apply 1 coat of semi-permanent or hard wax. If not, repeat steps 2 to 4.
8. Continue as 6 until the release performance becomes predictable and easy then re-apply 1 coat of release agent as and when required.

Recommended Testing

It is recommended that customers test all gelcoats before use under their own conditions of application to ensure that the product meets requirements.

Typical Properties – Uncured

Property	Typical Value
Viscosity, 25°C 0.6s^{-1}	425 poise
Viscosity, 25°C 4500s^{-1}	14 poise

Typical Properties – Cured

Property	Test Method	Typical Value
Barcol Hardness (Model GYZJ 934-1)*	EN59	45
Heat Deflection Temperature† (1.8MPa)	BS EN ISO 75-2 (1996)	106°C
Elongation at Break*	BS EN ISO 527-2	2.7%
Tensile Strength*	BS EN ISO 527-2	78MPa
Tensile Modulus*	BS EN ISO 527-2	3900MPa

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

Gel time & Backup time

Catalyst level and temperature will influence the gel time. The product only requires the addition of catalyst to start curing. We recommend the use of a 50% MEKP (type Butanox® M-50) which should be added at 2% in the gelcoat.

Temperature	Gel time (2% Butanox M50)**	Backup time (2% Butanox M50)**
15°C	40 minutes	75 minutes
20°C	30 minutes	50 minutes
25°C	10 minutes	40 minutes
30°C	8 minutes	18 minutes

**Measured under laboratory conditions. Information should be used as a guide only.

Packaging and Storage

Crystic® Gelcoat 15PA (B) is available in 25kg and 225kg containers. (15 kg and 200 kg depending on production site).
Crystic® Gelcoat 15PA (B) should be stored in its original container, under cover, and out of direct sunlight. These must be kept closed and airtight. It is recommended that the storage temperature should be less than 25°C and the product should not be frozen. Storing the product outside of these conditions may affect the properties of the product and reduce its shelf life. Ideally, containers should be opened only immediately prior to use. Material should be used within 5 months from date of production.

Health and Safety

Read and understand separate Material Safety Data Sheet before using this product. Unsaturated polyester products release heat when they cure in bulk.

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