

Application Guide for the CRYSTIC® Matched Tooling Systems

**Vinylester Spray Gelcoat 15PA (S) & (B),
Vinylester skincoat VE679PA, Rapid Tooling
Resin RTR4000PA &
Conventional Tooling Resin 474PA**

NB: Please read data sheets before use

*(Data sheets are available from our Sales Office or can be viewed on our Web Site:
www.scottbader.com)*

The tooling systems comprise of;

Crystic® Glosscoat and Crystic® Primecoat for high gloss plug (pattern) surfacing.

(i) Crystic® Gelcoat 15PA a vinyl ester based spray gelcoat with excellent gloss retention and exceptional resilience or

(ii) Crystic Gelcoat 15PA a high performance vinylester brush gelcoat with excellent gloss retention and exceptional resilience

Crystic® VE679PA vinyl ester/DCPD skin coat for reducing fibre print through.

(i) Crystic® Rapid Tooling Resin, RTR 4000PA for rapid mould production or

(ii) Crystic® 474PA for conventional mould production.

A four stage process

Stage one – preparing the plug (pattern)

The plug should be prepared to a very good finish. Extra time spent improving the surface of the pattern will greatly reduce the amount of remedial work needed to the surface of the mould.

Crystic Primecoat and Crystic Glosscoat are ideal products for surfacing the pattern. (Please refer to the Crystic Primecoat and Crystic Glosscoat data sheets.)

Both of these products must be stirred thoroughly before being diluted to spray viscosity (see data sheet) and catalysed with 2% Butanox® M50. Crystic Primecoat is designed for spray application but can also be brushed. Crystic Glosscoat must be sprayed. A gravity feed or siphon gun can be used. (Please see the data sheets for more details.)

Approximately 850g/m² of Crystic Primecoat will be required for a film thickness of 0.5mm - approximately 750g/m² of Crystic Glosscoat will give the same thickness. Crystic Primecoat is easy to rub down whilst Crystic Glosscoat is harder and polishes to a much better gloss. Providing the workshop is at 20°C plus, then both products can generally be abraded 2 hours after spraying. You must ensure the Crystic Glosscoat is fully cured before making the mould; if in doubt, seal the pattern with Frekote® FMS. A wax release agent is normally used on patterns but Frewax® can be used.

Stage two – constructing the mould

Option (i) Applying Crystic Gelcoat 15PA (S) to the pattern

Crystic Gelcoat 15PA is a very resilient gelcoat which cures with a standard MEKP catalyst, does not foam or gas, cures with a very low porosity, high gloss finish and has excellent gloss retention in use.

This is a spray gelcoat and should be catalysed using 2% Butanox® M50; each coat will require approximately 600g/m² of gelcoat. To ensure a low porosity surface is achieved, it is recommended that two coats are applied to achieve the required thickness of 0.5–0.6mm wet film thickness.

A minimum of 1 hour 30 minutes should be allowed between layers of gelcoat.

Crystic Gelcoat 15PA is available unpigmented as well as in a choice of three standard colours.

Option (ii) Applying Crystic Gelcoat 15PA (B) to the pattern

Crystic Gelcoat 15PA is a very resilient gelcoat which has been particularly successful in reducing water marking.

This is a brush gelcoat and should be catalysed using 2% Butanox® M50; each coat will require approximately 600g/m² of gelcoat. It is recommended that two coats are applied.

A minimum of 1 hour 30 minutes should be allowed between layers of gelcoat.

Crystic Gelcoat 15PA is available unpigmented as well as in a choice of three standard colours.

Stage three - Applying Crystic 679PA Skin Coat

Crystic 679PA is a DCPD modified vinyl ester which is easier to use and less prone to under cure than pure vinyl ester. It can also be cured with Butanox® M50.

The skincoat has been designed to reduce fibre print through. It is pre-accelerated and thixotropic. Catalyse the resin with 2% Butanox® M50 or LPT. **Matched Tooling Sytems Application Guide - Issue 6 - Apr 2013 3/3**

The minimum requirement for the skincoat is 1 layer of 300g/m² mat using approximately 600g/m² of Crystic 679 PA. In some cases a layer of surface tissue (wetted with Crystic 679 PA) may be used before the chopped strand mat to further reduce print through.

The wet laminate must be carefully applied and thoroughly rolled with a fin roller to remove any air bubbles. The skincoat should be left for at least 1 hour 30 minutes before being backed up with the rest of the mould laminate. You can now select either Crystic Rapid Tooling Resin, RTR 4000PA or Crystic 474PA to complete the mould construction.

Stage Four - Applying the Resin – two options

Option (i) - Crystic RTR 4000PA – Rapid Tooling Resin (24 – 36 hours)

Crystic RTR 4000PA is a pre-accelerated, prefilled, low profile, low shrinkage resin which should be catalysed using 1% Catalyst M (or Butanox® M50) and is suitable for both hand-lay and spray lay-up applications. It has been designed for rapid mould construction and relies on low profile additives to dramatically reduce shrinkage. The low profile system works best when sufficient exotherm is generated during curing. For this reason, a minimum of 3 layers of 450g/m² mat or equivalent should be applied wet-on-wet.

For hand-lay applications, mix the catalyst into the resin and brush (or roller) the RTR 4000PA on to the cured skin coat and then push the first layer of 450 g/m² mat into the wet resin. Apply more resin through the mat with a brush or roller and then roll thoroughly with a metal roller to remove the air. Apply the next two to three layers of 450g/m² mat in the same way, rolling each layer thoroughly. A minimum of 1.2 kg of resin will be required per metre² of (450 g/m²) mat.

For spray lay-up applications, the spray equipment should be clean and the catalyst level should be set to mix at the required level. The area to be laminated should initially be sprayed with a thin layer of pure catalysed Crystic RTR 4000PA before building the combined glass and resin layer to the required thickness, using even sweeps of the spray gun in both directions across the mould. A final spray of Crystic RTR 4000PA resin should then be applied over the back of the layer before fully consolidating the mat with a roller. The recommended thickness of a single sprayed layer is 3-5mm.

The resin should start to gel in approximately 30-40 minutes at 25°C and will change colour from light brown to white as it cures. Further layers can be added, or frames and stiffeners laminated in once the laminate has cooled.

The mould should be left on the pattern for at least 24 hours.

Option (ii) - Crystic 474PA – Tooling Resin – Conventional Tooling (7 – 9 Days)

Crystic 474 PA is a more conventional mould making resin, which can be used in place of RTR4000PA

It is a thixotropic, pre-accelerated, orthophthalic resin with very good heat and chemical resistance properties. It produces heat resistant dimensionally stable moulds.

When catalysed with 2% Butanox® M50, Crystic 474PA will have a pot life of approximately 20 minutes at 20°C. The mould must be made much more gradually with Crystic 474PA and should not be removed from the pattern for at least 7 days.

Finishing the mould with sealer and release agent

When the mould is released from the pattern it must be sealed with a mould sealer followed by the appropriate release agent. *(Please see data sheet for further information)*

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SCOTT BADER COMPANY LIMITED
Wollaston, Wellingborough, Northamptonshire, NN29 7RL
Telephone: +44 (0) 1933 663100
Facsimile: +44 (0) 1933 666623
www.scottbader.com