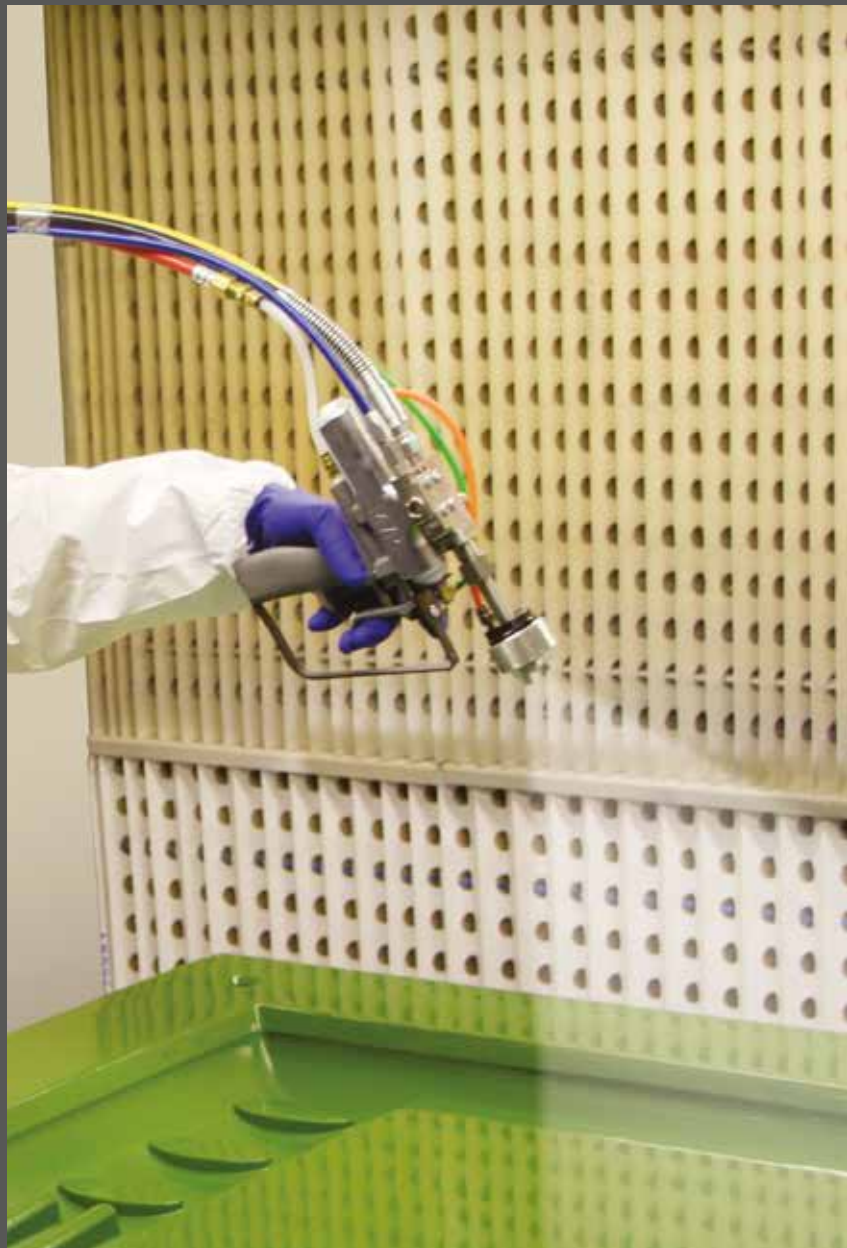




Composites

Crystic[®] Gelcoats Handling Guide

How to handle and achieve optimum performance



 **SCOTT BADER**
Making a **positive** difference



GELCOATS

INNOVATIVE GELCOATS, INCREDIBLE PERFORMANCE

Scott Bader gelcoats deliver a high-quality finish on the visible surface of fibre-reinforced composites across a multitude of uses. Handled and applied correctly you can create gelcoated surfaces that are durable, glossy and coloured - beauty and protection in one process.

We also manufacture more specialised gelcoats to manufacture moulds which in turn are used to manufacture components. These have exceptional levels of durability to overcome the mechanical and thermal stresses of the curing and demoulding processes.

This guide has been designed to help customers get the best results from Scott Bader gelcoats, from first receiving their gelcoat delivery through to final finish.



Call our Technical Support line on:
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TAKING DELIVERY

When your gelcoat delivery arrives, it's important to check the order details and shipping advice for:

- 1 Packing condition
- 2 Correct quantity
- 3 Product code: type, colour, spray or brush
- 4 Batch number

IMPORTANT: Always store catalyst separately from gelcoat and resin.

STORAGE

Once you're satisfied that your delivery is correct where you then store your gelcoats is just as important:

- ✓ Keep stock in original kegs and drums with lids and caps tightly closed
- ✓ Ensure kegs and drums are sitting on pallets that are in good order
- ✓ Keep in a separate storage room and out of direct sunlight
- ✓ Pay attention to product shelf life and exercise regular stock rotation
- ✓ Store below 20°C. If storage is cold (e.g., outside shed), the product needs to be acclimatised to an ambient temperature (18 - 25°C) before use

MOULD PREPARATION

Your mould needs as much care and attention as the gelcoat if you are to achieve the optimum finish, here's what to do:

- Check the mould for damage and clean thoroughly to remove any debris, dust or loose contaminants
- Apply an appropriate release agent to the surface of the clean mould, following the instructions carefully
- For a new mould, ensure that the surface is sealed with an appropriate mould sealer prior to application of a release agent
- Keep area used for gelcoating dust free

MATERIAL PREPARATION

- Check that the drums/kegs are in good condition and free from damage
- Check product code for correct colour and type
- Ensure enough product is mixed to spray or brush the mould in one session, ensuring even and consistent thickness
- Using a low shear mechanical mixer, mix the gelcoat prior to use in its original keg or drum, and leave to stand for 10 minutes to allow thixotropy to recover
- Prior to use, make sure the gelcoat is at its optimal working temperature of 18-25°C (the absolute minimum temperature is 15°C)
- Use a clean pail if the gelcoat is decanted from its original packaging

IMPORTANT: Always wear protective clothing, gloves and goggles.

CHECKING SPRAY EQUIPMENT

Just like with moulds, all equipment needs to be well maintained to achieve the best results, and this includes your spray equipment if being used:

- ✓ Make sure filters are clean and clear
- ✓ Select an appropriately sized spray gun, nozzle and angle to best suit the mould size and degree of complexity
- ✓ Check and adjust the spray pattern
- ✓ Use the lowest possible gun pressure that will achieve a uniform spray fan pattern
- ✓ Check catalyst to gelcoat ratio



SPRAY OPERATOR PROTECTIVE CLOTHING

The operator must wear a suitable protective suit, face mask and gloves at all times during spraying. Where there is a risk of ignition from static electricity, anti-static protective clothing should be worn.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

WORKING AREA

Gelcoating should be carried out in a purpose-built spray booth, in a separate area of the workshop that is set up with:



Effective ventilation



Good general lighting



Dust free environment



Temperature range 18-25°C (66-77°F)



Humidity max. 80%

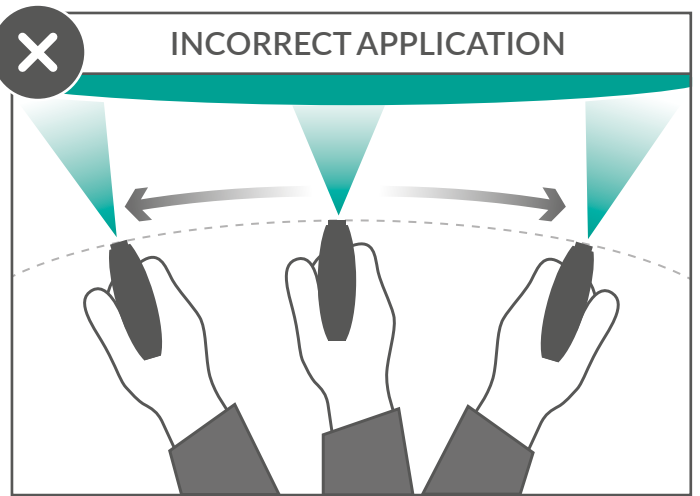
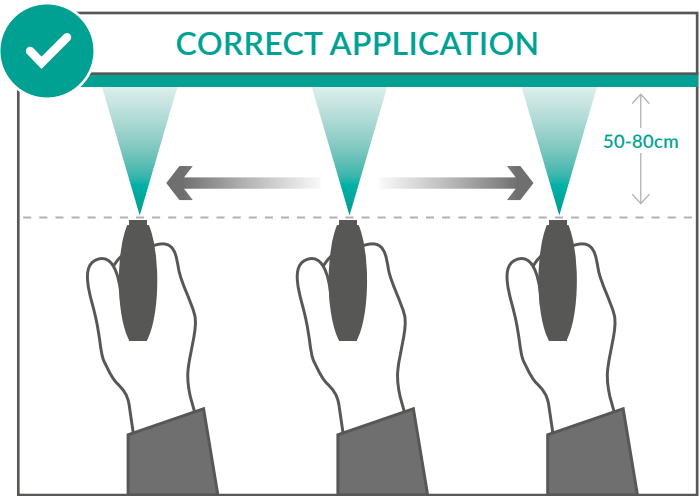


SPRAY APPLICATION

When your properly ventilated spray booth is ready you are ready to start spraying. The mould to be sprayed should be positioned in the most practical position ergonomically, to allow for an even coverage and to reduce fatigue of the operator:

- Keeping the wrist flexible, start by spraying away from the mould and bring the gun towards it maintaining an even left to right spraying pattern at a consistent distance of approximately 50 - 80cm
- The gun should always be perpendicular to the mould. An arched spraying motion as per the illustration below, will result in an uneven coverage, as will tilting the gun vertically
- Spray with continuous parallel strokes, left to right then up and down to lay a mist coat that covers the mould. A mist coat reduces the potential for colour faults and trapped air thereby minimizing potential of porosity
- Continue spray application using the same technique at a consistent speed to build up thickness gradually, usually in three passes perpendicular to each other. The number of coats to build up the thickness will be dependent on the equipment used
- Test gelcoat when still wet, aiming for a wet film thickness of 500 – 600 µ

IMPORTANT: Please refer to individual product technical data sheets for specific application details or contact our technical services department for further advice and assistance.





BRUSH APPLICATION

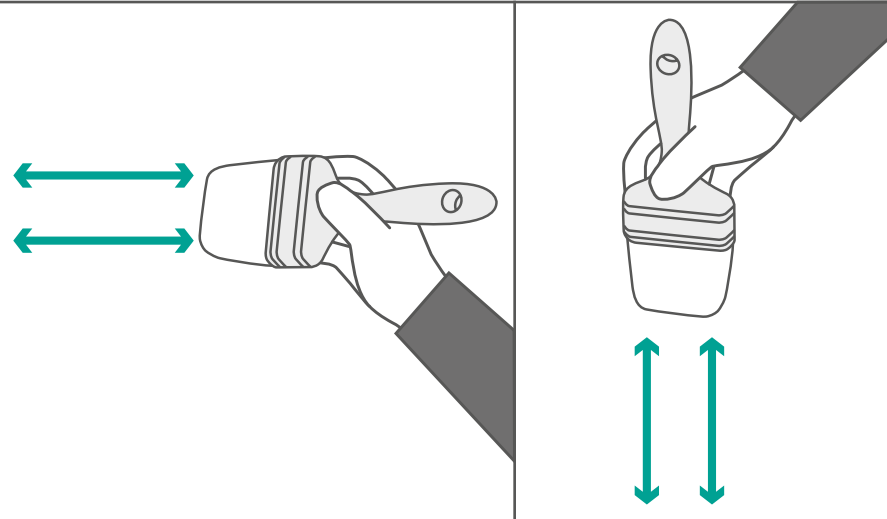
Just like spraying, brushing on your gelcoat demands equal care and attention for optimum results:

- Always use the best quality lacquer brushes with long and soft hair
- Stir gelcoat in its original packaging before use
- Decant the required amount of gelcoat into a clean pail
- Add 2% medium reactivity MEKP catalyst to the gelcoat and mix thoroughly to ensure even distribution of catalyst through the liquid
- Apply immediately using consistent continuous strokes to achieve an even wet film thickness
- Use a thickness gauge measuring tool to check the wet film thickness during application – your target should be 500 - 600 μ

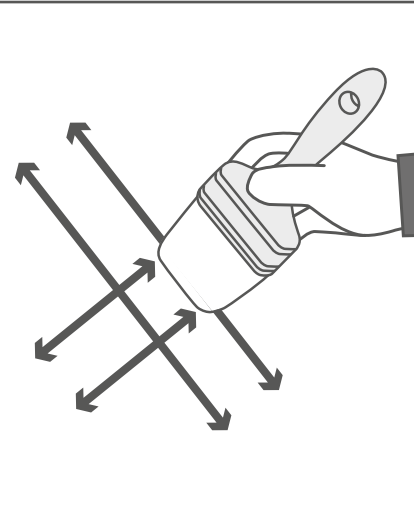
IMPORTANT: Always wear protective clothing, gloves and goggles.



CORRECT APPLICATION



INCORRECT APPLICATION



LAMINATION PREPARATION

Depending on room temperature, (16°C will take longer than 22°C) the gelcoat film will need approximately 1 – 2 hours to cure, by which time it should be firm to the touch, with a slight surface tack and ready for laminating. Deep pocketed areas of the mould can sometimes take a little longer to cure, but can be aided by improving ventilation or repositioning the mould.

Once you are satisfied that an even and complete cure has occurred you are ready to commence lamination
IMPORTANT: Do not leave the gelcoat film to cure for longer than eight hours before starting lamination. If it is left longer than 8 hours please contact Technical Support for guidance.

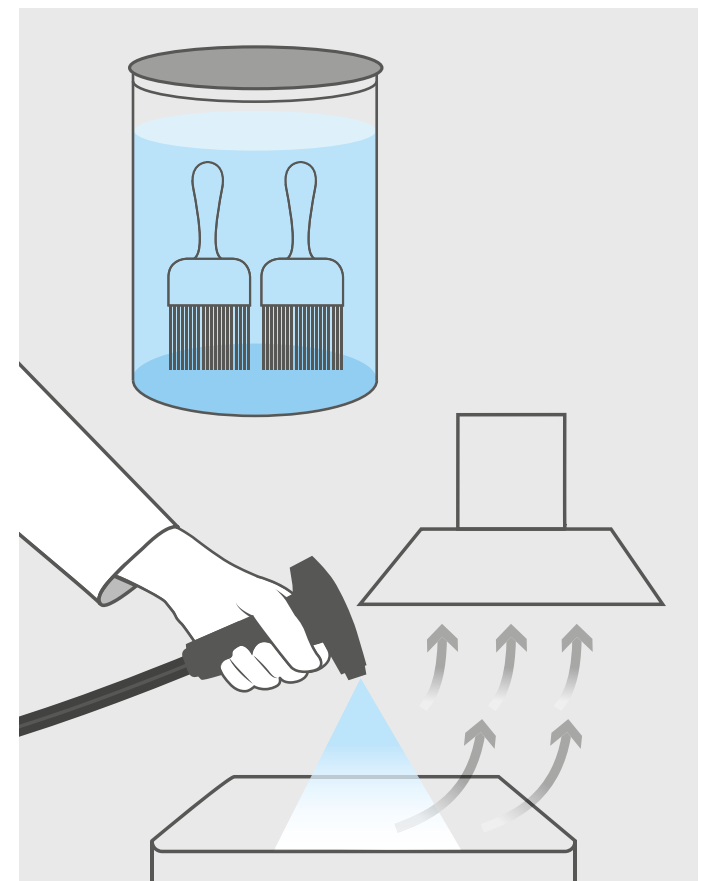


CLEANING AND MAINTAINING EQUIPMENT

If brushes are to be re-used, clean thoroughly with solvent in a dedicated area or cleaning room with adequate ventilation. It is crucial that all residual gelcoat is removed from brushes to avoid contamination during reuse. Washed brushes should then be stored, immersed in solvent inside a covered container.

Brushes need to be clean, dry and free from solvent when used for gelcoat application. Dry bristles thoroughly before use to ensure no moisture is introduced from brush to gelcoat.

Remove spray gun nozzle and flush the spray gun with cleaning agent. Clean nozzles and filters and all other components according to manufacturers' instructions to prolong the working efficiency of the equipment.



CONTINUED STORAGE AND DISPOSAL



If you still have some gelcoat left in your keg, tightly close the lid after use and store any unused product in the storeroom. Alternatively, if the keg is empty, follow existing regulations for safe waste disposal.

TROUBLESHOOTING

When handled correctly, gelcoats provide a durable and reliable finish. Here are some common reasons behind why some faults may occur:



Colour tearing

- Pigment separated from resin
- Improper spray technique
- Long geltime, sagging

Parallel cracks

- Flex cracking
- Gelcoat too thick
- Laminate too thin / flexible

Blisters on laminates

- Water ingress
- Damp reinforcement
- Air voids

Colour separation

- Insufficient mixing
- Sagging, drainage
- Poor gelcoat application

Star cracking

- Reverse impact
- Gelcoat too thick
- Crack pattern transferred from mould

Gelcoat blisters

- Air voids on release
- Unreacted catalyst
- Solvent contamination

Colour mottling

- Poor pigment compatibility
- Viscosity too low
- Gelcoat low in thixotropy

Crazing

- Chemical attack
- Excessive heat
- Contamination

Fibre pattern

- Gelcoat too thin
- High exotherm in laminate
- Insufficient cure / released too soon



Colour specks

- Poorly ground / mixed pigments
- Contamination
- Poorly maintained equipment

De-wetting (brush)

- Brush gelcoat applied too thinly
- Incompatible release system
- Contamination

Sagging

- Gelcoat too thick
- Geltime too long
- Viscosity / thixotropy too low

De-wetting (spray)

- Spray gelcoat applied too thinly
- Incompatible release system
- Contamination

Wrinkling

- Insufficient cure
- Gelcoat too thin
- Back-up too early

Gelcoat peeling

- Contamination
- Gelcoat too fully cured
- Geltime too long - release wax dissolved

Water-marking / etching

- Areas of thin, double gelcoating on mould
- Two colours gelcoated on mould
- Solvent attack

Dimpling

- Too heavy wet-on wet spray application
- Insufficient consolidation
- Contamination

Porosity

- Gelcoat too viscous to release air
- Gelled too quickly, entrapping air
- Cold gelcoat and / or mould
- Spray gelcoat applied with too high or low catalyst / gelcoat pressure

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