



Mold Manufacturing: Surfacing Direct Molds

APPLICATION GUIDE

PRODUCTS

Duratec Sealer - 823 or 5604-002
Duratec Polyester Surface Primer - 707-002
Duratec Vinyl Ester Hi-Gloss Topcoat - 1904-045
Aqua Buff 2000 Polish - AB2000

Computer Numerical Control (CNC) Milling offers the opportunity to create a first-quality mold quickly, while minimizing the cost. In mold-direct construction, the surface coat is applied last, exactly the opposite of traditional mold-making practice. The surface coat must cure in the presence of air— without the heat

from a curing laminate - to drive the reaction forward. Thus, mold-direct milling requires different performance characteristics than traditional tooling gelcoat applications

Duratec primers and topcoats are ideal for mold-direct construction. The unique Duratec air-cure chemistry has been proven over thousands of successful projects. The same performance that leads to a glossy, smooth and durable pattern surface leads to a mold with the same perfect appearance. With Duratec you will mill a quality mold and obtain a tough, durable gloss finish.

Application Conditions



The surface should be clean, dry and free from oil, grease, wax or other contaminants.



Ambient temperatures should be in excess of 64°F, 18°C to ensure a rapid & complete cure. Time calculations are based on temps of 77°F



Thoroughly stir products before use. A pain shaker or drill-mounted mixer is necessary - a stir stick is not enough.



Catalyze at 2% with full strength MEKP catalyst. We recommend Norox 925 for Polyester and 925H for Vinyl Esters.

Applying Sealer # 823 or # 5604-002

The substrate may be cut tooling board, wood, MDF, or tooling putty.

Duratec 823 is recommended for sealing MDF patterns and patterns made with combinations of plywood, wood, MDF and putty. Duratec 5604-002 is recommended for sealing oily tropical hardwoods like mahogany.

Catalyze as outlined above.

Your Duratec sealer of choice can be wiped onto the surface, or applied by spray. Apply enough to wet-out the surface, but do not build a film on the surface.

For epoxy tooling putty or paste the epoxy putty must be fully cured prior to sealing and topcoating

Recoat within 30 minutes. If the sealer cures for more than 4 hours, scuff the surface with a fine Scotch-Brite pad. Otherwise, sanding is not necessary before applying the primer.

Applying Duratec Surface Primer # 707-002

If needed, thin using Duratec Thinner 39UCE (or MEK Solvent) at no more than 10%.

Catalyze as outlined above.

Apply in 3-4 passes, waiting at least 2 minutes between passes, to a thickness of 15-20 mils.

Note: An air assisted cup gun works well, with a tip size of 2.0 mm. Orange Peel is minimized with line pressures around 30-40 psi. Allow the surfacing primer to cure until it can be sanded without plugging the paper (at room temperatures, 2-4 hours). Sand with 220-grit paper. Wipe with clean rags and acetone.

Applying Duratec Hi-Gloss Topcoat # 1904-045

To catalyze our Vinyl Ester Topcoats we recommend a low hydrogen peroxide MEKP catalyst like Norox 925H. Catalyze at 2% by weight. Norox 925H offers a lower peroxide level, which will minimize off-gassing, foaming, and pinholes.

Note: We recommend that only atomizing tips be used for applying the Duratec Vinyl Ester High Gloss. Non atomizing (FIT) tips can lead to entrapped solvents, causing pinholes and fish-eyes. With an air-assisted cup gun, a 1.8 to 2.2 mm tip works well, at 40 psi line pressure.

Best performance will be achieved using Duratec Reducer. Methyl Ethyl Ketone Solvent is an option. The Duratec Thinner minimizes orange peel and dry spray, assuring the best possible surface appearance.

Apply 15-20 mils. The first pass should be a mist pass. A mist pass minimizes fish eyes. Apply 4-5 mils per pass, with at least 2 minutes between passes. Apply the follow-up pass before the Duratec "tacks-up" to assure that each pass fuses into one continuous film.

Allow to dry and cure. At room temperature the topcoat will be sandable in about 4 hours. Inspect the surface before choosing the first sandpaper grit. If applied properly it may be possible to start with 400 grit paper, due to the smooth, defect-free surface.

Sand to the desired fineness of surface. Wait at least 8 hours from the start of sanding before polishing. This allows any trapped solvents to escape, and the film to achieve maximum hardness.

Compound and Polish with Aqua-Buff # AB2000

Polish with Aqua-Buff 2000 for a glossy, swirl mark-free finish. No surface cleaning is necessary prior to the application of release materials.

Check the material safety data sheet of your product for recommendations on protective equipment. The Duratec products are extremely flammable. Each product has a corresponding Technical Data Sheet available on our website, which includes a troubleshooting guide, general use instructions and other helpful information.

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