



## **Mold Manufacturing Application**

### **Surfacing Direct Molds**

**Products—Duratec Sealer (823A), Duratec Polyester Surfacing Primer (707-002), Duratec Vinyl Ester Hi-Gloss Topcoat (1904-045), Duratec Thinner (39LAC-1), Aqua-Buff® Tuff-Stuff® Rapid Cut Compound, Aqua-Buff® GlossMaster® Polish**

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

The surface should be clean, dry and free from oil, grease, wax or other contaminants. Ambient temperatures should be in excess of 60°F, 16°C (68°F, 20°C for Vinyl Esters) to ensure a rapid and complete cure. Time calculations are based on temperatures of 77°F, 25°C.

Thoroughly stir all Duratec products with a drill mounted mixer.

#### **1 Apply Duratec Polyester Sealer.**

The sealer is catalyzed with 2% mekP Catalyst (Norac925 is ideal). Duratec 823A can be wiped onto the surface, or applied by spray. Apply enough to wet-out the surface, and do not build a film on the surface. (If using expanded polystyrene foam, or an oily wood, such as teak or mahogany, see the end notes.)

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

#### **2 Apply Duratec Surfacing Primer.**

Filter to assure that any agglomerated pigment is removed. Add up to 10% Methyl Ethyl Ketone Solvent (or Duratec LAC-039 Thinner) to achieve a fine spray and coating atomization. Catalyze with 2% mekP Catalyst. Apply in 3-4 passes, waiting at least 2 minutes between passes, to a thickness of 15-20 mils, 375-500 microns.

**Note:** *An air assisted cup gun works well, with a tip size of 2.2-2.5 mm. Orange Peel is minimized with line pressures around 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.

### **3** Apply Duratec Vinyl Ester Hi-Gloss Topcoat

The Vinyl Ester Topcoat must be applied in a dust-free area. It is critical that sand and dust, or shop grit, not be allowed to drift onto the Vinyl Ester High Gloss until it has cured tack-free.

Thoroughly mix and filter the Vinyl Ester Topcoat. Once again, use 2% mekP catalyst. It is critical that a low hydrogen peroxide catalyst (less than 1%) is used. (Higher peroxide levels will lead to 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 LAC-039 Thinner. 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, 375-500 microns. The first pass should be a mist pass. A mist pass minimizes fish eyes. Apply 4-5 mils, 100-125 microns 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.

### **4** Compound and polish the surface with Aqua-Buff

Remove scratches with Aqua-Buff Tuff-Stuff Rapid Cut Compound and polish with Aqua-Buff GlossMaster Polish for a glossy, swirl mark-free finish. No surface cleaning is necessary prior to the application of release materials.

**SAFETY PRECAUTIONS:** Polyester Sealer, Polyester Surfacing Primer, Vinyl Ester Hi-Gloss Topcoat, and Thinner are extremely flammable. Do not apply near sparks, open flame or heat. Keep area ventilated. Do not smoke. Avoid continuous breathing of vapor. Do not take internally.

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