

# Gel Coat vs. Polyurethane Finishes

Most manufacturers of all-fiberglass industrial doors use gel coat as the surface finish provided on their exterior door and frame products. Regardless what these door makers may say about the performance or appearance of this surface finish, its use is driven by manufacturing considerations, and not aesthetic or product performance advantages.

## What is a Gel Coat finish?

Gel Coat is a pigmented polyester resin used in open molding, bag molding, and resin transfer molding processes. Its use is necessary for the following reasons:

- 1) It serves as a release agent to prevent the piece part from sticking to the mold in which it is being made. Without gel coat the liquid resin would eat through the wax applied to the surface of the mold and would bond to the mold. Gel coat cures too quickly to attack the wax layer so the finished molded door will not adhere in the mold.
- 2) Since the gel coat becomes the outer surface of the part, UV stabilizers must be added to the gel coat formulation to protect the underlying resin. Pigments are added to the gel coat to impart the desired finish color.

For some door manufacturers, UV stabilized gel coat is not standard and must be specified as an option. Kept under cover or out of direct sunlight, non-UV stabilized gel coat finish will last for years. But the same finish will oxidize quickly in direct sunlight resulting in dulling, chalking, and cracking, as is so often seen on poorly maintained fiberglass boats that do have UV-stabilized gel coats. Non-UV stabilized gel coat should never be used in exterior locations.

Proper application of a gel coat finish is also critical. An application thickness of 15 mil is optimal. Gel coat is brittle, so excessive thickness can cause cracking

and crazing due to the normal flexing and twisting that swinging doors are subjected to in use. If applied to less than 8 mils, the gel coat will lift and wrinkle like the hide on an alligator's back, a phenomenon known as alligation.

As owners of fiberglass boats sometimes come to understand, there are two more potential drawbacks with gel coat: Moisture penetration, and repair of cosmetic damage. Water can penetrate gel coat through fine cracks or through the finish itself to cause blistering or separation via freeze/thaw processes. If a gel coat finish becomes damaged it is very hard to repair, requiring specialized skill and experience. Gel coat is very difficult to post apply, as it must be catalyzed, giving it short working times, and its high viscosity makes it difficult to apply smoothly.

## Why we use polyurethane coatings

The aliphatic polyurethane coatings applied to our all-fiberglass pultruded products are the highest quality industrial finish available on the market today. This finish is used worldwide for the toughest applications, from off-shore oil rigs to amusement parks to industrial plants. Polyurethane finishes have better UV protection and resistance to airborne corrosive agents, and are not susceptible to chalking, discoloration, or leaching. They maintain a high gloss appearance and flexibility for many years, even in full sun exposure and corrosive environments.

Repair of surface damage is easy with all-fiberglass pultruded products. Any body filler suitable for use on fiberglass can be used to repair damaged areas, and polyurethane can be applied using conventional methods to repair the finish.

The finish on all of our products is applied to a thickness of 5 mils. We offer 10 standard colors, and can match custom colors, or provide a primed finish only.