SCIGRIP® arjay™ THE FUTURE OF PERFORMANCE BONDING™

Pro-Tip Series

PRO TIPS

Troubleshooting 2-Part Molds

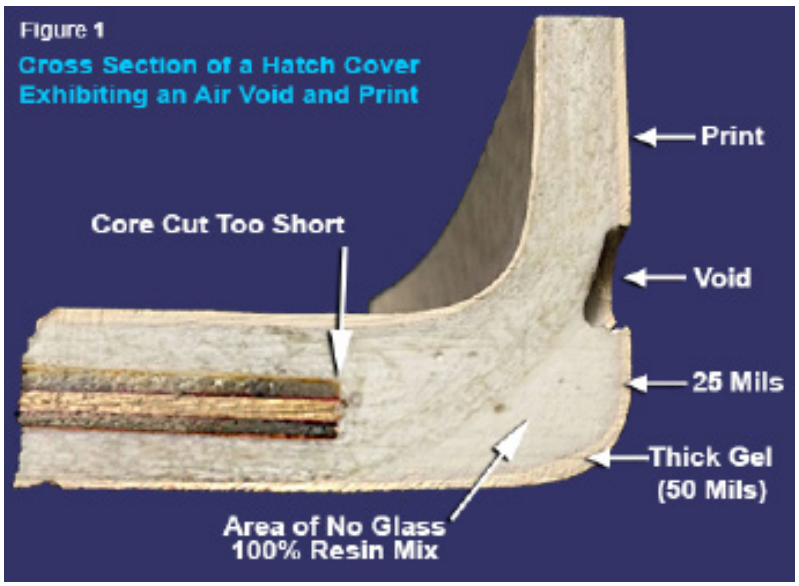
2 Common Pitfalls to Avoid

By Bob Cottrell, CPIM

An increasing number of boat builders are using one of several 2-part molding processes for making small parts. Regardless of the specific method used, there are certain basic principles which, if not followed, will most likely lead to defective parts requiring final finishing. This is counterproductive to some of the presumed original reasons that two part molding was adopted – consistency and labor reduction.

What are two of the most common principles that we see violated?

- Establish and maintain proper core dimensions
- Maintain appropriate gel coat thicknesses



These may seem like obvious points, but the cross section shown in Figure 1 illustrates just how straying from these principles causes defects – in this case air voids and print.

Note first that the core stops far short of the vertical return of the hatch. This allows the fiberglass (the darker portions of Figure 1) under the core to take a "shortcut" and creates a space in the corner where resin (or resin mix) pools. This is a problem for a couple of reasons. First it leaves a large unreinforced area behind the gel coat in a particularly vulnerable (to potential blows) area. But, also, the large pool shrinks more than the surrounding glass/resin matrix, creating stresses that pull on the gel coat and create print.

How far should the core extend? Ideally, it should be cut so as to fit halfway into the laminate thickness of the vertical return. If this were the case in Figure 1, the glass under the core would be forced into the corner eliminating the pool and reinforcing the gel coat.

Notice that the air void is located at the top of resin pool under the fiberglass. With a proper fitting core, this air bubble would have had no place to "hide" and would have been flushed out.

The other contributing factor to the print which this part exhibits is the uneven gel coat thickness. As seen in Figure 1, the gel coat is 50 mils thick in the corner and half that thickness on the nearby sidewall. This magnitude of variation – particularly in the corner of a female mold – is a well accepted recipe for prerelease and print of the gel coat.

The main cause of excessive variability in gel coat thickness in smaller parts is too high of an application rate. The material is exiting the spray gun faster than the operator can deal with it. A smaller tip, reduced pump pressure and additional operator training may be in order. While maintaining a gel coat thickness tolerance on small parts of 18 to 20 mils is probably a dream, 15 to 25 mils should be possible and should resolve most associated problems.

Arjay Technologies, Inc.
2020 Wild Acres Road • Largo, FL 33771
Sales: 919.598.2400
Fax: 919 598 2439
Email: sales@arjaytech.com
Online: www.arjaytech.com