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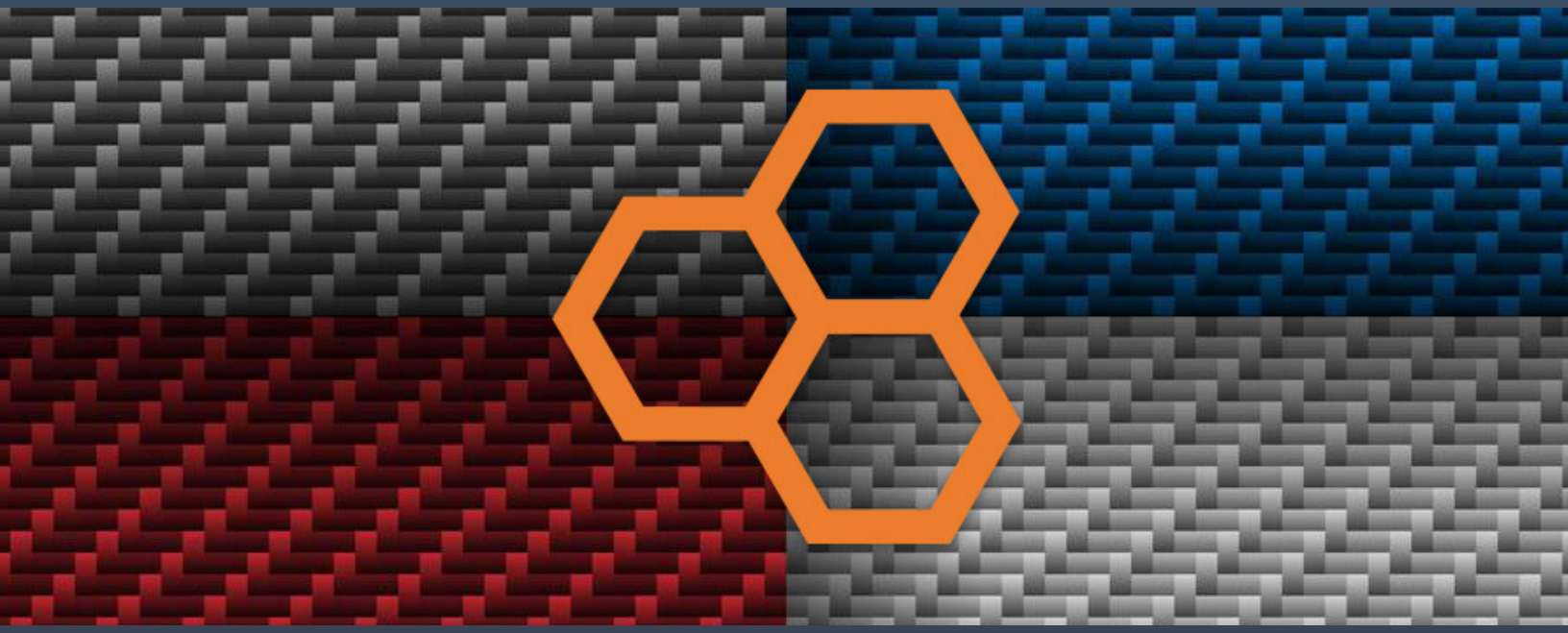
PRACTICAL AND INSIGHTFUL COMPOSITES INFORMATION



# WHAT TO DO WHEN YOUR PART STICKS IN THE MOLD

COMPOSITE ENVISIONS

# MOLD PART STICKING

There are various reasons as to why a part may stick to a layup mold. Most often, the mold release that was used may not have been applied adequately or the wrong mold release could have been used. These problems may also be caused by bad batches of mold release. Regardless, if the part is stuck, the following actions and tools may help to recover the mold surface and possibly the part.

It is important to keep realistic expectations on a part when it is stuck in or on the mold. This can be a frustrating and non-ideal situation that can easily result in a scrap part and/or a scrap tool, dependent on the material. The mold surface is of utmost importance even if the part is scrap by the process.

Tools Needed for part extraction:

Proper stripping tools should always be used when prying parts away from their mold surface. Most mold surfaces are very easy to scratch. Non marring tools are a must have in all stripping processes, especially in this process. Many kinds of metal scrapers will scratch softer metal tools and / or gel coated tooling surfaces. Use of a flathead screwdriver is not advised.

1. Filed Fiberglass / Carbon Fiber Shims: Fiberglass shims are often used as a pry bar to drive between the two stuck surfaces. Carbon Fiber also makes a good shim material as it is stiffer, and more leverage can be applied to it without the shim bending. A sharpened shim is a good tool in creating any space between surfaces.
2. Rubber mallet
3. Mold release
4. If given access to an air hose it may help with separating the part from the mold.
5. Brass Scraper

Look for an area in the part in which any leverage could be placed upon the part's surface to pry against the mold surface. Ideally this would be in a thicker area of the part in which the force applied would not delaminate the plies or crack the part.

Grab a shim and rubber mallet, keeping the mold release and air hose close by. Depending on how much the part will move from the mold surface can give an idea of how thin of a shim to use. The important part of this is finding something thin enough to get in between the 2 parts. Using a rubber mallet, drive the shim between the 2 pieces as far as it will go without digging into the mold surface. This should create some sort of separation between the two surfaces. If any separation is created, pour some mold release into the cavity, and use the air hose to drive any additional separation. This may cause small pieces of the part that are stuck to free from the mold surface. With the initial separation created, repeat the process around the perimeter of the part, building the shims up in any area that will increase the separation. The separation will likely occur little by little. Eventually one of two events will occur. The part will eventually give way from the tool surface or the part will crack under the force given by the shims. Be wary of applying force to sharp or steep angles in the part/

tool surface in which the part may buckle in the mold, causing delamination. Patience is key throughout the process. A rush during the stripping process could cause a part to crack, delaminate, or be completely scrapped beyond repair.

Usually, the tool surface resin or metal tools have a harder surface than that of the composite part. The tool design is adequately completed, the part would crack before any permanent deformation occurs tot the tooling surface.

As the part releases from the mold surface, it is likely that pieces of the original part will be stuck to the mold. The part's mold side surface will have likely had imperfections and/or laminate resin /fabric bonded to the mold surface. For these pieces left on the tool, use a brass scraper or composite scrapper and rubber mallet to remove the high spots and remnant pieces as part of tool cleaning and prep. It is also likely that these pieces do not simply chip off the tool, in which handing sanding the areas down to the original tool should occur. Precise care and precision should be practiced to not damage the tool surface. Use of hand sanding with a block are useful along flat parts of the tool. Be sure to not angle the tool in such a way that drives the paper into the tool. For female radii along the tool, roll a piece of sandpaper in the areas that have remaining pieces and file them away.

If separation cannot be achieved, likely mold release was not applied, or the wrong type may have been used. Scrapping the part and tool should be the last option dependent on the economic impact of the tool or part.

If there was any tool prep completed with mold release the above process should work. If the part still will not come out of the mold, the scrap part will still need to be taken from the mold surface. If the part is broken, use the fiberglass shim to create any space or to jar any pieces of the part from the mold surface. Once this has been done lightly sand to remove the remaining pieces. Sand all pieces out of the mold surface using care to mitigate damage done to the tool surface.

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