

Back-To-Basics: Fiber-Reinforced Plastic Repair



Sometimes going back-to-basics can make the difference between a quality repair and a failed repair. Although fiber-reinforced plastics (FRP) usage and repairability is limited on today's vehicles, here are a few things to consider.

One type of FRP is sheet-molded compound (SMC). SMC is smooth on both sides with fiber reinforcements in the middle. The fibers are not visible unless cracked.

Here are a few characteristics of FRPs and how to avoid failed repairs:

Check with the vehicle maker for repairability restrictions, guidelines, and procedures.

When fibers are exposed, oils and solvents can easily be absorbed into the fibers.

When preparing a panel for repair, make sure all exposed fibers are taped off before using wax and grease remover to ensure that the fibers do not trap solvent, which can lead to delamination.

Clean repair area with a vacuum or compressed air with no oil in the lines.

Can crack in other areas other than the point of impact (like mounting points).

Check other areas of the panel for cracks or chips to protect any exposed fibers. Some cracked parts, such as radiator core supports, are generally replaced.

Another type of FRP is carbon fiber. Carbon fiber is woven fibers imbedded in resin or plastic made of epoxy, vinyl ester, polyester, and nylon. In some cases, the woven fibers are visible. Use of carbon fiber is not widespread on vehicles yet. Its use is mostly limited to high-end vehicles or aftermarket accessories. There are several repair options for carbon fiber depending on damage and vehicle maker repair procedures. These include vacuum bagging, adhesive bonding, rivet bonding, and conventional composite/SMC repair. It is important to note that exposed weave carbon fiber may be limited to minor surface repairs due to the fact that repairs below the resin layer will be visible.

Always follow product maker and vehicle maker SOPs to ensure a complete, safe, and quality repair.

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