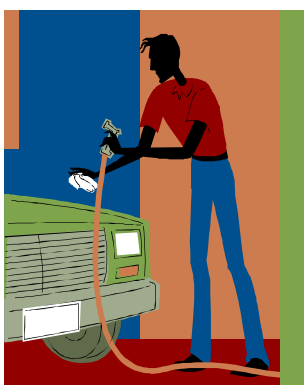


Tech Tip - More About Flexible Epoxies

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As promised, we are continuing our feature from the last issue on the subject of flexible epoxies or flexible adhesives as requested by one of our readers, Donald Loomis. Flexible adhesives can be one of your best friends for some challenging repairs. We will look at some typical repairs that work well using flexible epoxies. First, we want to thank our good friends at **SEM** (especially **James Hussey**) and **Urethane Supply Company (USC)** for their extensive technical expertise and much-needed help with this article.

In order to discuss epoxies, we need to talk first about the types of plastic we will "be fixin'" (as my good friend Clay Williams from Georgia would say).



(If you're acronym-phobic, then skip this section.) Most plastics today are identified using an acronym such as ABS, TPO, PP, PPO, EPDM, TPE, TEO, PC, PUR or RIM. Plastics such as TPO and TEO contain a nasty little compound known as "olefin". This olefin compound closely resembles a kind of wax.

Olefin is an important component in resolving the difficulty of recycling plastics as well. It can be difficult to recycle plastic since many different and incompatible types of plastic must often be processed together at the same time. In the recycling process these many types of plastics are run through a hopper that chips them up in small pieces. Then they are heated. Olefin is added to melted plastic to get all the different types of plastic to combine. Think of it as the "glue" that holds the different types of plastic together. The problem that arises for us technicians lies in the nature of olefin. Due to its waxy nature it can be difficult to get anything to stick to it. However, don't be intimidated. With today's technology and a little know-how, most of the plastic you will encounter can be repaired quite easily.

When repairing any type of plastic, it is important to choose the right product for the job. Equally important is to clean the plastic using the products and methods recommended by the manufacturer of the repair material. This usually includes a cleaner to remove water-based contaminants and a separate cleaner to remove solvent-based contaminants. If the surface is not cleaned properly, poor adhesion of your repair material may result. Additionally, some manufacturers will recommend using an adhesion promoter to improve the adhesion of the repair material to the plastic.

SEM offers several solutions when it comes to plastic repair. One solution includes using epoxy-based fillers, and the other includes using polyurethane-based adhesives.

Epoxy-based fillers bond mechanically to the substrate while providing superior sanding characteristics for cosmetic repairs, such as cracks, gouges, abrasions, and punctures. **SEM** recommends **39767 PROBLEM PLASTIC REPAIR MATERIAL** to repair most thermoplastics, including ABS, PP, TPO, PPO, EPDM and TPE. The nice thing about this product is that an adhesion promoter is already built in, saving the user time and money. **SEM** also offers **39927 FLEXIBLE SEM WELD**, which may be used on very flexible thermoset plastics such as PUR and RIM. Both products provide 3-5 minutes of working time and can be sanded in just 15 minutes.



Polyurethane-based adhesives rely on a chemical bond for durable structural repairs, but lack the sanding qualities of epoxies, making them more suitable for multi-purpose bonding applications. **SEM** offers **4020 QUICK SET 20** and **4050 QUICK SET 50**. **4020 QUICK SET 20** has a 20-second working time, while **4050 QUICK SET 50** has a 50-second working time. These versatile adhesives are perfect for bonding backer panels, moldings, emblems, small plastic, metal and aluminum parts, as well as repairing or replacing broken tabs. Both set in less than 5 minutes and can be drilled or tapped, making these products extremely valuable in the time and money they save the user.

According to Keith Lammon from **USC**, the company recommends that you use their plastic welder for the structural part of the repair and then use their epoxy filler for the cosmetic aspect of the repair. They designed the epoxy filler to be easy to sand, which compromises the strength of the epoxy but is not an issue since the structural strength of the repair is in the plastic weld.