



Plastic Pointers

The Newsletter on Repairing & Refinishing Automotive Plastics

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Cut the Confusion! An Easy Guide to Bumper Repair.

One of the best things about *Plastic Pointers* is that you get the latest information about plastic repair as it comes available. Urethane Supply Company is the only company in the industry which publishes up-to-date technical information on plastic repair for our customers' benefit.

The only problem is that, with all the new information we throw at you every quarter, it can get kind of confusing! With this issue, we'd like to cut the confusion for you. **This will be our first issue devoted to solving a specific problem.**

In this issue, we'll cover bumper repair -- the most common problem



Urethane? TPO? Xenoy? Sometimes it's hard to tell. In this issue, we cut through the confusion.

in plastic repair. We've covered a couple of these problems separately in past issues, but we wanted to bring everything together to help make plastic repair easier for you!

Identifying the Plastic

This is the most important step, because if you can't identify the plastic, you won't be able to choose the proper repair method.

Unfortunately, this is the most confusing area. It used to be that all urethanes were yellow, but now they're making them gray, black, and white, so it's harder to tell them apart.

Identifying the Plastic

When your lawn mower won't start, what's the first thing you normally do? Overhaul the carburetor, right? Wrong! You do the easiest thing first-- like making sure you've got some gas in the tank!

Let's use the same method for plastic ID -- keep it simple. Just follow these steps one by one, starting from the easiest point.

1. If It's Yellow, It's Urethane -

Although urethanes are being made in gray and black now, nothing else is made in yellow. If it's yellow, go on to the repair step! This stuff isn't so hard, is it?

2. If It's Hard as Nails, It's Xenoy -

Although Ford has pretty much dropped this material, it's still being used by Mercedes and Hyundai. It's the most rigid bumper material.

3. Check the ID Symbol -

If the bumper's gray or black on the backside and you can't tell by how hard it is, the next easiest way to figure it out is to look for the ID symbol on the backside of the part. The symbol's probably going to be one of the following. If it's not, call us toll free and we can help you.

- **Urethane** - PUR, RIM, RRIM
- **TPO** - TPO, TEO, PP, PP+EPDM, PP+T-20
- **Xenoy** - PC + PBT

4. Grind It - First, take a some coarse sandpaper in a high speed rotary grinder and lay into the plastic on the backside. If it melts and smears, it's TPO.

5. Melt It - Take your hot welder tip and press the corner of it deeply into the plastic on the backside. After the plastic cools, if the plastic is still sticky and gooey where you melted it, it's urethane.

6. Make a Test Weld - Pick a couple of rods of the type of plastic you think it might be and make some small test welds on the backside of the part. The rod that sticks best will be the one to use.

7. Use Uni-Weld Ribbon - If all else fails, use Uni-Weld Ribbon. You can make a quality repair on any bumper with the Uni-Weld. It's the best way to fix TPO bumpers and it works great on urethane and Xenoy, too.

Luckily, over 95% of the bumper covers are made from one of three types of plastic, so by following our simple tips in the "Identifying the Plastic" box, you'll quickly be able to tell what's what.

Always Clean the Plastic

Once you've identified the plastic, pat yourself on the back -- you've finished the most difficult part! The next part is so easy, anybody could do it. The only problem is, most people don't!

Many plastic repair problems occur because, out of laziness, people skip the cleaning step. Cleaning the bumper thoroughly will help you

both in the repair and refinishing steps.

First, clean the bumper with soap and water and a gray scuff pad, inside and out. Let the water dry or wipe off and blow dry with compressed air.

Spray on a heavy wet coat of 1000 Super Clean Plastic Cleaner. This will float all the oil-based contaminants. Wipe off while wet with a clean cloth. After this, the plastic will be squeaky-clean and ready for you to begin the repair process.

Follow the repair process described here for the type of plastic you're working with.

Howdy Pardner! See us at NACE 1998

Join us at the world's biggest automotive collision repair convention in Dallas, December 4 - 6! We'll be in **Booth 1235**, so please stop by and see our latest products and demonstration materials.

Repairing Urethane (PUR)

Once you've identified the plastic as urethane and you've cleaned the part as described, you're ready for the easy part... the welding.

PUR is a thermoset material. Similar to what happens when you mix body filler and cream hardener, it is formed when two liquid chemicals come together in the mold to form a solid.

The point is that you cannot melt urethane bumpers with the welder. Repeat: **YOU CANNOT MELT URETHANE BUMPERS WITH THE WELDER!**

If you lay your hot welder on a urethane bumper, a foaming, brownish liquid may form, making you think that you are melting the bumper. You are actually **destroying** the plastic! Touch this "melted" plastic with your finger after it cools. If it's still goeey, you can be sure you're working with a urethane.

The key to making a urethane repair is *don't melt the bumper*. Simply melt the **5003R1 Urethane Welding Rod** into the v-groove. The repair is actually more like a braze or a hot-melt glue repair instead of a true fusion weld. Don't worry about the strength, though. Done properly, a urethane weld is stronger than any true fusion weld on any other kind of plastic.

Here's the step-by-step procedure for making quality welds on PUR:

1. V-Groove and Grind - Line up the outer surface of the tear with **6481 Aluminum Body**

Tape or with clamps. You can also tack the tear together with **2100 Insta-Weld 1** thin adhesive. V-groove the backside halfway through the part with the **6121 Teardrop Cutter Bit** then sand the v-groove and surrounding area with 50 grit sandpaper to put some extra "tooth" in the plastic.

2. Melt the Rod Into the Groove

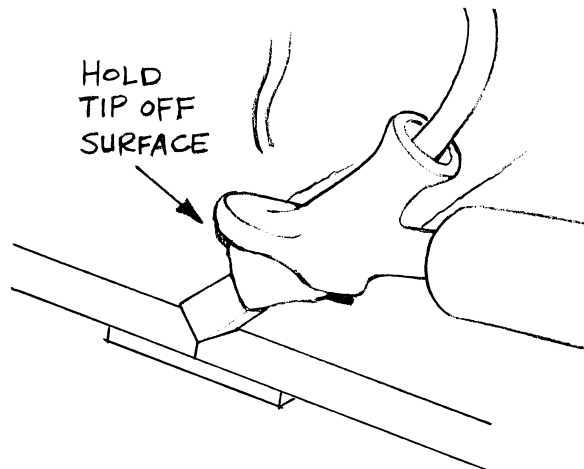
With your airless plastic welder set at the "clear" rod setting, melt the rod into the v-groove. The rod should come out of the bottom of the welder's shoe completely melted and clear, not discolored or bubbling. When depositing the rod into the v-groove, hold the base of the welder tip off the surface of the bumper slightly to prevent from overheating the bumper.

Weld about two inches of the tear at a time. Remove the rod and go back and smooth the weld with the tip of the welder. On the backside, overfill the v-groove and smooth out on the sanded area outside of the v-groove.

3. Cool and Weld

Frontside - After letting the weld on the backside cool or force cooling it with a wet rag, remove the aluminum body tape from the front side and v-groove the tear. Feather the v-groove out onto the paint with some coarse sandpaper.

As on the backside, just melt the rod into the v-groove without melting the bumper. When the weld cools, grind it slightly flush and apply **2000 Flex-Filler 2** flexible epoxy filler as a cosmetic finish.

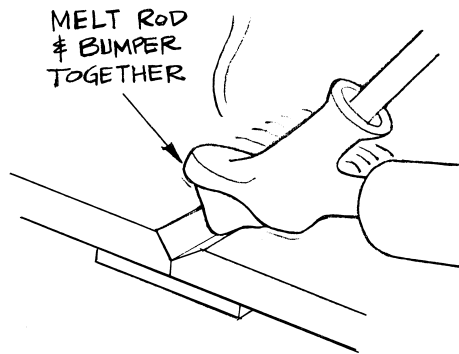


Repairing Xenoy (PC-PBT)

Outside of urethane, all other bumpers, and most other plastics on automobiles, are made from thermoplastic materials. This means that they can be melted with the application of heat.

After you've got the tear v-grooved and sanded, use a heat gun to preheat the tear about three or four inches at a time. Keep the heat on it until it starts to get glossy.

Using the **5003R7 Polycarbonate Rod** and the airless plastic welder set on the highest heat setting, melt the rod into the v-groove



about two inches at a time. Remove the rod, then go back over the weld and melt it into the base material. Be patient, it may take some time to get a good melt-in with the base material.

You can do a "stitch-tamp" method by mashing the tip or edge of the welder's shoe to help force the mixing of the the rod and base. Apply more welding rod if necessary, then finish the weld by smoothing the entire area with the welder's foot.

Cosmetically finish the area with **2020 SMC Hardset** rigid epoxy filler.

Repairing TPO (TEO, PP-EPDM)

TPO is the most common bumper material today. Between 70 - 80% of all late model bumper covers are TPO. It has taken over the urethane bumpers because it's cheaper and it's recyclable.

TPOs are thermoplastics, so they're meltable like Xenoy. The problem is that there are several manufacturers of TPO, each making dozens of different blends. In fact, Philip Yaneff, senior research associate at DuPont Canada says "TPOs are becoming a garbage can for other materials. Manufacturers are throwing all kinds of stuff in there."†

Our **5003R5 TPO rod** is only a single, generic blend of TPO, so it won't match any TPO material exactly. That's why we recommend using our **5003R8 Uni-Weld Ribbon** on TPOs. It sticks to anything and you get the added benefit of great featheredging when sanded.

Because Uni-Weld is a unique product, it has to be applied in a different manner. This is a short course on how to use the product. If you need more information, check out our website or call us toll free.

1. Sand Backside - After cleaning the part, grind the backside with 36 - 50 grit sandpaper in a slow speed electric grinder. Grinding too fast will melt the plastic!

2. Melt In Mesh - Using the airless plastic welder on its highest setting, melt a piece of **2045W**

Stainless Steel Wire Mesh directly into the plastic on the backside. If the part is torn to the edge, leave 3/4" of mesh hanging off the edge so you can wrap it around into the v-groove on the front side.

3. Knock Off the Gloss - The plastic you melted to sink the mesh in now has a glossy appearance. Quickly knock off the gloss by hand with some coarse sandpaper.

4. Apply Uni-Weld Ribbon - Using the 6028RT Round Tip on the airless plastic welder, melt Uni-Weld Ribbon onto the surface. As with the urethane, do NOT melt the base material. The Uni-Weld is like a hot glue -- just melt it on top of the surface.

It helps to premelt one side of the rod before sticking it down onto the bumper. Use the round tip to spread the melted Uni-Weld over the mesh and smooth it out. The thicker you apply the Uni-Weld on the backside, the stiffer your repair will be.

5. V-Groove & Weld Frontside - Once the backside repair cools, make a 1 1/2" or 2" wide v-groove in the frontside and roughen it up with coarse sandpaper in a low speed grinder. Melt the Uni-Weld into the v-groove and spread it around. Overbuild the surface slightly to get a good surface for finish sanding.

† Industrial Paint & Powder Magazine, Sept. 1998

