



You are not limited to using chemical bonding only on panels that are not bolted or riveted. Applying a bonding agent to mechanically-attached panels reduces stress, fatigue and noise from flexing.



Follow the adhesive manufacturer's instructions for surface preparation. Metal panels may need to have their galvanic coating removed before the panel is applied to the structure. At the same time, care needs to be taken not to compromise corrosion resistance at the repair area.

Mercedes-Benz



First, squeeze one inch of bonding material out of the tube, then install the static mixer and discharge another inch to “equalize” the mixture. This will ensure equal and properly mixed adhesive material.

automotive applications, however. It is a very thin liquid and doesn't fill gaps satisfactorily. As a result of being thin, it doesn't work well with porous materials, either, but it can be used in low-stress minor repairs on metal or plastic just make sure you have a tight fit with minimal air gaps.

Next, there are bonding glues. These are usually epoxy-type adhesives, but can also be composed of acrylic or methacrylate compounds. These adhesives are strong and well suited for automotive applications. They apply as a gel/heavy liquid so they tend to stay where they are applied. Being thicker, they fill surface irregularities fairly well when bonding panels. They are not as temperamental as some other adhesives, but there are some conditions we need to know to get the best performance out of them. The number-one thing to understand is that these bonding adhesives dry by chemical reaction. You will usually

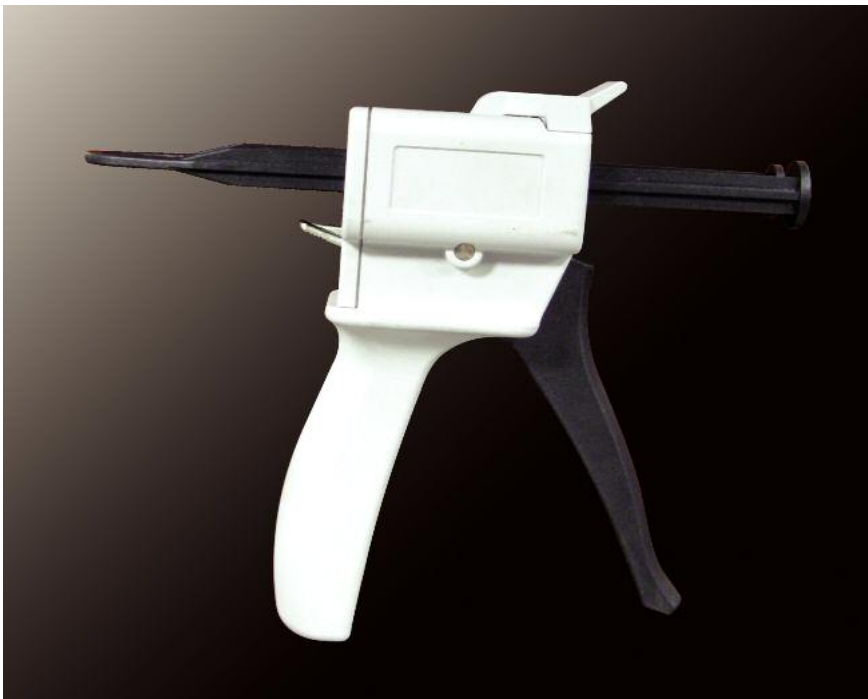
see an adhesive compound mixed with a hardener similar to that used with body filler. This chemical reaction usually occurs best at 75 deg. F. and will take about an hour or somewhat more to dry. It will take roughly four hours to fully cure, but you can continue repairs after the first hour. Acrylics may dry faster, but their strength limitations should limit them to smaller repairs.

Urethane adhesives are also useful in automotive applications. While not as strong as epoxy bonding glues, it can be used for larger plastic repairs found on bumpers, brackets and/or backing panels. It can also be used for grille, headlamp assemblies, moulding and emblems. It is thicker than cyanoacrylate, so it fills gaps well and stays where it is applied. It does have a very short working time of under a minute, so be prepared to fit components together quickly. It is a two-part adhesive that needs to be mixed before application.

The Application Process

As in any collision repair, surface preparation is often the most time-consuming step. It is always a good idea to remove as many layers of coating as possible so the adhesive can bond to the

The two-part adhesive plastic housing fits into this applicator gun. The gun is necessary if you're going to use the new applicator kit. Its small size makes it ideal for smaller patch panel and full panel bonding.





Mercedes-Benz requires all chemical bonding to be supported by some mechanical attachment such as spot welding. Or, when attaching dissimilar metals, you can use these special structural rivets, which are available from your Mercedes-Benz parts supplier.

mechanically strongest surface. Different bond agents are available for metal and plastic attachment. Follow the instructions of the adhesive manufacturer regarding bonding surfaces preparation. In any event, you will need a clean surface to begin. Start off by cleaning with soap and water. Follow up with an astringent used in plastic prep. This provides an oil-free surface that will not contaminate adhesive chemicals. Sandpaper of 180 grit will provide an optimal surface for the adhesive to bond to. It is very important that all the loose material from sanding be removed before application. Thoroughly clean the surface once again with prep cleaner to prepare for the adhesive application.

If an epoxy requires a two-part mix, don't just "eye" it. Use a glue gun with a static mixer. It is mere-

ly a plastic tube with groves that direct the adhesive mixture together for proper consistency. Before installing the static mixer, "equalize" the mix by forcing about one inch out of the tube. Then, install the static mixer and again squeeze out a small amount of adhesive. This starts off the mixing process correctly. Depending on the application, apply a bead about 10 to 13mm wide at the panel contact points. While the chemical reaction is occurring, you'll notice that heat is being generated. This is normal. Remember how long the working time of your adhesive is. Since the reaction is temperature sensitive, you can control it to some extent by heating or cooling the area. Heating will speed up the drying process. You can use a heat lamp and bring the area up to about 140 deg. F. Apply the panel to the vehicle and make sure of its

alignment with other body panels. Do not pull up on the panel to reposition it. Instead, slide the panel into its proper position.

Clamping

During this time body repair panels should be clamped together to hold them in the proper position, force the adhesive into surface irregularities, and squeeze out excess adhesive. Many automotive bonding agents contain glass bead, which provides a heavier consistency. Once again, this helps fill gaps and maximizes the surface area of the bond, which leads to more strength. This is a result of a material's "bond line control," which is its ability to maintain thickness under clamping forces. Use as many clamps as you can fit and make sure they hold the panels tight. At this point take a clean rag or acid brush to remove any excess adhesive material before it dries. Of course, once it dries it will be a lot harder to remove. If you can, schedule your work so you can let the bonding material cure overnight. As mentioned earlier, you can heat the area to reduce the curing time if necessary.

Once the adhesive is fully cured, you can continue with your repair. With a proper bond, you have returned the structural integrity of the vehicle as close as possible to its pre-collision state. Proper repairs not only affect crash worthiness in future accidents, but also the resale value of your customer's Mercedes-Benz, although these points are often overlooked. Your peace of mind comes from knowing you performed the best job you could. ■