Uniform Procedures For Collision Repair

PR11–Plastic Repair, Adhesive

 v.2.3

1. Description

This procedure describes methods for making adhesive repairs to most types of exterior and interior automotive plastics. Procedures for reshaping plastic parts are also included.

2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality adhesive repairs to plastic parts. This procedure is intended for use by professionals who are qualified through training and experience.

3. Referenced Documents

The following documents are considered part of this procedure by reference.

3.1 Procedures

HM01 Hazardous Materials
PS01 Personnel Safety
RF01P Surface Preparation

3.2 Other Information

Equipment-specific information
Product-specific information
Vehicle-specific repair information

4. Equipment And Material Requirements

4.1 Equipment

The use of this equipment is included in this procedure:

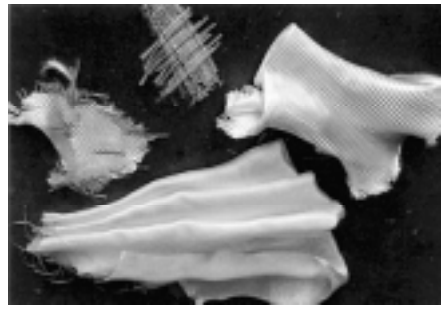
- ❑ die grinder
- ❑ disc grinder
- ❑ vacuum sanding system
- ❑ propane torch
- ❑ heat gun
- ❑ hot water tank
- ❑ dispensing gun for adhesive cartridge
- ❑ mixing nozzles for adhesive cartridge

4.2 Repair Materials

The use of these materials is included in this procedure:

- ❑ two-part adhesive
- ❑ adhesion promoter
- ❑ fillers designed for plastic
- ❑ aluminum body tape
- ❑ plastic surface cleaner

4.3 Reinforcing Materials



Adhesive repairs to plastics may require the use of reinforcing materials. The use of these reinforcing materials is included in this procedure:

- ❑ loosely woven glass cloth
- ❑ unidirectional glass cloth
- ❑ nylon or glass tape

Fiberglass matting should not be used as a reinforcement because it does not allow the adhesive to penetrate.

5. Damage Analysis

Does not apply.

6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Plastic Repair Safety

To prevent injury when repairing plastic parts, wear these protective items:

- ❏ rubber gloves
- ❏ cotton gloves
- ❏ chemical respirator, NIOSH-approved for chemical vapors
- ❏ long-sleeved shirt
- ❏ safety glasses or face shield

Follow the adhesive product maker's recommendations when cleaning and wiping plastics, to avoid the buildup of static electricity and the possibility of fire.

7. Environmental Safety

7.1 Hazardous Materials

Hazardous material safety information is in **HM01**.

8. Vehicle Protection

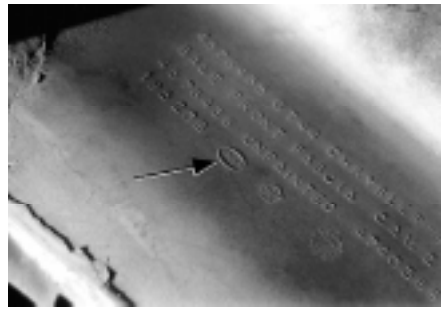
8.1 Adjacent Areas

Protect adjacent areas while making on-vehicle plastic repairs.

9. Repair Procedure

Determine the type of repair to be made. For restoring the shape of plastic parts, see **9.2**. A two-sided repair is required if the damage goes through the part, or if the reinforcing fibers are damaged. For one-sided adhesive repairs, see **9.3**. For two-sided adhesive repairs, see **9.4**.

9.1 Identification Of Plastic



To identify the type of plastic:

- ❑ 1. Look for an ISO code molded on the part.
- ❑ 2. Use information from the vehicle maker.
- ❑ 3. Perform a sanding or flexibility test.
- ❑ 4. Perform a welding rod adhesion test.

9.2 Reshaping

To reshape a plastic part using heat:

- ❑ 1. Clean both sides of the damaged part with a pH-neutral soap and water, followed by plastic cleaner.
- ❑ 2. Blow or wipe dry.
- ❑ 3. Heat the distorted area with a heat gun, heat lamp or submerge in a hot water tank The surface should be heated to 70–80° C (160–175° F). Excessive heat may result in deformation of the material or burning of the plastic.
- ❑ 4. Move the part back into shape. Clamp in place if necessary.
- ❑ 5. Cool the area.
- ❑ 6. Check the alignment of the part to the adjacent panels.
- ❑ 7. Repeat this process, if necessary to complete the repair.

9.3 One-Sided Repair

To make a one-sided adhesive repair on a plastic part:

Note: It may be necessary to remove the part from the vehicle for access.

- ❑ 1. Clean the repair area with pH-neutral soap and water. Blow or wipe dry. Follow the adhesive maker's recommendations. Do not allow water to stand on the damaged area.
- ❑ 2. Clean the repair area with a plastic cleaner. Blow or wipe dry. Follow the adhesive maker's recommendations. Do not allow solvents to stand on the damaged area.
- ❑ 3. Make a repair taper around the damaged area, about 75–80% through the part.

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9. Repair Procedure (cont'd)

❑ 4. Featheredge the tapered area to remove coatings, primers, and paints. Use a coarse grit (80–120) to improve the adhesion. Remove all remaining dust.
❑ 5. Make sure the damaged part and the repair materials are within the product maker's recommended temperature range.
❑ 6. Thoroughly mix the proper two-part adhesive to the recommended ratio, or use the mixing applicator provided.
❑ 7. Apply adhesion promoter or flame-treat the surface. Follow the product maker's recommendations for the type of plastic being repaired.
❑ 8. Apply the mixed adhesive. Follow the product maker's recommendations.
❑ 9. If additional strength is required, press pieces of reinforcing material into the adhesive. Alternate layers of adhesive and reinforcing material as necessary, smoothing and shaping with a plastic spreader. Do not allow any exposed reinforcing fibers.
❑ 10. Allow the adhesive to cure, or force-dry it as recommended by the product maker. Allow the adhesive to cool.
❑ 11. Sand the adhesive to the surrounding contour. Avoid overheating the adhesive.
❑ 12. Re-apply adhesion promoter, or flame-treat the area, as recommended by the product maker.
❑ 13. Apply additional adhesive, or the recommended filler with the proper flexibility for the type of plastic being repaired, to fill any remaining low areas or pinholes.
❑ 14. Sand and featheredge to the surrounding contour.
❑ 15. Refinish the part following the vehicle maker's recommendations for refinishing plastic parts.

9.4 Two-Sided Repair

To make a two-sided adhesive repair on a plastic part:

❑ 1. Remove any loose or broken pieces from the repair area.
❑ 2. Remove the part from the vehicle, if necessary for access.
❑ 3. Clean the repair area with pH-neutral soap and water. Blow or wipe dry. Follow the adhesive maker's recommendations. Do not allow water to stand on the damaged area.
❑ 4. Clean the repair area with a plastic cleaner. Blow or wipe dry. Follow the adhesive maker's recommendations. Do not allow solvents to stand on the damaged area.
❑ 5. Align the pieces using aluminum body tape applied to the front side.

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9. Repair Procedure (cont'd)

- ❑ 6. Make a repair taper on the back side, around the damaged area, about 75–80% through the part. Some adhesive makers recommend a single taper all the way through the part from the front side, when a backing reinforcement is used.
- ❑ 7. Featheredge the area to remove coatings, primers, and paints. Remove all remaining dust.
- ❑ 8. Make sure the damaged part and the adhesive are within the recommended temperature range.
- ❑ 9. If a reinforcing material is required, cut the reinforcing material so that it overlaps the repair area by about 40 mm (1½") on all sides.
- ❑ 10. Apply adhesion promoter or flame-treat the area, as recommended by the adhesive maker.
- ❑ 11. Thoroughly mix the proper two-part adhesive to the recommended ratio, or use the mixing applicator provided.
- ❑ 12. Apply a thin layer of the adhesive to the prepared area on the back side.
- ❑ 13. Lay the reinforcing material onto the adhesive, cover it with waxed paper or a piece of olefin-based plastic, and force it into the adhesive. Remove the waxed paper or piece of plastic.

- ❑ 14. Apply more adhesive to completely cover the reinforcing material.
- ❑ 15. Allow the adhesive to cure, or force-dry it as recommended by the product maker.
- ❑ 16. Remove the aluminum body tape, and make a repair taper on the front side of the part, around the damaged area and extending into the adhesive on the back side.
- ❑ 17. Featheredge the area to remove coatings, primers, and paints. Remove all remaining dust.
- ❑ 18. Apply the recommended adhesive for the type of plastic being repaired. Use reinforcing materials, and adhesion promoter or flame treatment, as recommended by the product maker.
- ❑ 19. Allow the adhesive to cure, or force-dry it as recommended by the product maker. Allow the adhesive to cool.
- ❑ 20. Sand and featheredge to the surrounding contour. Avoid overheating the adhesive.
- ❑ 21. Re-apply adhesion promoter, or flame-treat the area, as recommended by the product maker.
- ❑ 22. Apply additional adhesive, or the recommended filler with the proper flexibility for the type of plastic being repaired, to fill any remaining low areas or pinholes.
- ❑ 23. Sand and featheredge to the surrounding contour.
- ❑ 24. Refinish the part following the vehicle maker's recommendation for plastic part refinishing.

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10. Use Of Recycled (Salvage) Parts

Does not apply.

11. Inspection And Testing

Does not apply.