



Technical Information For The Collision Industry

Foam Fillers

Foam fillers are being used more each model year for sound-dampening, added rigidity without additional weight, and in some cases, both. Not all foam fillers are alike. They come packaged as a pre-made drop-in or as a two-part material in a cartridge. They may vary in flexibility and density, and in how much they expand. Installing the wrong foam filler or even the wrong quantity of the correct foam filler could result in an inferior repair. Properly identifying, removing, and replacing foam fillers has become a skill that all collision technicians must acquire.

Foam fillers are used in both structural and non-structural parts. The varying characteristics of foam fillers include density, moisture resistance, expansion rate, hardness, and installation method. These characteristics are used to define the purpose of a foam filler and categorize it as acoustical or structural. There is an SAE document, J2621, that will be available in the future that provides a proposed standard classification system of structural foam fillers.

ACOUSTICAL AND STRUCTURAL FOAM FILLERS

Acoustical foam fillers are used to prevent noise, vibration, and harshness (NVH), with no significant structural role. Acoustical foam filler may be installed to prevent exterior panels such as hoods, deck lids, roofs, and door panels from fluttering or in pillars and rocker panels. Acoustical foam fillers are

typically urethane. These foam fillers are low density with an expansion rate of about ten times the packaged amount. They may be either a flexible or rigid foam filler.

Structural foam fillers are used to increase the strength of a part without dramatically increasing vehicle weight, for collision energy management, to improve the crash performance of the vehicle without design changes to the structure, and to help decrease NVH. Structural foam fillers are typically an epoxy. Structural foam fillers are high density with a minimal expansion rate. When structural foam filler is installed in a replacement part, the location and the displacement of the foam filler is critical to restoring the structure of that vehicle. A rigid classification on a product does not necessarily mean that it is structural foam filler.

Comparing acoustical foam filler to structural foam filler is like comparing a sponge to a piece of cement. This is directly related to the differences in material. The density of foam filler is measured in pounds per cubic foot. Foam filler that is considered flexible typically has a density of about four pounds, while rigid foams are typically about 12 pounds, and structural foams about 32 pounds. Foam that is denser contains smaller cells and more resin resulting in a heavier material. Structural foam filler is also more difficult to puncture compared to acoustical foam filler.

REPAIR CONSIDERATIONS

Foam filler will melt and burn when excessively heated. Caution must be used around these areas when heating to straighten or when welding.

Foam filler may be removed using a variety of different methods including heat, a scraper, or a rotary rasp bit. Use caution to prevent damaging the part and the coatings.

It is also important to remember that cosmetically straightening an area restores the physical appearance, but the foam filler inside the part will remain damaged.

INSTALLATION METHODS

There are two types of foam filler installation methods: carrier foam fillers and two-part dispensable foam fillers. Acoustical and structural foam fillers are both installed using either of these methods.

Carrier foam filler is mounted to a carrier plate and installed during vehicle assembly. The foam filler is activated and expands during the E-coat bake process. This type of foam filler installation may also be called drop-in foam filler.

Two-part dispensable foam filler is either a urethane or epoxy that is pumped into a part and does not require heat to cure. This type of foam filler is used during the repair process and may be called full-fill foam filler or pumpable foam filler.

REPLACEMENT FOAM FILLERS

Most replacement foam fillers are the two-part dispensable type. They are packaged as a two-part cartridge that is installed using either a manual or pneumatic applicator gun. Home insulation expanding foams should not be used. One-part foam fillers should also not be used. One-part foam fillers may not cure completely and absorb moisture, which could accelerate corrosion. If a product other than foam filler is used, such as windshield urethane for flutter prevention, the panel may look distorted under

certain conditions due to conflicting expansion and contraction rates.

Foam dams may be used to control the location of the foam filler during installation to duplicate the original installation. They are cut to the proper size and inserted into the body cavity. Foam dams may be included in a replacement foam kit from the foam filler maker or from the vehicle maker. Foam dams are typically recommended when installing structural foam fillers because of the lack of expansion compared to acoustical foam fillers.

A replacement foam filler kit may be available from the vehicle maker. This kit would include the recommended two-part foam filler cartridges, foam dam material, and may include the installation procedure.

The replacement foam filler must duplicate the properties, location, and amount of the original foam filler. Methods to determine which type of foam filler should be used include referencing a collision repair manual or a technical service bulletin (TSB). Some replacement parts are serviced with the foam filler already installed. This ensures that the type of foam and the placement is correct. If recommendations do not exist, a visual and physical inspection should be performed. This is done by comparing the characteristics of the original foam filler to samples of replacement foam fillers.

Samples of replacement foam fillers can be made by injecting the foam filler into a cardboard tube or carton. After it has cured, the cardboard is peeled away and a sample is created. Labels should be made indicating pertinent information such as the brand name and type.

Practice samples should be made for the technician to become familiar with the flow and expansion rates, fill volume, and application time before installing it in the vehicle (see Video 1). If the foam filler is installed too quickly, it may travel down too far into the part, unless a dam is used (see Video 2). If it is applied too slowly, it may dam too quickly and not be applied far enough into the part (see Video 3). The



Movie—This video shows acoustical foam filler being applied in the proper location.



Movie—This video shows acoustical foam filler being applied too quickly.



Movie—This video shows acoustical foam filler being applied too slowly.

type of application gun also plays a factor. If the pressure is set too high on a pneumatic gun, it will cause the foam filler to be installed too quickly. Place the practice tube in the same position as the foam filler will be applied. Foam filler installation may differ depending on whether the part is horizontal or vertical. The technician should choose foam filler that has the same characteristics of the foam filler that was originally used.

During replacement, the foam filler should be installed in the original location. The area where foam filler is applied may also be the same area where wiring harnesses or drain tubes are routed. These should be routed before the replacement foam filler is installed. A corrosion-resistant primer may have to be applied inside of the part before the foam filler if the coatings were removed for any reason. Always follow the product maker's recommendation for the primer use and specifications. Before installing foam filler, holes should be taped or plugged to prevent seepage, and foam dams should be installed if necessary. During installation, caution should be used to prevent blocking drainage holes and distorting panels.

Foam filler that is located in a part and exposed during repair, such as next to a sectioning joint, may only require removal to a specific distance recommended by the product maker or vehicle maker. Some vehicle makers recommend full removal. If the foam filler is uncovered during part replacement, it is typically removed and replaced due to heat considerations during removal or welding, or because the foam filler was detached from one of the parts during removal.

CONCLUSION

Get to know foam fillers. Try to understand why the original filler was put there and what purpose it served, so that the characteristics can be restored during replacement. Make samples of various types of foam fillers to help identify what type was originally installed if replacement information is lacking. Before installing the replacement filler, make samples to learn how the filler will behave during installation.