REPAIR METHOD FOR SELF-SEAL PASSENGER TIRE PUNCTURE REPAIR

TRMG
Tread Rubber and Tire Repair Materials
Manufacturers' Group

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I.   PURPOSE

The purpose of this Recommended Practice (RP) is to provide step-by-step procedures for repairing tires with self-sealants located inside the tire, on top of the inner liner, in an effort to reduce air loss due to small diameter penetrating objects. These additives are factory installed and designed to reduce air loss, but are not considered an industry-accepted tire repair.

II.   INSPECTION

A. Locate and mark the injury on the outside of the dismounted tire with a tire crayon. A thorough internal inspection on a tire spreader, with adequate lighting (i.e. 200 footcandles (fc)/2153 lux (lx) minimum, 300 fc/3229 lx recommended), should be performed to evaluate the condition of the beads, sidewalls and injury channel to ensure it is worthy to be repaired.

B. Using a probe to follow the injury channel, penetrate the sealant to determine the angle and location of the injury channel.

C. Using a very sharp liner scraper, push and pull the sealant away from the tire liner in an area large enough to accept the patch body of the repair material selected for the injury size.

NOTE:
Do not use liner cleaner on the sealant or the tire. Cleaner solvents are flammable and will soak into the sealant potentially causing adhesion failure or trapping VOCs in the sealant.

D. Inspect the newly exposed penetration channel for any collateral damage, signs of run-flat conditions or ply separations.

III. PERMISSIBLE REPAIRS

A. The repairable area is specified as the crown area of the tire, within the tread belt area (see Figure 1).

Figure 1

B. The maximum allowable injury size in a passenger tire is 1/4" (6mm) in diameter.

C. The angle of the penetration should not exceed the repair manufacturer's maximum angle for their one-piece combination repair unit.

IV. REPAIR METHOD

A. Only a one-piece combination repair unit will be explained here due to potential contamination concerns associated with the tools typically used to do an industry-accepted tire repair.

NOTE:
The use of flammable solvents should be avoided on these tires. Using a buffing rasp to prep the liner is also not recommended.

1. Based on the injury size, use an appropriate sized carbide cutter, attached to a low-speed (i.e. 1200 rpm maximum) air/electric drill, to remove fractured steel

and rubber from the injury channel. Drill the cavity three (3) to five (5) times from the inside and outside to ensure a clean cavity.

NOTE:
The carbide cutter may need to be cleaned with solvent or a wire brush to remove sealant contamination on the blade surface of the cutter.

2. Use the liner scraper to remove any steel shavings and rubber dust from the tire liner surface area where the repair unit will come in contact.

3. Apply an even coat of chemical cement to the prepared area and penetration cavity, and allow to dry for 3 - 5 minutes, or longer if cold or humid conditions exist. Refer to your repair manufacturers' drying times if needed.

4. Remove the protective poly from the repair unit stem and the repair unit. Avoid touching the cushion gum.

5. Apply minimal cement to the taper of the stem, or re-cement the injury channel with a clean probe or cement tool from the tread side of the tire to allow for easy pull-through of the stem into the hole. Then immediately insert the stem from inside the tire, and pull through the cavity until the base of the repair unit is snug against the surface of the inner liner, and there is a slight indentation on the surface of the repair unit.

6. Stitch the repair unit starting from the center, and work outwards in a cross stitch pattern.

7. Use the liner scraper to re-apply the sealant over the edges of the repair unit, <u>or</u> use liner sealant on the edges of the repair.

8. Cut the stem off flush with the surface of the tread.

9. Remount the tire for installation on the vehicle.

NOTE:
The procedures described in this RP still qualify as an industry-accepted tire repair specific to tires that have factory installed sealants, and that are referred to by the manufacture as self-seal tires. This is because, the material used is chemically vulcanized, and it fills the injury channel and seals the tire liner. These procedures are not adequate for passenger tires using aftermarket liquid sealants.