TEROSON®

Panel Repair Procedure for Cargo Trailers Assembled with TEROSON® MS 9399™

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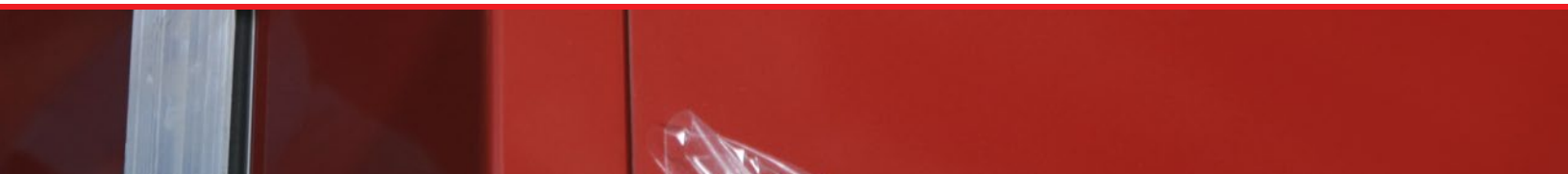


For over a decade, specialty vehicle manufacturers such as trailer and bus manufacturers have been using TEROSON® MS 9399™, a silane modified polymer based adhesive, to bond panels of various composition to steel and aluminum framing members. TEROSON® MS 9399™ offers such features as a watertight seal, repositionability of panels during assembly, high green strength, flexibility and cosmetic attractiveness. Its robust, elastomeric properties allow cargo trailers to maintain their structural integrity against extreme road forces and severe weather conditions, while also allowing for easy repair. This document will outline the proper procedures for replacing a damaged panel on a cargo trailer that has been assembled with TEROSON® MS 9399™.*

* For manufacturing assembly instructions, please refer to LT #8232 “Panel Bonding Procedure for Cargo Trailers Assembled with TEROSON® MS 9399™.

Factors for a Successful Panel Repair

- A CLEAN, WHITE CLOTH or applicator bottle/tip (see page 2) should be used to apply TEROSON® SB 450™.
- Substrates and adhesive should acclimate to 60°F to 80°F prior to bonding for ideal dispense and cure properties. (Colder temperatures will result in lower flow rates and slower cure times. Use warming blanket if needed to reach desired temperature).
- To optimize green strength and other mixed properties of TEROSON® MS 9399™, make sure to use the green, square mix nozzle, Henkel Item # 98667 (sold separately).
- The use of damming tape ≥0.040" in thickness to control bondline thickness and to ensure aesthetics by eliminating adhesive squeeze-out.
- Adequate amount of TEROSON® MS 9399™ to fill overlap joint.
- Rolled seams to compress adhesive joint for maximum wet out and adhesion properties.
- Bonded assemblies should cure for 1.5 to 2 hours at 60°F or higher before exposing to colder temperatures.
- Overlapping, painted top coat panels are the most sensitive surfaces to bond, so proper surface preparation is critical.
- Surface cleanliness is important. In case of any doubt, clean again. TEROSON® SB 450™ can be used as a general-purpose cleaner as well as a Surface Adhesion Promoter.

Materials/Equipment Required

DESCRIPTION	ITEM NUMBER	FUNCTION
TEROSON® MS 9399™ (400 ml)	2081733	Bonding Agent
Mix Nozzle	98667	Static Mix Nozzle
TEROSON® SB 450™ Active Cleaner	642844	Cleaner/Adhesion Promoter
0.040" x 0.25" Double-Sided Foam Tape	—	Gap control
Pneumatic Dispense Gun, 400 ml	983438	9399 dispenser
White Cloth	—	Active cleaner applicator
Designetics™ Applicator Bottle	Designetics™ PN 21BF	Active Cleaner Container
Designetics™ Applicator Tip	Designetics™ PN 32DF	Active Cleaner Dispense
Designetics™ Applicator Bottle Cap	Designetics™ PN 14A	Container Cap
Seam Roller	—	Spread adhesive within seam
Air knife	—	Cut out damaged panel
Pliers	—	Peel out damaged panel
Screw Gun	—	Remove trim
Scraper Blade	—	Remove old, cured adhesive

MAJOR STEPS

1 REMOVAL OF DAMAGED PANEL

a. Remove any trim that overlaps the damaged panel to be replaced.

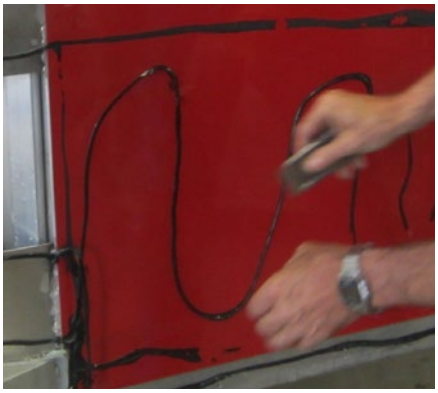
b. The overlap joint portion of the damaged panel can be released from the underlying panel by first cutting as close to the joint as possible with an air knife, keeping in mind a framing member may be in this location.

c. Cut into the panel seam using a sharp razor blade to separate the damaged panel from the good underlying panel. Heat can be used as another option to soften the TEROSON® MS 9399™ and damming tape, keeping in mind that too much heat may actually damage the good underlying panel.

1 REMOVAL OF DAMAGED PANEL

d. The underlap joint portion of the damaged panel should be cut approximately 3" short from the original joint, using an air knife and being careful not to cut into a framing member, if at this location.

e. Clean the remaining TEROSON® MS 9399™ from the underlying panel joint using a sharp razor blade, making sure not to scratch the remaining good panel.



2 PREPARATION OF REMAINING UNDAMAGED PANEL(S)

Both of the remaining undamaged panel skins will need to have their painted side surfaces activated with TEROSON® SB 450™ Active Cleaner. Use a clean white cloth or applicator bottle/tip* for this step.

a. Using either a clean white cloth or an applicator bottle with tip*, wipe the exterior side of the leading edge of the assembled panel with TEROSON® SB 450™ Active Cleaner.

b. To prevent streaking, only apply the TEROSON® SB 450™ Active Cleaner to the surface area that's equivalent to the width of the overlap joint – approximately 1 to 2 inches.

c. Apply enough active cleaner to the surface to leave behind a wet, but non-drip film.

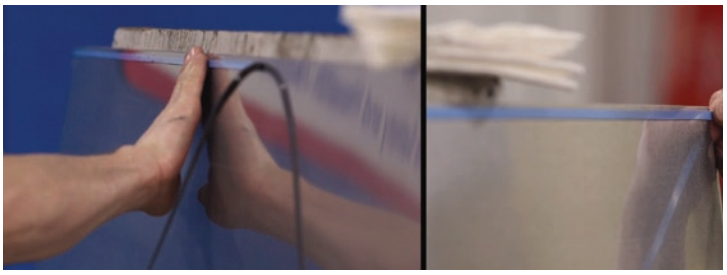
d. Allow the TEROSON® SB 450™ Active Cleaner to flash-off or dry before applying adhesive. This typically occurs in less than one minute when temperatures are between 60°F to 80°F, but can vary with changes in environmental conditions.

e. Be sure to use a clean cloth to prevent transferring any possible contaminants to other bond areas.

f. If unsure of TEROSON® SB 450™ Active Cleaner application coverage, use a black light to verify coated area. The product contains a fluorescent dye, which reflects upon exposure to black light to confirm that it has been applied.

*see page 2 for bottle/tip information

3 PREPARATION OF REPLACEMENT PANEL



Damming tape only needs to be used at the seams of overlapping panels.

The damming tape serves 4 purposes:

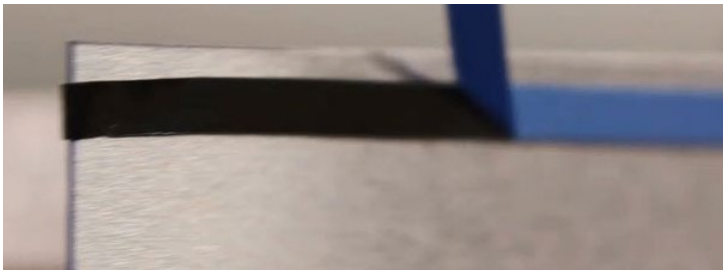
1. Ensures adequate gap for maximum adhesive properties.
2. Prevents squeeze-out of adhesive from seam.
3. Assists in holding the panel in place while the adhesive fully cures.
4. Allows for easier repair process, if panels get damaged once in use.

Apply the damming tape as follows:

a. Apply damming tape to the trailing edge of the backside of the replacement panel to be assembled.

b. Align the outside edge of the damming tape ⅛" from the edge of the panel and apply the tape along the entire length of the panel.

c. Begin to peel away 3" of the release film, but do not remove completely. Leave the 3" of film hanging, so it is easy to peel away the remaining film once the panel is assembled to the trailer frame.



4 PREPARATION OF TEROSON® MS 9399™ ADHESIVE

a. Allow adhesive to acclimate to 60°F to 80°F.

b. Place the TEROSON® MS 9399™ 400 ml cartridge into pneumatic gun.

c. Adjust pneumatic gun pressure to a low setting.

d. Remove cap and plug from nozzle-end of cartridge.

e. Screw static mix nozzle onto the cartridge.

f. To optimize green strength and other mixed properties of TEROSON® MS 9399™, make sure to use the green, square mix nozzle, Henkel Item # 98667 (sold separately). Do not use the white round nozzle.

g. Adjust pneumatic gun pressure to the maximum setting.

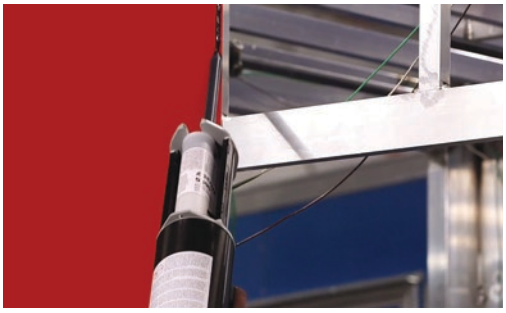
h. Prime the nozzle by pulling trigger to allow adhesive to flow through the mix nozzle.

i. Dispense a small amount of adhesive onto a rag or scrap part to allow thorough mixing.

j. The cartridge is now primed and ready for use.

5 INSTALLATION OF REPLACEMENT PANEL

a. Dispense a ¼" diameter bead of TEROSON® MS 9399™ to the remaining panels that will be mated with the replacement panel.



b. Assemble panel within 5 minutes of applying adhesive. Tuck leading edge of new panel up against or underneath damming tape.

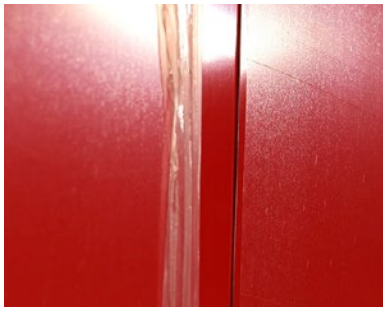
c. **OPTIONAL:** For extra panel support, drive 2 screws or use double-sided foam tape to temporarily hold panel at top. Screws can be removed once the adhesive fixtures in approximately 20 minutes.

5 INSTALLATION OF REPLACEMENT PANEL

d. Ensure that the adhesive does not make contact with the damming tape. In some cases, applying the adhesive at the overlap can be done just prior to removing the release film.

e. Apply hand pressure along the length of the seam to mate the 2 panels.

f. Remove the release film from the damming tape.

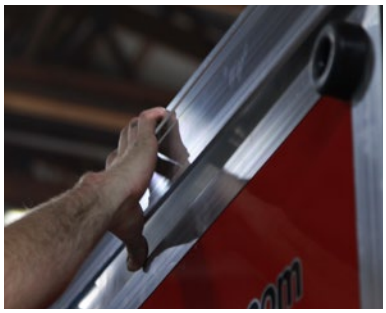


g. Use a seam roller to evenly apply pressure to the entire length of the bonded joint to ensure the damming tape secures the panel in place and the adhesive is spread properly throughout the joint.

5 INSTALLATION OF REPLACEMENT PANEL

h. Repeat this procedure for all remaining damaged panels.

i. Reinstall any necessary trim pieces.



FAQs

Q Can I apply TEROSON® MS 9399™ without letting the panels acclimate to 60°F?
A Yes, but the wet out of the TEROSON® MS 9399™ will not be as good, which could lead to lower overall strengths.

Q Does the open time of TEROSON® MS 9399™ lessen if warmer climates prevail?
A Yes, higher temperatures shorten the open time of TEROSON® MS 9399™.

Q Is TEROSON® MS 9399™ affected by seasonal changes in temperature and humidity?
A Yes and No, TEROSON® MS 9399™ is a two-part chemistry (a catalyst is incorporated in the formulation) so ambient moisture is not a large concern. The higher or lower temperatures will shorten or increase the open time of the TEROSON® MS 9399™.

Q Is there a way to tell if TEROSON® SB 450™ has been applied to the affected area?
A Yes, a black light will fluoresce the TEROSON® SB 450™.

Q What is the lowest temperature TEROSON® MS 9399™ will still cure?
A Testing has shown cure will still take place at temperatures as low as 30°F.

Q What happens if I assemble my parts after 5 minutes from dispensing?
A The High Position Tack (“green strength”) of the adhesive will diminish as time elapses, thus we recommend you assemble your parts within 5 minutes. If you wait a longer time to assemble your parts, this could result in your panels sliding/shifting while the adhesive cures. However, this concern can be alleviated by using a strip of double sided tape or a screw at the top of the panel to fixture the panel in place.

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