



Glass Bonding Process Steps

Technical Bulletin

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Process Steps

Surface Preparation:

1. Surfaces to be bonded must be clean and dry.
2. Surfaces should be free from grease, mold release and oil.
3. Abrading the non-glass surface with 180 to 220 grit abrasive followed by a solvent wipe will improve the bond. Suitable solvents include 3M Adhesive Remover, IPA (Isopropyl alcohol) and acetone.
4. Use 3M Glass Cleaner 08888 to clean both sides of windshield.
5. Use of a two-step surface preparation is suggested for bonding, but can be done without the Adhesion Promoter for the Polyurethane 595.
6. Apply 3M AP596 Adhesion Promoter followed by the appropriate 3M Primer to both bonding surfaces.

Glass substrate	Appropriate primer
Fritted glass	3M All Purpose Primer P591
Plain glass	3M All Purpose Primer P591
Fiberglass	3M All Purpose Primer P591

- Soft lint free cloths for 3M AP596 application
 - Wool dauber or foam/sponge brush for 3M Primer application
7. Pour 3M AP596 Adhesion Promoter onto the soft lint free cloth folded in quarters.
 8. Wipe AP596 to the main body (pinch weld) and glass. Wait 15 minutes for it to dry.
 - a. Adhesion Promoter must be used within 30 days of opening (if the product begins to turn cloudy, dispose of properly)
 9. Shake primer for 30 seconds after hearing the ball moving inside the bottle.
 10. Dip a clean wool dauber/foam or sponge brush into the primer. Roll the dauber/brush around the edges of the bottle to squeeze out excess primer.
 11. Replace plug and cap on primer bottle. Primer must be used within 7 days of opening.
 12. Apply a continuous layer of primer to main body (pinch weld) and glass applying in one direction. It is suggested not to go back over applied primer as you will contaminate previously applied primer.

Depending upon environmental conditions, you will need to wait 15 to 30 minutes for the primer to dry.

Application of Sealant

Loading the applicator: Make sure the applicator is set up with the correct plunger for either a cartridge or sausage pack.

Cartridge: Puncture the seal in the center of the nozzle connection on top of the cartridge and remove the pull-tab seal at the bottom of the cartridge. Load cartridge into applicator. Attach the nozzle and cut to desired shape and size.

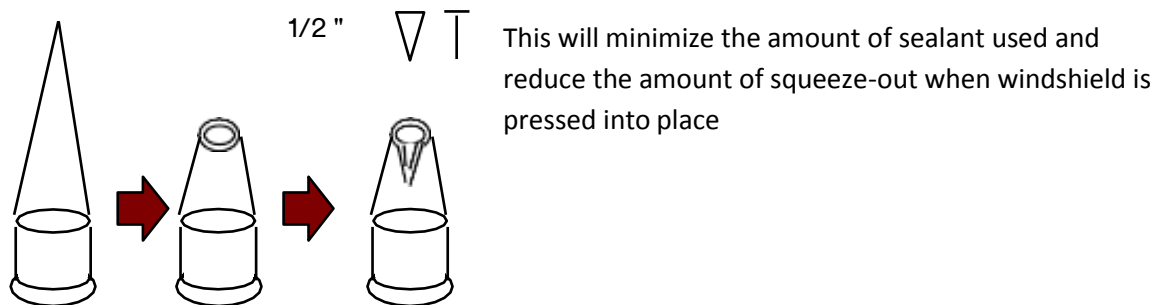
Sausage Pack: Load the sausage pack into the applicator barrel and make a 1" slit in the sausage pack close to the metal crimp in the end of the sausage pack. Place the rounded end of the supplied sausage nozzle onto the slit end of the sausage pack and fix with the screw on retaining collar. Cut nozzle to desired size and shape.

Suggested nozzle size and shape: Use a nozzle with a triangular V cut. A notch clipper for pig ears or a blade can be used to make the cut. The desired size of the triangular V cut is ½" (10-12mm) high and ¼" (5-6mm) wide.

TIPS FOR PROPER NOZZLE CUT AND BEAD SHAPE

A triangular bead is desirable to improve bead profile, reduce squeeze out and eliminate waste.

Cut the tip nozzle as below.



WHEN YOU CAULK URETHANE, ALWAYS KEEP THE GUN AS VERTICAL AS POSSIBLE TO ENSURE GOOD ADHESION TO THE SURFACE.

3M™ OEM Polyurethane Glass Adhesive Sealant 590 or 3M™ Polyurethane Window Bonder Adhesive Sealant 595 should be used within 24 hours after the cartridge is opened. Dispense the Adhesive Sealant onto the primed main body with the tip perpendicular to the substrate to insure uniform contact with the substrate. Press glass into the frame until the triangle bead is squeezed to half its original height. The cross section of the bond should be approximately ¼" x ¼" (5mm x 5mm) square after application.

How to maintain bead thickness:

- (a) Maintain 2Kg pressure in case of manual applicator
- (b) Maintain 6 bar pressure in case of pneumatic applicator
- (c) Maintain sufficient pressure in case of battery operated applicator

Position the glass by aligning the masking tape on glass and vehicle body. Press glass in place to assure complete contact with the urethane adhesive. Remove masking tape alignment strips after allowing sealant to build strength. Clean any excess urethane with an adhesive cleaner.

Tack free time: 20 to 30 minutes (make the bond in 10 to 15 minutes)

Safe drive away time: PU 590 – 3 hours, PU 595 – 1 hour

Do not allow other finishing agents to come into contact with water sensitive paint finishes can cause carbon particles to be released from the uncured adhesive and are therefore unsuitable for this application.

Note: Curing time is dependent upon the temperature and humidity.

Gap filling: Fill the internal and external gaps with 3M™ 740 UV Adhesive Sealant after 12 hours of the bonding application.

Do & Don't:

1. Check glass and main body (pinch weld) moisture trials.
2. Understand main body (pinch weld) fabrication design.
3. Remove moisture condensation from main body (pinch weld) and glass.
4. Understand glass specification.
5. Identify gap area between glass and main body (pinch weld).
6. Careful !!! Primer will not dry quickly at lower temperatures. Please make sure it is fully dry before you apply urethane.
7. Follow normal application procedures.
8. Use adhesive specified by vehicle manufacturer.
9. Understand the windshield as a structural component of the vehicle body.
10. Learn/follow vehicle and adhesive manufacturer's recommendations.
11. Assure employees are properly trained.

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