



SURFACE VEHICLE RECOMMENDED PRACTICE	J1529™	JAN2021
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Overlap Shear Test for Automotive Type Sealant for Stationary Glass Bonding		

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Foreword—This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. **Scope**—This SAE Recommended Practice defines a procedure for the construction and testing of glass to metal lap shears for determining shear strength of sealant adhesives for automotive stationary glass bonding. This procedure can also be used for fiber reinforced plastic (FRP) when used in place of metal.
2. **References**—There are no referenced publications specified herein.
3. **Test Substrates**
 - 3.1 **Substrates and Dimensions**—The metal coupons shall be cut from automotive sheet metal into flat strips 25.4 x 102 mm (1.000 x 4.000 in) coupons at a nominal thickness of 0.8 mm (0.032 in). The glass coupons shall be cut from float glass or ceramic coated fleet glass into 25.4 x 102 mm (1.000 x 4.000 in) at a nominal thickness of 5.5 mm (0.220 in). Fiber reinforced plastic coupons shall be cut into flat strips 25.4 x 102 mm (1.000 x 4.000 in) at a nominal thickness of 2.54 mm (0.100 in). All test coupons shall be free of flaws such as nicks and splinters that would give erroneous test results.
 - 3.2 **Surface Coatings**—The metal and FRP shall be coated with paints recommended by the automotive engineer. Also, the ceramic on the glass shall be the type recommended by the automotive engineer.
 - 3.3 **Surface Preparation**—Surface preparation with respect to cleaning and primer application shall be in accordance with adhesive supplier or automotive engineer recommendation.

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4. Preparation Of Test Joints

4.1 **Joint Geometry**—The final joint geometry shall be shown in Figure 1 with tolerances specified under 4.3.

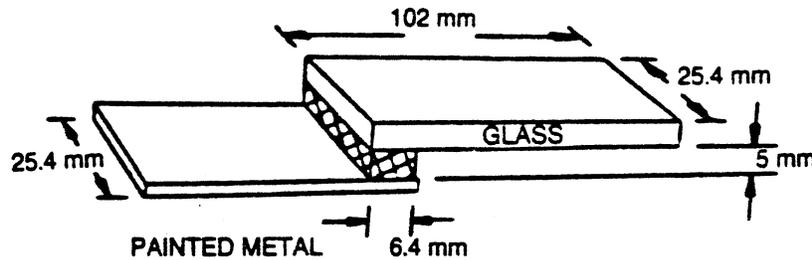


FIGURE 1—

The joint geometry can be controlled by the use of a lap shear board as illustrated in Figure 2.

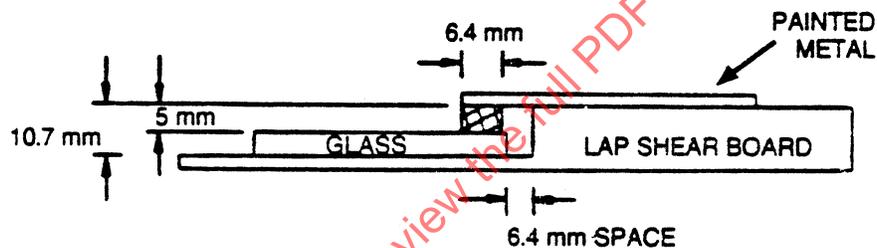


FIGURE 2—

The lap shear board should be constructed as in Figure 2 to give the proper dimensions for the lap shear as described in Figure 1. The glass coupons shall be taped onto the board so that the one inch side is 6.4 mm away from the board. Glass coupons can be laid down side-by-side to make multiple lap shears.

- 4.2 **Replacement of Metal with FRP**—Fiber reinforced plastic coupons can replace metal coupons on the top section of the board in Figure 2.
- 4.3 **Adhesive Bond Line Tolerance**—Final bond tolerance width shall be 6.4 ± 0.5 mm (0.25 ± 0.02 in) and height of 5 ± 0.5 mm (0.2 ± 0.02 in).
- 4.4 **Sealant Application**—The sealants wet bead dimensions can be controlled to give the cured bond dimensions specified in Figure 1. The sealant shall be extruded using a 6.4 mm (0.250 in) high bead along the one inch side of the glass coupon. The bead shall also be high enough so that when the metal coupon is placed down on wet sealant to the required 5 mm (0.200 in) height, the resulting bond width on the metal will be comparable to bead width on the glass side of 6.4 mm (0.250 in). Adhesive open time shall be prescribed by adhesive supplier or automotive engineer.
- 4.5 **Adhesive Cure**—The bonded lap shear shall be cured at the temperature and time prescribed by adhesive supplier or automotive engineer.

4.6 Sample Preparation—After the recommended cure cycle, the lap shear shall be removed from the board by cutting excess cured sealant away from the edge of the lap shear. This trimming will assure that the lap shear will have the final bond line length of 25.4 mm (1.000 in) as described in Figure 1.

4.7 Conditioning—Bonded lap shears shall be conditioned according to adhesive supplier or automotive engineer recommendation before being tested.

5. Testing

5.1 Apparatus—Test apparatus as described in ASTM D 1002.

5.2 Sample Fixture—The sample fixture described in Figure 3 shall be used when testing lap shears on the tensile tester. The glass coupon shall fit into the space provided with the bottom end of the lap shear resting on the shoulder of the fixture. This will allow the metal part to hang down to allow clamping to the lower jaw of tensile tester.

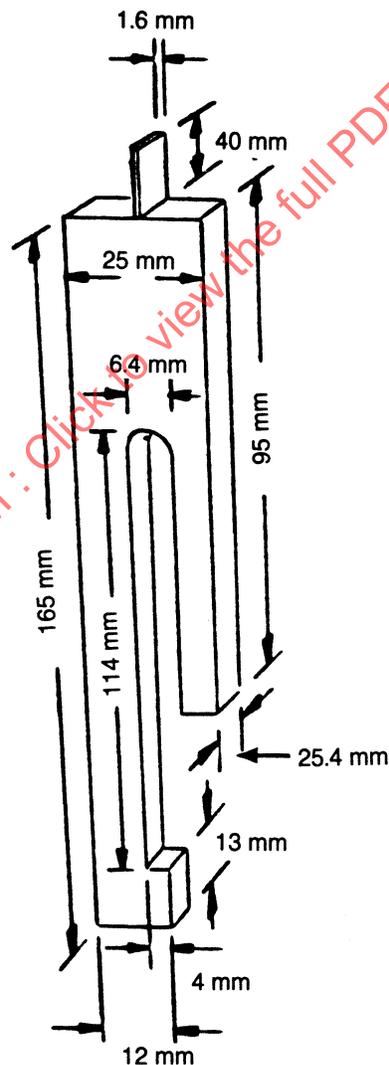


FIGURE 3—