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**Method for
Evaluating the
Cleavage Strength of
Structurally Bonded
Fiberglass Reinforced
Plastic (Wedge Test)**

**SAE Recommended Practice
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**METHOD FOR EVALUATING THE CLEAVAGE STRENGTH OF STRUCTURALLY
BONDED FIBERGLASS REINFORCED PLASTIC (WEDGE TEST)**

1. **SCOPE:** This SAE Recommended Practice sets forth a method of quantifying failure loads and energies in structurally bonded reinforced plastic cleavage plaques.
2. **BACKGROUND:** Traditional lap shear (SAE J1525) and cross peel (SAE J1553) test specimens are adequate for many screening studies to determine shear strength of adhesively bonded parts. Since, however, many bonded automobile assemblies are also subject to a variety of cleavage forces, additional testing is often in order. This test method describes a test and bond part configuration that is designed to measure cleavage adhesion of bonded assemblies.

3. **PREPARATION OF BONDED SPECIMENS:**

- 3.1 **Substrate:** Flat reinforced plastic panels having a thickness of 2.54 mm (0.1 in) $\pm$ 0.5% is recommended. Substrates should be cut into 150 x 150 mm (6 x 6 in) $\pm$ 0.5% panels using a saw blade (for example, diamond) capable of generating a smooth cut (NOTE: see Addendum No. 1 for optional variations in panel size).

It is important to be aware of potential substrate surface differences. Frequently reinforced plastic (for example, SMC, FRP) has a preferred bonding side. Substrate supplier should be contacted if there is any doubt.

Surface preparation of the substrate prior to bonding, should be performed in accordance with adhesive supplier's or automotive engineer's recommendation. Typical surface preparations include solvent scrubbing, application of primers and in some cases, only a dry rag wipe.

3.2 **Bonding:**

- 3.2.1 **Adhesive Mixing:** Adhesive mixing (if required), should be performed in accordance with adhesive supplier's recommendation.

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- 3.2.2. Test Sample Assembly: Adhesive bondline and flow are controlled by carefully applying adhesive bead and a combination of shims and glass beads. Apply a 13 mm (0.5 in) diameter bead of adhesive to the center of the bond area across the full length of panel, see Fig. 1. Sprinkle a uniform coating of 0.76 mm (0.03 in) glass beads onto the adhesive bead covering no more than 1% of the adhesive bead surface. Position a 0.76 mm (0.03 in) thickness Teflon or mold release coated steel shim as shown to control adhesive squeeze out.

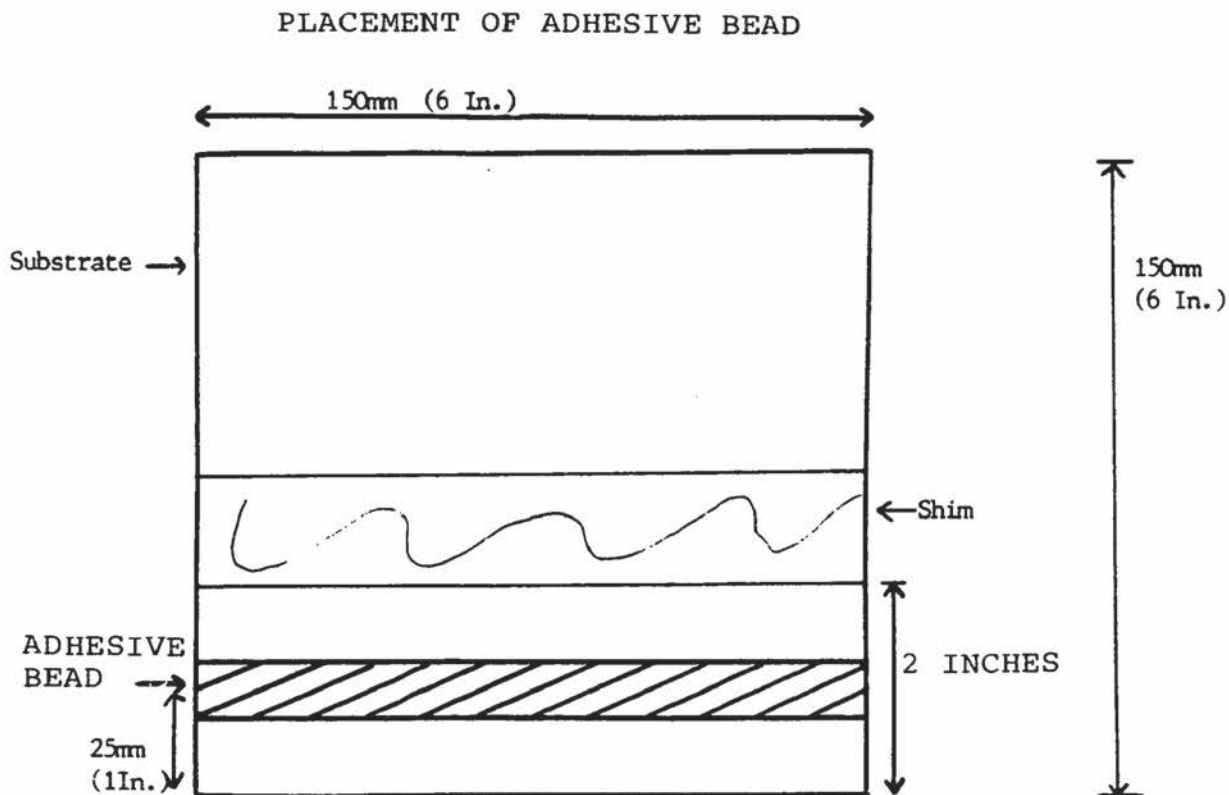


FIG. 1 - PLACEMENT OF ADHESIVE BEAD

Mate the two halves of the cleavage assembly as soon as possible after apply bead to form the test specimen shown in Fig. 2. The entire bonded assembly can optionally be wrapped in aluminum foil to protect heated platens used to cure the adhesive. Cure the adhesive in accordance with adhesive supplier's or automotive engineer's recommendation. Immediately after curing, remove shims from bonded assemblies and trim adhesive squeeze out. Allow bonded parts to condition at $23 \pm 2^\circ\text{C}$ for 24 h prior to postbakes or final testing.