



SURFACE VEHICLE RECOMMENDED PRACTICE

J1863™

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Coach Joint Fracture Test

RATIONALE

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Foreword—This Reaffirmed 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 determining the cleavage strength of an adhesive used for bonding automotive oily metal substrates.

2. References

2.1 Applicable Publication—The following publication forms a part of this specification to the extent specified herein.

2.1.1 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 1002—Test Method for Strength Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal)

3. Test Substrates

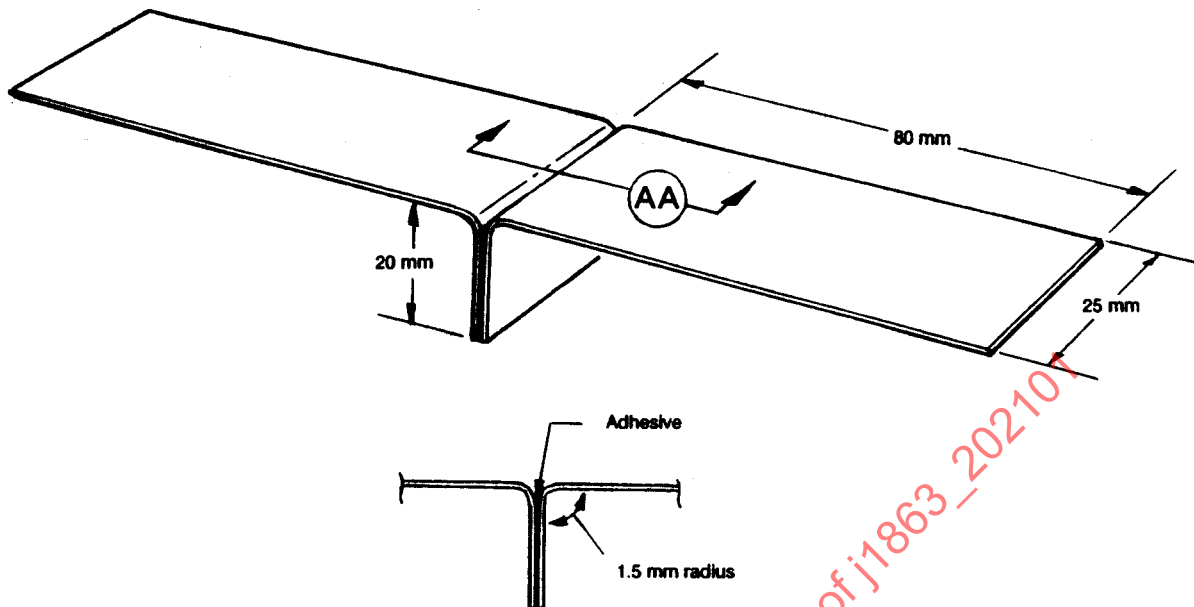
3.1 Substrates—Metal composition and roughness as specified.

3.2 Dimensions—Metal substrates shall be cut into flat coupons 25.4 mm x 100 mm at 0.8 mm nominal thickness, unless otherwise specified. Coupons shall be free from burrs or other surface imperfections. Form coupon to geometry shown in Figure 1.

3.3 Surface Preparation—Remove contaminant from test coupon surface using a neutral solvent such as acetone or methyl ethyl ketone. Apply a uniform 0.025-mm wet thickness coating of light mineral oil over test coupons, unless otherwise specified. Condition coupons at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and $50\% \pm 5\%$ humidity for 1 h minimum before bonding.

4. Preparation of Test Joints

4.1 Joint Geometry—Joint geometry will be as shown in Figure 1.



SECTION - AA

FIGURE 1—COACH JOINT FRACTURE SPECIMEN

- 4.2 Adhesive Bondline Thickness**—Evaluate adhesive bondline thickness at 0.25 mm and 0.8 mm. Bondline thickness can be controlled by inserting wire or glass bead spacers into the adhesive. The spacer volume shall not exceed 1% of the total adhesive volume.
- 4.3 Adhesive Application**—The quantity of adhesive used to prepare the bond should be regulated to avoid excess squeeze-out. Squeeze-out at the edges of the bond shall be removed prior to curing.
- 4.4 Clamping and Fixturing**—Bonding surfaces shall be firmly fixed and retained through cure cycle.
- 4.5 Adhesive Cure**—Adhesive shall be cured in accordance with the adhesive supplier's or automotive engineer's recommendation.
- 4.6 Conditioning**—Bonded specimens shall be allowed to return to ambient temperatures for 1 h minimum prior to testing.
- 5. Testing**
- 5.1 Apparatus**—Test apparatus as described in ASTM D 1002.
- 5.2 Sample Clamping**—The distance between clamping jaws shall be 100 mm with each jaw grasping 25 mm minimum of test specimens.
- 5.3 Test Rate**—Specimens shall be tested at a pull rate of 13 mm/min.
- 5.4 Test Quantity**—A minimum of five sample lap shears shall be prepared for each test condition.

6. Report Results

- 6.1** Report each individual peak load values, sample average, and standard deviation. Bond values shall be reported as the peak load (N) per 25.4 mm sample width.
- 6.2** Report composition, roughness, and thickness of substrate.
- 6.3** Report adhesive bondline thickness.
- 6.4** Report metal preparation materials and thickness applied.
- 6.5** Report mode of failure (adhesive, cohesive, or substrate failure).
- 6.6** Report adhesive cure schedule (time and temperature).

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