SURFACE VEHICLE RECOMMENDED PRACTICE

J1523™ JAN2021

Issued 1985-06
Revised 2012-02
Stabilized 2021-01

Superseding J1523 FEB2012

Metal to Metal Overlap Shear Strength Test for Automotive Type Adhesives

RATIONALE

This document covers technology, products, or processes for which technical expertise no longer resides in the owning committee.

STABILIZED NOTICE

This document has been declared “Stabilized” by the SAE Materials, Processes and Parts Council and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/J1523_202101

1. SCOPE

This SAE Recommended Practice defines a procedure for determining shear strengths of adhesives used for bonding automotive oil metal substrates.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 ASTM Publication

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org

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

ASTM D 4896 Guide for Use of Adhesive-Bonded Single Lap-Joint Specimens

3. TEST SUBSTRATES

3.1 Substrates

Metal composition and roughness as specified.

3.2 Dimensions

Metal substrates shall be cut into flat coupons 25 mm (1.0 in) x 100 mm (4.0 in) at 0.8 mm (0.030 in) nominal thickness unless otherwise specified. Coupons shall be free from burrs or other surface imperfections.

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 (0.001 in) wet thickness coating of light mineral oil over test coupons unless otherwise specified. Condition coupons at 23 °C ± 2 °C and 50% ± 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. A 3.2 cm^2 (0.5 in^2) overlap is recommended.

4.2 Adhesive Bondline Thickness

Evaluate adhesive bondline thickness at 0.25 mm (0.010 in) unless otherwise specified. 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.

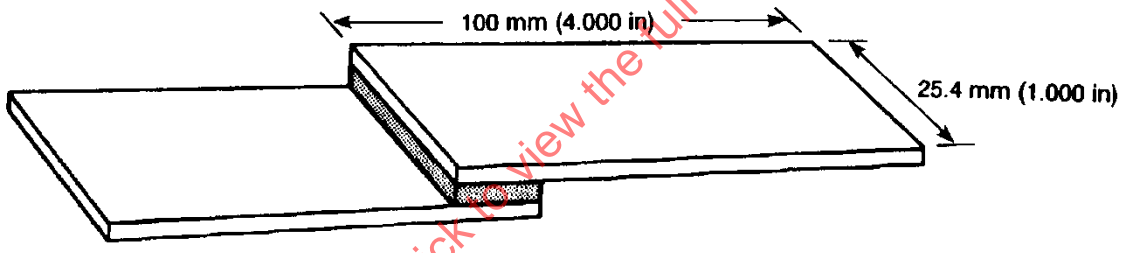

FIGURE 1 - JOINT GEOMETRY

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 suppliers 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.