



Tensile Test for Adhesive for Bonding Stationary Glass

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard describes a test procedure to determine the tensile strength of adhesives used for bonding stationary glass.

1.2 Applicability. This procedure applies to qualification of adhesives used to bond fixed automotive glass in vehicle body openings. It can be used to determine uncured (green) and cured tensile strength. It is referenced in GMW3041, Performance Requirements for Bonding and Sealing of Stationary Automotive Glass. This test procedure is also commonly referred to as "H Tensile".

1.3 Remarks. Not applicable.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3041 GMW3221

2.3 Additional References. None.

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Tensile tester capable of pulling 5000 N with a cross-head speed of 500 mm/minute.

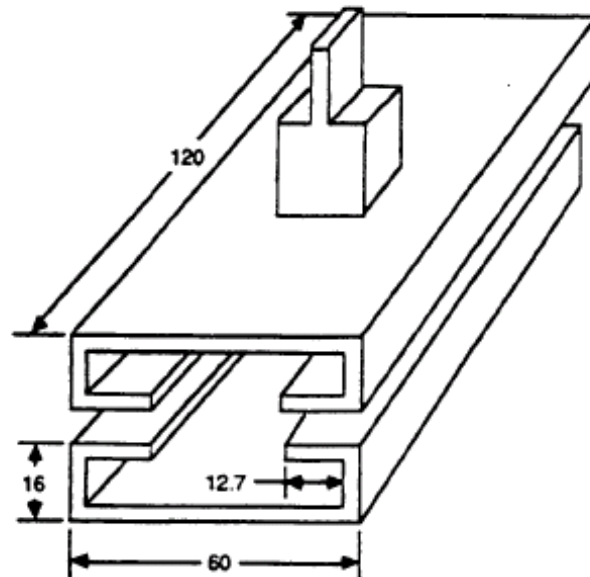
3.2.2 Quantity of 50 mm × 150 mm cold rolled steel (CRS) panels.

3.2.3 Quantity of 50 mm × 150 mm cold rolled (CR) tempered/plate glass panels.

3.2.4 Quantity of 6.4 mm spacers.

3.2.5 Air operated or electric adhesive cartridge dispense gun capable of producing a bead of 6.4 mm wide × 8.5 mm high.

3.2.6 A pair of special jaws for pulling samples (see Figure 1).



Note: Material: 3.2 CRS Stock

Figure 1: Tensile Jaws (All Dimensions in Millimeters)

3.3 Test Vehicle/Test Piece. Glass bonding adhesive system including required primers.

3.4 Test Time. Seven (7) days for full cure.

3.5 Test Required Information. Pounds recorded at break and mode of failure.

3.6 Personnel/Skills. Laboratory Technician familiar with test facilities and equipment.

4 Procedure

4.1 Preparation.

4.1.1 Prepare the appropriate number of test specimens for each test condition as dictated by the material specification. If not specified prepare five (5) test specimens for each test condition.

4.1.2 Clean all substrates with Varnish Makers and Painters Naphtha (VM&P Naphtha) unless otherwise specified.

4.1.3 Prepare the glass panels as described in the individual material specification, (i.e., required primers).

4.1.4 Prepare the steel panels as described in the individual material specification, (i.e., required primers).

4.2 Conditions.

4.2.1 Environmental Conditions. All testing in standard conditions to this specification shall be performed in accordance with GMW3221 Code A, Procedure for Standard Conditions of Organic Materials.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 Apply a 6.4 mm wide and 8.5 mm high adhesive bead that is 100 mm long onto the center of the glass panel.

4.3.2 Place a 6.4 mm spacer at each end of the glass panel.

4.3.3 Place the steel panel, primed side to the adhesive bead, directly over the glass panel. Make sure that the adhesive contacts the steel panel for its full length. Clamp the panels together.

4.3.4 Condition samples as described in the individual material specification.

4.3.5 Pull samples in tension at a rate of 500 mm/minute using the special grips shown in Figure 1.

Note: Drape rags over the tensile fixture to contain any cracked glass fragments. Record the maximum load.