



Vertical Expansion Test for Preformed Sealers

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 test procedure is intended to measure the peak vertical bonding expansion of expanding preformed sealers. This procedure may be referred to as a ramp expansion test.

1.2 Applicability. This test procedure may be used for body shop or paint shop expanding preformed sealers.

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.

GMW11 GMW3008

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 Metal Spacers A and B. Dimensions shall be according to Table 1 unless otherwise specified or agreed to by the GM approving engineer. One (1) set per test piece is required.

3.2.2 Measuring Calipers. With accuracy of 0.1 mm.

3.2.3 Binder Clips. Two (2) per test piece.

3.2.4 C-Clamps. One (1) per test piece.

3.2.5 Straight Edge. Minimum length is 300 mm.

3.2.6 Index Card. Small index card or other thin, rigid object with true square corners.

3.2.7 Permanent Marker. Required.

3.2.8 Oven. Forced air, circulating-type oven capable of maintaining a set temperature within ± 3 °C.

Table 1: Spacer and Sealer Dimensions

Sealer Volumetric Expansion	Spacer Dimensions	Sealer Dimensions
<300%	A: 4 mm, B: 10 mm	2.0 mm to 3.0 mm x 25 mm x 225 mm
300% to 900%	A: 4 mm, B: 20 mm	2.0 mm to 3.0 mm x 25 mm x 225 mm
>900%	A: 4 mm, B: 30 mm	2.0 mm to 3.0 mm x 25 mm x 225 mm

3.3 Test Vehicle/Test Piece. Dimensions shall be according to 3.3.1 and 3.3.2 unless otherwise specified or agreed to by the GM approving engineer.

3.3.1 Sealer Test Material. Preformed sealer with dimensions according to Table 1. The long dimension of the sealer shall be cut parallel with the direction of sheet extrusion, if any.

3.3.2 Metal Panels. Metal panels with minimum dimensions of 100 mm x 300 mm. Electrogalvanized (EG) steel panels per GMW11 are recommended for use with body shop sealers. Electrocoated (ELPO) steel panels with any GM approved GMW3008 ELPO are recommended for use with paint shop sealers.

3.3.3 Number of Test Samples. Testing shall be completed with a minimum of three (3) test pieces per condition unless otherwise specified.

3.4 Test Time.

Calendar time: 1 d

Test time: 2 h

Coordination time: 1 h

3.5 Test Required Information. See 5.3.

3.6 Personnel/Skills. Test technician capable of conducting this testing.

4 Procedure

4.1 Preparation. Not applicable.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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 Measure the initial thickness of the sealer test material with calipers and mark it on one of the steel panels.

4.3.2 Construct the expansion assembly as shown in Appendix A, Figure A1 making sure that the clips or clamp do not put excessive force on the panels, causing panels to bend or bow.

4.3.3 Place the assembly into an oven and bake according to the material specification requirements (including ramp rate and time at metal temperature).

4.3.4 After bake and cooling, check the top piece of metal with a straight edge to ensure that no bowing has occurred. If bowing has occurred, repeat the test with thicker gage metal panels.

4.3.5 Carefully remove spacer B (the larger spacer), C-clamp, and binder clips from the baked assembly. Do not stretch or compress the sealer during handling.

4.3.6 Place the assembly on edge such that the panels are vertical and their bottom edges rest upon a flat surface.

4.3.7 Slide a small index card or other thin, rigid object with true square corners along the inner surface of the top panel and along the surface upon which the assembly is resting. The point where the card meets the sealer