



Compatibility Testing of Body Shop Applied Adhesive and Sealer with Metallic Substrates

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 is used to test the compatibility of body shop applied adhesive and sealer with metallic substrates.

1.2 Applicability. Materials include pumpable adhesives and sealants.

1.3 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

ASTM D1876	ISO 4587	ISO 11343
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2.2 GM Standards/Specifications.

GMW14019	GMW14124	GMW14706	GMW14874
GMW14729	GMW15174	GMW15200	GMW15286
GMW15477	GMW16150		

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 Circulation oven, capable of maintaining a set temperature within ± 3 °C.

3.2.2 Cartridge gun.

3.2.3 Pliers.

3.2.4 Spatula.

3.2.5 Tension Testing Machine.

3.3 Test Vehicle/Test Piece.

3.3.1 Number of Test Samples. For initial approval the compatibility shall be determined with a minimum of 3 test samples per curing and aging condition.

3.3.2 Adhesive/Sealer. All products (adhesives/sealants) released under the corresponding Material Specification shall be tested:

- Low expanding antifleter material according to GMW14874-LE-HS
- High expanding antifleter material according to GMW14874-HE-LS

- Weldthrough Sealer according to GMW14874-LE-MS
- Crash toughened adhesive according to GMW15200-HS-IR-FS
- Medium strength structural adhesive with glass beads according to GMW15200-MS-GB
- Low strength Hem Adhesive with glass beads according to GMW15200-LS-GB

3.3.3 Lubricant. For lubricant surface use one challenging GMW14019 approved lubricant as specified by the approving material engineer. Degreasing and oiling according to GMW15477. Oil coating weight shall be 3 g/m² for corrosion protection oils/lubricants and 1.7 g/m² for drylubes.

Remark: Oils shall not exceed a storage time of one year and shall be stored in opaque and inert bins.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

4 Procedure

This Test Procedure investigates the compatibility of Adhesives and Sealants, used in Body Shop with metallic substrates by evaluating the adhesion performance (failure mode), the tensile shear strength and impact peel resistance (only for crash toughened adhesives).

All tests shall be performed with reference to panels with a standard metallic substrate (report the standard substrate used).

To reduce the amount of testing the test matrix according to Table 1 shall be observed.

Table 1: Test Matrix

Adhesive	Surface Quality ^{Note1}		
	Peel Adhesion (GMW14706)	Peel Test (ASTM D1876)	Lap Shear (ISO 4587)
Low expanding antflutter material: GMW14874-LE-HS	X	O	-
High expanding antflutter material: GMW14874-HE-LS	X	O	-
Weldthrough Sealer: GMW14874-LE-MS	X	O	-
Crash toughened adhesive: GMW15200-HS-IR-FS	-	X	X
Medium strength structural adhesive with glass beads: GMW15200-MS-GB	-	X	X
Low strength hem adhesive with glass beads: GMW15200-LS-GB	-	X	X

Note 1: X = Minimal test (to be tested generally). O = To be tested only in case of need (adhesion requirements per GMW14706 not met).

Note: Each region has the responsibility to test the compatibility of their released Body Shop applied materials with the metallic substrate.

4.1 Preparation.

4.1.1 Test Sample Preparation. All test samples shall be prepared according to the test methods listed in paragraph 4.3.

4.1.2 Curing Schedule. All samples used for the testing listed in paragraph 4.3 shall be cured according to the schedules outlined below.

4.1.2.1 Minimum Cure Schedule. According to the respective Material Specification.