



Pressure Sensitive Adhesive Compatibility with Topcoat Paint Systems

1 Scope

1.1 Material Description. This standard describes the requirements to determine the compatibility of Pressure Sensitive Adhesives (PSA) with new or modified topcoat paint systems. The adhesives are part of the components listed in: 1.1 a thru 1.1 f.

- a. Body side moldings, fascia moldings, appliqués, and claddings.
- b. Nameplates and emblems.
- c. Decal films.
- d. Labels.
- e. Inner door water deflectors.
- f. Sill plates.

Note: This standard is a quick screen test to determine if any potential adhesion problems exist between the new or modified paint system and the PSA.

1.2 Symbols. Not applicable.

1.3 Applicability. Not applicable.

1.4 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

ASTM D2578

2.2 GM Standards/Specifications.

GMW3221	GMW14573	GMW15523	GMW16982
GMW3059	GMW14729	GMW15680	
GMW14124	GMW15201	GMW16243	

2.3 Additional References.

3M Part Number PA1-B

3M Part Number PA1-G

Decal Manufacturer's Recommendations

Deflector Manufacturer's Recommendations

GM Approved Materials Source List

Master Process Document (MPD) Procedure

3 Requirements

3.1 Requirements on Test Specimens. Reference GMW3221. All samples are to be conditioned prior to each requirement test to GMW3221, Code B.

3.1.1 Test panels (100 mm × 300 mm) painted with the new or modified paint system.

3.2 Molding, Cladding, Appliqué, Nameplate, and Emblem Double-Coated Foam Tape.

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3.2.1 Laminate aluminum 12.7 mm wide tape (non-liner side) 114 mm in length. Test the tapes 3.2.1 a thru 3.2.1 e or equivalent.

- a. GMW15201 Types I
- b. GMW15201 Types II
- c. GMW15201 Types III
- d. GMW15201 Types VI
- e. GMW15201 Types VIII

Note: Type II is available from Saint-Gobain, One Sealants Park, Granville, New York 12832, USA, (www.saint-gobain.com). The other types are available from 3M, St. Paul, Minnesota 55144-1000, USA, (www.3m.com).

3.2.2 Roll one time with a 6.8 kg roller.

3.2.3 Remove the tape release liner and apply to the painted test panel. Roll two (2) times in same direction with a 6.8 kg roller.

3.2.3.1 Anodized (clear, unsealed) aluminum foil (Alloy AA1145, Temper H19), 0.125 mm thick, 12.7 mm wide, scratch brush finish, from Lawrence and Frederick Incorporated 411 E. North Avenue, Streamwood, Illinois, 60107, (www.lawrencefrederick.com), or equivalent.

3.2.4 Perform 180 degree peel test, after the environments in 3.2.4 a thru 3.2.4 h. Initiate jaw separation at a rate of 300 mm/minute. Continue peel to end of tape sample. Disregard the first, and last 25 mm, and report the average peel strength.

- a. Twenty (20) minutes at room temperature.
- b. Four (4) h at room temperature.
- c. (Optional) Twenty four (24) h at room temperature.
- d. Seventy two (72) h at room temperature.
- e. One hundred sixty eight (168) h at 70 °C.
- f. One hundred sixty eight (168) h humidity per GMW14729.
- g. Fuel Resistance for Type III, Type VI and Type VIII.

h. Cycle Test.

- 1. **Interior Applications.** Expose samples to the adhesive/sealants, humidity/high temperatures cycle per GMW14124 test cycle "W", two (2) cycles.
- 2. **Exterior Applications.** Expose samples to the humidity thermal cycle per GMW14124 test cycles "C", two (2) cycles.
- 3. **Optional.** An optional exterior cycle is the adhesive/sealant, humidity/high temperature cycle per GMW14124 Test Cycle "W", five (5) cycles.

Note: Engineering to call out the required exterior cycle on the part drawing.

Note: Refer to GMW15201 for the minimum continuous peel requirement for each particular tape type after the different exposures.

3.2.5 Cold Slam. This test is optional, and is to be called out on the part drawing, or in the math data. Run six (6) times at -30 °C per GMW16982. No adhesion loss. Bond, production body side moldings, to paint panels. Dwell for 4 h at room temperature. Place in a freezer at -30 °C for 4 h minimum. Impact two (2) times. Repeat with a room temperature dwell of 72 h.

3.2.6 Surface energy measurement per ASTM D2578 using "Accu-Dyne" calibrated solutions. Report measurement. Provide comparison measurements to the original paint system.

3.2.7 Bowed Panel Test Method. This test is optional, and is to be called out on the part drawing, or in the math data. Low Angle Stress per GMW15680. Compare to a control.

3.2.8 Paint Age Adhesion Comparison. Bond aluminum foil to paint panels 4 h, and 336 h out of the paint oven. Perform 90 degree peel after 72 h at room temperature. Refer to GMW15201 for the minimum continuing peel requirement for the particular tape type.

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