



Adhesion Performance of Decorative Emblems and Nameplates

1 Scope

1.1 Material Description. This specification details the adhesion performance requirements of decorative emblems, inserts, individual letters, and nameplates. These emblems and nameplates may be plastic based materials, or metal based materials decorated with paint, paint film, inks, chrome plating, hot stamp foils, or decals.

1.2 Symbols. Not applicable.

1.3 Applicability. This specification applies only to substrates, adhesion promoters, tape and room temperature vulcanizing (RTV) materials used for emblems that have been qualified and approved to the appropriate GM specifications.

1.4 Remarks. Double coated foam tapes that are typically used for emblem and nameplate attachment. Exterior applications use tapes approved to GMW15201.

1.4.1 The Approved Adhesive Applications (AAA) process per GMW15625 is required as part of this specification. Omission of this requirement must be approved by materials engineering.

1.4.1.1 Once a supplier is granted AAA for a specific combination (adhesive, part substrate, vehicle mating surface), that approval may be used for new applications of the same combination.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059	GMW14124	GMW15201	GMW16061
GMW3221	GMW14729	GMW15625	GMW16830

3 Requirements

3.1 Requirements on Test Specimens. All samples are to be conditioned prior to each requirement test to GMW3221, Code A, unless otherwise specified.

3.2 After Exposure Conditioning. After each environmental exposure, samples are to be conditioned per GMW3221, Code A conditions, prior to adhesion testing unless otherwise specified.

3.3 Component Testing.

3.3.1 Environmental exposure tests are not consecutive. A minimum of 3 parts are to be run for each exposure.

3.3.2 For emblems attached to a mating surface sweep ≤ 0.25 mm per 75 mm length, run per 3.4 Peel Adhesion of Tape Applied Emblem Assembly to a Flat Mating Surface.

3.3.3 For emblems attached to a mating surface sweep > 0.25 mm per 75 mm length, run per 3.5 Peel Adhesion of Tape Applied Emblem Assembly to a Curved Mating Surface.

3.4 Peel Adhesion of Tape Applied Emblem to a Flat Mating Surface.

3.4.1 Apply taped emblems to a production representative part/surface or plaque using the production representative surface. Utilize production intent locating and wet-out techniques. Verify surface test material with GM Validation and GM Materials Engineering.

3.4.2 Perform cleavage peels after environmental exposures per 3.7. All exposures listed in 3.7 to be performed as individual tests not in series. Peel testing to be performed at ambient conditions after environmental exposure. Peel testing is run at 300 mm/minute using the gauge in GMW16061 Section 3.2.1. The fixture should securely hold the emblem and maintain a 90 degree angle during testing. Record the maximum peel force, failure mode (adhesive/cohesive), and include pictures of both sides of the adhesive system in the report.

3.4.3 Cleavage peel test location must be on the most critical point of the emblem. This is typically at the end of the stroke width of the tape applied emblem. Refer to Figure 1 for an example. Test location must be agreed to by Validation and Design Release Engineer prior to start of testing.

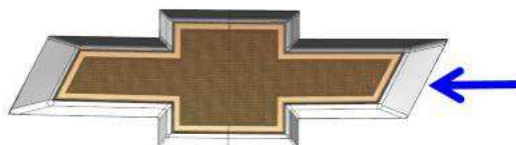


Figure 1: Chevy Bowtie

Note: For areas not accessible by the tip detailed in GMW16061 Section 3.2.1, use an aid (aluminum T-block with epoxy, plastic strap, cable, etc.) The Validation and Design Release Engineer must approve setup prior to testing.

3.4.4 Emblem assemblies must meet minimum peel adhesion values in the Subsystem Technical Specification (STS).

3.4.5 Typically, the mode of failure is cohesive failure (foam split), although some types of tape may not exhibit this failure mode. Mixed failure modes are frequently observed (cohesive failure and adhesive failure). Certain tape/adhesion promoter/substrate combinations may not exhibit evidence of cohesive failure (foam split) until after oven aging or environmental cycling. Any adhesive failure must be reviewed by materials engineering and approved.

3.5 Peel Adhesion of Tape Applied Emblem Assembly to a Curved Mating Surface.

3.5.1 Test taped emblems using the aluminum foil 90 degree peel strength test procedure detailed in GMW16830. Test after the conditions in 3.7 of this specification. All exposures listed in 3.7 are to be performed as individual tests not in series. Peel testing to be performed at ambient conditions after environmental exposure.

3.5.2 Record the maximum peel value, mode of failure and include pictures of both sides of the adhesive system in the report.

3.5.3 Emblem assemblies must meet minimum peel adhesion values found in the Performance Requirements Tables in GMW15201 in the columns for the appropriate tape type after the appropriate environmental exposure.

Note: In order to determine if the emblem peel values meet the requirements to GMW15201, the peel values need to be normalized based on the tape width used on the individual emblem. Non-uniform emblems may need to be calculated by averaging the width. Emblems with ribs shall only calculate the width on areas where tape is applied. Type III and VIII tapes use 10 mm wide tape. All other types use 12.7 mm wide tape.

3.6 Peel Strength of Tape Applied Inserts to Bezel. Run same testing as 3.4. Instead of a production representative part or test panel, the emblem bezel must be fixtured and anchored to evaluate peel adhesion of the insert to the bezel substrate. The validation or design engineer must approve setup prior to testing.

3.7 Peel Strength Environmental Exposures. Peel values must meet the requirements for the exposures in Table 1.

3.8 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to obtain a GM-approved International Material Data System (IMDS) submission.