



Adhesion Performance of Decorative Exterior Emblems and Nameplates

1 Scope

1.1 Material Description. This specification details the adhesion performance requirements of decorative exterior 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 exterior emblems that have been qualified and approved to the appropriate GM specifications.

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

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.

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

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

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 Test Conditioning. All tests shall be performed at GMW3221, Code A conditions, 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 vehicle mating surface sweep ≤ 0.25 mm per 75 mm length, run per Section 3.4 Peel Adhesion of Tape Applied Emblem Assembly to a Flat Vehicle Mating Surface.

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

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

3.4.1 Apply taped emblems to 100 mm x 300 mm steel test panels using the vehicle production intent paint system. Utilize production intent locating and wet-out techniques.

Note: Refer to GMW15201 Appendix B for information on ordering panels.

3.4.2 Perform cleavage peels after environmental exposures per Section 3.9. 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 adherends 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 or Design Engineer prior to start of testing.

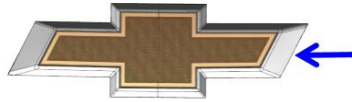


Figure 1: Chevy Bowtie

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 or design engineer must approve setup prior to testing.

3.4.4 Emblem assemblies must meet minimum peel adhesion values in the Exterior Trim Subsystem Technical Specification (SSTS) and values found in the Performance Requirement 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.

For example, GMW15201 Type IA tape is used on the following emblem (see Figure 2). One would divide by 1.27 cm, which is the width of tape used for the 90 degree peel tests.

GMW15201 Table 4		
	Newton (N)	N/cm
20 minute peel	4	3.1
72 h Peel	4	3.1
Accelerated Age	40	31.5
Humidity	18	14.2
Cycle Test	32	38



Figure 2: GMW15201 Type IA Tape

For this emblem, the minimum peel strength after humidity is calculated as follows.

$$14.2 \text{ N/cm} \times 3 \text{ cm} = 42.6 \text{ N}$$