



Performance Requirements - Exterior Acrylic Ornamentation, Second Surface Decorated

1 Scope

1.1 Material Description.

1.1.1 General Construction. The ornamentation usually consists of an acrylic insert bonded into a bezel which in turn is bonded or mechanically attached to the vehicle. Styling requirements determine whether the acrylic material will be transparent, translucent, or opaque. Normally decorative coatings are applied to the acrylic second surface. These coatings may be inks, paints, or vacuum deposit metals used singularly or in combination. Decorative coatings that incorporate vacuum deposited metals must be sealed with protective backcoats, and either full double-coated foam tape coverage, or a full perimeter bead of Room Temperature Vulcanization (RTV) silicone to prevent degradation. Additional specific construction and appearance requirements need to be described on the part drawing.

1.2 Symbols. Not applicable.

1.3 Applicability. Exterior emblems.

1.4 Remarks. Second surface decorative coatings and backcoatings must meet the requirements of GMW14797.

2 References

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

2.1 External Standards/Specifications.

SAE J2527

2.2 GM Standards/Specifications.

GMW3059

GMW3286

GMW14334

GMW14729

GMW3221

GMW14124

GMW14458

GMW14797

3 Requirements

3.1 Sample Conditioning. All samples are to be conditioned prior to each performance requirement test. Use GMW3221, Code A unless otherwise specified.

Performance requirement testing shall be done using finished assemblies, i.e., decorated acrylic inserts bonded to the appropriate substrate. See 3.2, 3.3, 3.4, and Table 1.

3.2 Thermal Shock Plus Rain-X Original (Glass Treatment) Immersion Test.

3.2.1 Scope. Test 10 emblem assemblies through cold and hot cycles followed by chemical immersion in Rain-X Original (yellow bottle) to ensure environmental robustness. Required for initial approval.

3.2.2 Procedure: Thermal Shock Plus Rain-X Original Immersion.

3.2.2.1 Cold soak emblems at -40 °C for 4 h. After 4 h, immediately put the emblems into thermal chamber at 70 °C for 20 minutes followed by -40 °C for 20 minutes. Repeat this hot/cold cycle 4 times for a total of 5 cycles. After the final cold cycle, remove parts and let them come to ambient temperature for 30 minutes.

3.2.2.2 Place enough Rain-X Original in a shallow container and fill to a level that will cover the emblem when it is submerged.

3.2.2.3 Submerge the emblem into the solution for 1 minute assuring that there is adequate solution to cover the interfaces between the acrylic insert and the bezel (if applicable).

3.2.2.4 Remove emblem and lightly shake and tilt emblem to remove any residual solution. (There will still be solution between the components).

3.2.2.5 Do not dry the part.

3.2.2.6 Place in a rack or fixture that would allow the emblem to sit in a vertical position unless otherwise directed.

3.2.2.7 Place in humidity chamber (GMW14729, Option A) for 24 h.

3.2.2.8 Repeat 3.2.2.2 through 3.2.2.7 two more times (a total of 3 immersion cycles).

3.2.2.9 Remove emblem from the chamber and inspect the emblem.

3.2.3 Requirement: Thermal Shock Plus Rain-X Original Immersion. For a standard sample size of 10 parts, the maximum allowable average corrosion squares score is 5, with none of the 10 parts having an individual score of greater than 5. See 3.2.4 for scoring corrosion on tested samples. Corrosion is only allowed on edges of the insert.

3.2.4 Report Procedure for Measuring Corrosion Squares. Using the sample population of 10 parts that went through the thermal cycling and immersion, prepare grid paper with each square 5 mm x 5 mm and copy the grid onto a transparent sheet. Overlay the transparent sheet with 5 mm x 5 mm grid onto the failed emblem and mark each square that has some corroded area underneath it. Add the total number of squares that are marked and then divide by 10. This will give the average corrosion squares for the sample population. A perfect score would be an average of 0 corrosion squares. See Figure 1 for representative tested parts with Corrosion Square Scores of 5. Report the number of corrosion squares and the total number of possible squares (total area).

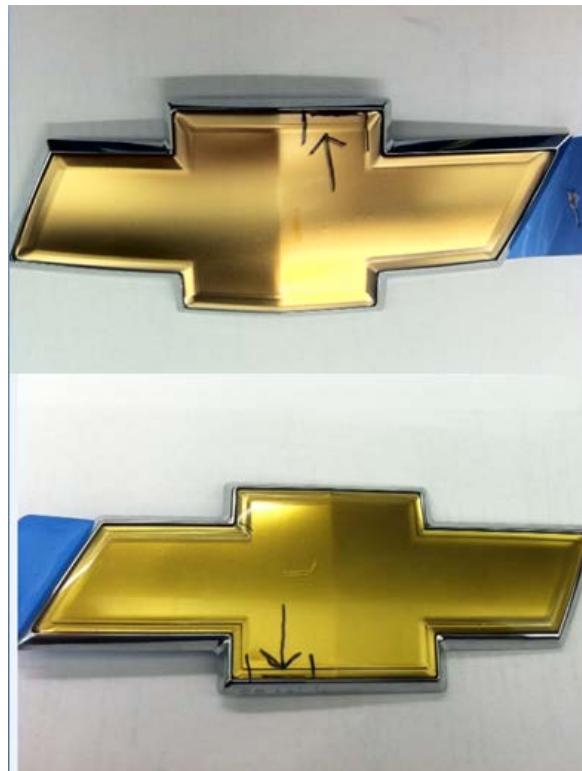


Figure 1: Representative Tested Parts that Have a Corrosion Square Score of 5

3.3 Liquid Dye Penetration Test.

3.3.1 Scope. Test standard test population of 10 emblem assemblies through the liquid dye penetration test to visually detect contamination intrusion into a sealed part. This test uses full emblem assemblies that are assembled using non-decorated (no vacuum metalizing/backcoating) clear lenses so any intrusion of dark food coloring may be visible after test.

3.3.2 Materials Required: Liquid Dye Penetration Test.

- Pressurized container large enough to submerge part(s) for test. See Appendix A, Figure A1 for an example.

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