GM	WORLDWIDE ENGINEERING STANDARDS	Material Specification	GMW15960

Performance Requirements of Primed and Bonded Glass Lace and Reveal Moldings

1 Scope

This specification covers the adhesion performance of flexible moldings (glass lace, reveal, etc.) which are bonded to automotive glass with polyurethane glass adhesive. The bond is intended to be the primary retention method for attachment of these moldings to glass during the service life of the vehicle.

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/Material Description. The materials tested to this specification are typically molded Ethylene Propylene Diene Monomer (EPDM), Polyvinyl Chloride (PVC), or Thermoplastic Elastomer (TPE) trim parts bonded with one- or two-component, warm or cold temperature applied moisture cure, black polyurethane adhesive sealing compounds or by direct extrusion on glass. These are used in conjunction with compatible primers and process methods for bonding to automotive glass.

1.1.1 General Description.

1.1.2 This specification encompasses two (2) different modes of performance validation. The first is the evaluation of the quality and acceptability of the molding prime operation. A section of molding that has been subjected to the production prime operation is embedded into a fresh bead of representative urethane or equivalent adhesive and allowed to cure. Upon cure and exposure to the prescribed environmental exposures, the molding section is pulled or peeled from the adhesive bead and the separation mode is noted.

1.1.3 The second type of performance requirement covered in this specification is an actual part or plaque test where the representative bonding process and materials are used. After cure, a proof load is applied to the molding to validate acceptable “pull-off” performance of the system. Upon meeting the proof load, the system is pulled to separation. The mode of separation is observed, evaluated and recorded.

1.2 Symbols. Not applicable.

1.3 Applicability. Materials and process applications tested to this requirement are typically non pressure sensitive bonded flexible moldings. For pressure sensitive bonded molding performance, see GMW15671.

1.4 Remarks. None.

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	GMW14729	GMW15671
GMW3221	GMW14270		

2.3 Additional References. Not applicable.

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3 Requirements

3.1 Sample Conditioning. All samples are to be conditioned prior to each requirement test to GMW3221, Code A.

3.2 Performance Requirements for Source Primed Moldings. As stated in the preceding, this procedure is used to validate and document the acceptability of the production priming process for molding sections that are supplied with primer applied to facilitate adhesive attachment.

3.2.1 Test Sample Set Description. Three (3) 30.0 cm (12 in) sections of the subject molding are considered as a test set and four (4) sets are required for the testing.

3.2.1.1 One (1) section of the set shall be primed with production representative process and material.

3.2.1.2 Two (2) molding sections shall be received by the testing source free from primer and will be used as controls.

3.2.1.3 One (1) of the control sections shall be hand primed with fresh primer material, applying a primer film that is in accord with the adhesive primer manufacturers recommendations for film thickness and dry time.

3.2.1.4 The other control molding section of the set shall be used as received, without primer application.

3.2.2 Test Sample Set Assembly. Three (3) 7.0 mm (0.275 in) round beads ± 1.0 mm (± 0.04 in) round bead, (approximately 25 cm (9.84 in) long) of the representative adhesive shall be applied to a 10 cm × 30 cm (4 in x 12 in) Electrodeposition Primer (ELPO) standard panel. Within three minutes, the intended primed surface of the molding shall be wetted to the adhesive bead in a manner to affect a bond to the bead. One (1) set of moldings per each panel shall be used.

3.2.3 Sample Testing. After full cure (to the manufacturer's recommendation), the test panels shall be subjected to the environmental exposures of the specification.

3.2.3.1 Completed test panels shall be exposed to the following environments.

- 72 h room temperature.
- 14 d heat age at 80 °C.
- 7 d humidity (GMW14729).
- Cycle exposure (GMW14124, Cycle C).

3.2.3.2 After the exposures noted in 3.2.3.1 and a 24 h recovery at room temperature, the molding sections shall be peeled at 90 degrees from the adhesive beads. The separation mode shall be noted and recorded for each test section.

3.2.4 Acceptable Separation Modes.

- Tearing of the molding section during test, or
- Cohesive separation of the adhesive (that is, evidence of the adhesive material on both the molding and the edge of glass after peel test).

3.3 Adhesion Performance Requirements for Bonded Stationary Glass Reveal Moldings Adhered to Glass Edge. This portion of the specification is intended to cover stationary glass assemblies where the reveal molding is designed to be permanently bonded to the edge of glass.

3.3.1 Test Sample Set Description. Four (4) production assemblies are required for test. The assemblies shall be representative of production in all respects. If pre-production sample validations is required, the differences in materials and/or assembly process should be noted and accompany the test data for the record. To fulfill the specification, testing shall be done again when actual production samples are available, and those test results shall be added to the respective data package for the part record.

3.3.2 Sample Testing. Sample part testing shall be accomplished in two (2) modes.

3.3.2.1 First, a non-destructive proof load will be run on all submitted parts. The proof load testing will require a test fixture (specific for the part) to facilitate a tensile pull (in the opposite direction of assembly insertion of a 75 mm (3 in) length of the bonded molding). This 75 mm (3 in) section of bonded molding shall withstand an 18 kg (40 lb) tensile load for 5 s. This proof load shall be conducted at locations designated on the part print. An 18 kg (40 lb) tensile load shall be used unless a more representative load is established for the proof load test, and that load will be stated on the associated part print.

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