



Door Inner Water Deflection/Barrier/Acoustic Material

1 Scope

This specification describes the functional requirements for a sheet form material (either flexible, soft, rigid and/or combination of both) used inside the vehicle door as a means to block the intrusion of water, air, dust and/or noise into the passenger compartment. The intrusion levels of water, air, dust and/or noise will be specified by the Statement of Requirements (SOR) listed for each program. The material assemblies, meeting the requirements of this specification, must function in continuous operating temperatures from -30 °C to 80 °C with expected intermittent exposure to automotive industry paint repair cycles. These materials will not stain fabric surfaces. The three families of material constructions described herein are normally supplied with an adhesive on one side and a release surface on the opposite side so that they may be stacked for shipping. They may be flat or formed to fit the shape of door components as required by the Vehicle Program Component Technical Specification (CTS) and SOR.

1.1 Material Description.

1.1.1 Materials conforming to this specification may be supplied to the assembly plant and applied to the door on the assembly line as one of the types listed in 1.1.3.

1.1.2 All families of door sealing systems must adhere to the door sheet metal with an adhesive which meets or surpasses the requirements outlined in 3.7.

1.1.3 Material Identification. Reference GM Best Practice No. 115434.

Note: The supplier shall work with the GM Design Release Engineer (DRE) to comprehend this requirement.

1.1.3.1 Family 1 Materials, (For Level A and Level B Vehicles).

- a. Barrier material shall consist of Ethylene Vinyl Acetate (EVA).
- b. The EVA materials, prior to forming, shall have mass per unit area per Level A and Level B as follows:
 - Mass per unit area of Level A shall be $1.465 \text{ kg/m}^2 \pm 0.7 \text{ kg/m}^2$.
 - Mass per unit area of Level B shall be $0.851 \text{ kg/m}^2 \pm 0.4 \text{ kg/m}^2$.
- c. Thickness of EVA barrier shall be 1.00 mm. Reference for Level A barrier materials.
- d. Thickness of EVA barrier shall be of 0.60 mm. Reference for Level B barrier materials.

Note: Variation in thickness may occur due to density tolerances.

- e. Barrier material shall be adhered to door sheet metal with non-gassed hot melt adhesive that meets requirements in Table 1.

1.1.3.2 Family 2 Materials, (For Level C, Level D, and Level E Vehicles).

- a. Barrier material shall consist of Polypropylene (PP) or Polyethylene (PE) film.
- b. Both PP and PE barrier materials shall have density of $0.120 \text{ kg/m}^2 \pm 0.006 \text{ kg/m}^2$.
- c. The thickness of PP and PE barrier materials shall be between 0.15 mm to 0.25 mm.

Note: Variations in thickness can occur due to density tolerances.

- d. Barrier material shall be adhered to door sheet metal by an adhesive which can be spray or gravure applied and meets requirements in Table 1.

1.1.3.3 Family 3 Materials (For Level C, Level D, and Level E Vehicles).

- a. Barrier material shall consist of a PE foam sheet.
- b. The PE foam material shall have a density of $0.440 \text{ kg/m}^2 \pm 0.022 \text{ kg/m}^2$.
- c. The thickness of the PE shall be 0.6 mm.

Note: Slight variation in thicknesses may occur due to density tolerances.

- d. Barrier material shall be adhered to door sheet metal with non-gassed hot melt adhesive that meets requirements in Table 1.

Note: Data generated for Level A through Level E Vehicles are acoustic performance standards generated from Vehicle Market Segmentation Card.

1.2 Symbols. Not applicable.

1.3 Applicability. Door noise barrier water deflectors.

1.4 Remarks.

1.4.1 Changes in part composition or construction must be approved by the GM DRE and GM Materials Engineer. Any deviation from GM Best Practice No.115434 shall be approved by the Global Subsystem Leadership Team (GSSLT).

1.4.2 The data obtained by these methods are applicable to the material under conditions of the particular test and are not necessarily the same as those obtained in the vehicle. Data obtained may also be used for statistical process control to measure the effectiveness of the production system.

2 References

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

2.1 External Standards/Specifications.

ISO 34-1	ISO 8510-2	ISO 13937-2	SAE J1400
----------	------------	-------------	-----------

2.2 GM Standards/Specifications.

GMW3005	GMW3221	GMW14124	GMW14444
GMW3059	GMW4217	GMW14270	GMW16853
GMW3182			

2.3 Additional References.

- GM Best Practice No.115434 (KPAC WATERDEFL-1).
- Statement of Requirements (SOR).
- US Vehicle Market Segmentation Card.
- Vehicle Program Component Technical Specification (CTS).

3 Requirements

3.1 Requirements on Test Specimens. Reference GMW3221.

3.2 Emissions Testing of Interior Materials and Parts. For all Code E designated parts per GMW14444, reference GMW16853 for emissions testing of interior materials and parts.

3.3 Dimensional Stability (GMW4217). Maximum allowable change will be 1.5% unless approved the GM DRE and GM Materials Engineer.

3.4 Mass per Unit Area (GMW3182). Shall be specified in SOR and/or CTS and engineering drawing. Best Practice deviations shall be approved by GSSLT.

3.5 Barrier Performance (SAE J1400). For initial qualification only; the Sound Transmission Loss (STL) shall be at least as great as the values calculated for production thickness stock by the equation.

$$\text{STL (dB)} = 20 \log_{10} W + 20 \log_{10} F - 47.2$$

Where:

W = mass per unit area kg/m²

F = sound frequency

Note: This test is for information only. Results of this test shall be retained by supplier for reference.