



Low MDI Urethane Acoustic Foam

1 Scope

This specification describes the requirements of a two-component, rigid polyurethane foam material used as an acoustic baffle in enclosed areas such as A, B, and C pillars and engine compartment structures. It must be capable of bonding to e-coated metal, be non-wicking and be compatible with all manufacturing processes.

1.1 Material Description. This material is a two-component foam comprised of a 24:1 mixture (by volume) polymeric Methylene Diphenyl Diisocyanate (MDI) prepolymer (GM Part Number 9986185) and a water/amine curative (GM Part Number 9986184).

1.2 Symbols. Not applicable.

1.3 Applicability. Foam material used as an acoustic baffle in enclosed areas such as A, B, and C pillars and engine compartment structures.

1.4 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

ASTM D92	ASTM D1638	ASTM D2126	ASTM D4339
ASTM D1622	ASTM D1735	ASTM D2196	SAE J1756

2.2 GM Standards/Specifications.

GMW3059	GMW14124	GMW14729	GMW15735
GMW14093	GMW14270		

2.3 Additional References.

GM Part Numbers 9986184, 9986185

3 Requirements

3.1 Requirements on the Prepolymer (GM Part Number 9986185) and Curative (GM Part Number 9986184).

3.1.1 Requirements on Delivery. The isocyanate prepolymer must be homogeneous and free of lumps, unmixed particles, and foreign materials.

3.1.2 Shipping Stability (GMW15735). Material shall be stored in airtight containers away from heat and sunlight.

3.1.3 Elevated Temperature Stability (GMW15735). As shipped, the material must be capable of withstanding 72 h at 54 °C. Test per GMW15735.

3.1.4 Low Temperature Stability (GMW15735). As shipped, the material must be capable of withstanding three (3) cycles of the applicable cycle schedule outlined in GMW15735.

3.1.5 Storage Stability (GMW15735). The shelf life of the material in closed containers shall be 90 d at a temperature not to exceed 35 °C, when tested per GMW15735. Shelf life of the materials commences upon receipt of the material from the manufacturer.

3.1.6 Color. The two components, isocyanate prepolymer and water/amine curative, shall be in contrasting colors. The colors shall be picked so that in instances of improper mixing, color striations shall be visible in the dispensed material.

3.1.7 Material Properties. See Table 1 and Table 2.

Table 1: Material Properties of the Prepolymer (GM Part Number 9986185)

Property	Test Method	Value
Viscosity (at 25 °C)	ASTM D2196	3500 cps
Appearance	Not applicable	Brown Liquid
Flash Point	ASTM D92	> 100 °C (> 230 °F)
Shelf Life	GMW15735	90 d minimum
Specific Gravity	ASTM D1638	1.05 to 1.15
Odor	Not applicable	Slight

Table 2: Material Properties of the Curative (GM Part Number 9986184)

Property	Test Method	Value
Appearance	Not applicable	Clear Yellow Liquid
Flash Point	ASTM D92	> 110 °C (> 230 °F)
Shelf Life	GMW15735	90 d minimum
Specific Gravity	ASTM D1638	0.95 to 1.04
Odor	Not applicable	Slight

3.1.8 Viscosity (ASTM D2196) of the Prepolymer (9986184). In addition to being determined at 25 °C, the viscosity shall also be tested and reported at the process condition temperature.

3.2 Requirements on the Cured Foam.

3.2.1 Requirements on Test Specimens.

3.2.1.1 Odor (ASTM D4339). The cured foam must not have a toxic or noxious odor.

3.2.1.2 Toxicity. The foam must not adversely affect the personnel handling it.

3.2.1.3 Adhesion. The foam must not crack, promote corrosion, or lose adhesion to the test panel before, during or after the following conditions.

- Initial
- After 24 h at Room Temperature (RT) (23 °C ± 5 °C)
- GMW14124, Cycle F, six (6) Cycles
- Heat Aging of 336 h at 70 °C

Note: Test panels can be flat or preferably a simulated pillar, or tail section consisting of production intent metal plus primer and topcoat (if applicable). After all environmental cycles, evaluation shall consist of cutting the part open and visually inspecting. There must not be any corrosion on the panel surface underneath the foam.

3.2.1.4 Cold Impact (GMW14093, Apparatus C, Code 3, Minimum 1.7 J). The material must not crack or lose adhesion to the substrate prior to, or after, two (2) 1.7 J impacts at -30 °C. Sample size shall be 250 mm × 250 mm × 25 mm (6 in × 6 in × 1 in), with trimmed edges.