



Impregnated Polyurethane Foam for General Applications

1 Scope

1.1 Material Description. This specification identifies polyurethane (PUR) foam types impregnated with acrylate or acrylate/bitumen dispersion. These types are sound absorbing foams used in General Motors vehicles.

1.1.1 Types. Types are defined by density and impregnation type per Table 2, Table 3, and Table 4 respectively.

1.1.2 Operational Temperature. The typical temperature range the material is exposed to at its position in the vehicle is limited to the following:

Type A: -20 °C to +100 °C

Types B, C, D, E, F: -40 °C to +120 °C

Types G, H, J: -30 °C to +120 °C

1.1.3 Peak Temperature. The maximum temperature the material is exposed to for a short time in its position in the vehicle is limited to the following:

Type A: +120 °C

Types B, C, D; E, F, G, H, J: +150 °C

1.2 Symbols. Not applicable.

1.3 Applicability. This standard shall encompass polyurethane foams used in all applications throughout the body and chassis areas of the vehicle. These polyurethane foams may be used for vibration damping, noise and shock isolation, spacers for part retention and air and dust seals in the body and chassis range.

2 References

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

2.1 External Standards/Specifications.

FMVSS 302	ISO 845	ISO 1856-A	ISO 3386-1
ISO 354	ISO 1798	ISO 1923	

2.2 GM Standards/Specifications.

GMW3059	GMW3221	GMW4217	GMW16853
GMW3182	GMW3232	GMW14270	
GMW3205	GMW3235	GMW15634	

3 Requirements

3.1 Test Piece and Number. If it is not possible to take test pieces from part, then suitable plates shall be manufactured for the test (taken from equal manufacturing process, recipe of foam and density). The test piece shall be taken without skin and in rising direction of foam.

3.2 Conditioning. All test pieces shall be conditioned to GMW3221, Code A.

3.3 Required Performance Values. All requirements listed in Table 1 shall be fulfilled by the delivered foam and shall be documented by the supplier in the foam certification submission.

3.4 Basic Foam Physical Properties. All requirements listed in Table 2, Table 3, and Table 4 shall be fulfilled by the delivered foam and shall be documented by the supplier in the foam certification submission. Values indicated with N/A ("Not Applicable") are not required. Documentation of additional properties may be required by the approving region.

Table 1: Required Performance Values for Documentation

Performance	Test Method	Specified Value
Fogging/Volatility of Organic Constituents Note 1	GMW3235 Method B-Y1-T1 (gravimetric, ≥ 1 day pre-drying, $+90^{\circ}\text{C}$ test temperature)	≤ 4 mg
Flammability	GMW3232	Must comply to FMVSS 302
Interior Emissions Note 1 Volatile Organic Compounds (VOC) Semi-Volatile Organic Compounds (SVOC)	GMW15634	Per GMW16853
Resistance to Odor Note 1	GMW3205	
	Wet condition (Code A)	Rating 6 minimum
	Dry condition (Code B)	Rating 6 minimum
Acoustical Performance	Alpha cabin testing ISO 354	Per specific engineering drawing
Mass per Unit Area	GMW3182	Per specific engineering drawing
Thickness	ISO 1923	Per specific engineering drawing
Dimensional Stability	GMW4217	
	Dimensional change	$2.0\% \pm 0.5\%$

Note 1: Required for all parts which are in contact with refreshable air in the occupant compartment and the trunk.

Table 2: Basic Foam Physical Properties (Type A to C)

		Type	A	B	C
Property	Test Method	Unit			
Density of the Raw Foam	ISO 845 Note 1	kg/m ³	25	25	25
Impregnation	N/A	N/A	Acrylate	Acrylate	Acrylate
Density of the Impregnated Foam	ISO 845 Note 1	kg/m ³	60 $\pm$ 12/-6	80 $\pm$ 15/-8	110 $\pm$ 11
Tensile Strength	ISO 1798	kPa	> 100	> 120	> 120
Elongation at Break	ISO 1798	%	> 140	> 140	> 140
Compression Stress Value	ISO 3386-1	kPa	> 2.5	> 2.5	> 3
Compression Set	ISO 1856-A	%	< 5	< 5	< 5

Note 1: Determination of linear dimensions per ISO 1923. But compressive force of foot is 500 Pa (0.5 kPa) $\pm$ 5% and a 50 mm $\pm$ 0.1 mm diameter pressure. All readings should be taken after the pressure foot has been in contact with the material for at least 5 s.

N/A = Not applicable.