



Polypropylene - Expanded Bead Foam

1 Scope

1.1 Material Description. This specification covers the properties of a highly resilient, multiple impact resistant, black or white polypropylene expanded bead foam, which is steam chest molded.

1.2 Symbols. The material abbreviation according to ISO 11469 is >PP-E<.

1.3 Applicability. Typical applications include the following: bumper energy absorbers, knee bolsters.

1.4 Remarks. Material types are delineated by density range. For ranges outside those listed in Table 1, contact GM Materials Engineering.

2 References

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

2.1 External Standards/Specifications.

FMVSS 302	ISO 845	ISO 1856	ISO 11469
ISO 844	ISO 1798		

2.2 GM Standards/Specifications.

GMW3059	GMW3232	GMW14444	GMW16853
GMW3205	GMW3235	GMW14650	
GMW3221	GMW14270	GMW15634	

2.3 Additional References.

Foam Submission Template

3 Requirements

3.1 Requirements on Test Specimens. All test pieces shall be conditioned according to GMW3221, Code A.

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 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to obtain a GM-approved International Material Data System (IMDS) submission.

3.4 Chemical Requirements. All parts manufactured from molding compounds shall be resistant to any media contacted in application.

3.5 Requirements on Materials. See Table 1.

3.5.1 Requirements at Use for Interior. See Table 2. These requirements must be met in addition to the requirements in Table 1.

3.5.1.1 All finished parts for Interior applications shall meet the requirements according to GMW14444.

3.5.2 Requirements at Use for Exterior. The following requirements must be met in addition to the requirements in Table 1.

3.5.2.1 All finished parts for exterior applications shall meet the requirements according to GMW14650.

3.6 Requirements on Delivery and Required Performance Values. Important physical and mechanical properties that characterize the material are summarized in Table 1.

All requirements listed in Table 1 and Table 2, if necessary, shall be fulfilled by the delivered foam and shall be documented by the supplier in the Foam Submission template. The Foam Submission Template is available on GM Supply Power or through GM Materials Engineering.

Table 1: Physical and Mechanical Properties

Properties	Type												
	Standard	1	2	3	4	5	6	7	8	9	10	11	12
Density	ISO 845	20 kg/m ³ ± 10%	30 kg/m ³ ± 10%	40 kg/m ³ ± 10%	50 kg/m ³ ± 10%	60 kg/m ³ ± 10%	70 kg/m ³ ± 10%	80 kg/m ³ ± 10%	90 kg/m ³ ± 10%	120 kg/m ³ ± 10%	150 kg/m ³ ± 10%	180 kg/m ³ ± 10%	200 kg/m ³ ± 10%
Tensile Strength	ISO 1798 500 mm/minute	> 180 kPa	> 240 kPa	> 300 kPa	> 400 kPa	> 450 kPa	> 500 kPa	> 600 kPa	> 700 kPa	> 900 kPa	> 950 kPa	> 1000 kPa	> 1100 kPa
Elongation at Break	ISO 1798, 500 mm/minute	> 12%	> 12%	> 10%	> 10%	> 10%	> 10%	> 10%	> 10%	> 8%	> 8%	> 5%	> 5%
Compression Stress	ISO 844, Test at 23 °C/50% deformation	> 80 kPa	> 120 kPa	> 180 kPa	> 300 kPa	> 380 kPa	> 450 kPa	> 550 kPa	> 650 kPa	> 1000 kPa	> 1500 kPa	> 2100 kPa	> 2500 kPa
Compression Set	ISO 1856 method C 23 °C/50% compression	< 35%	< 45%	< 45%	< 45%	< 45%	< 45%	< 45%	< 45%	< 45%	< 45%	< 45%	< 45%