



Polyethylene - Low Density, Heat Stabilized, UV Stabilized

1 Scope

1.1 Material Description. This standard covers the properties of low density, heat stabilized, ultraviolet (UV) stabilized, injection moldable polyethylene.

1.2 Symbols. The material abbreviation according to ISO 11469 is >PE-LD<.

1.3 Applicability. Seat belt sleeves.

1.4 Remarks. This resin is not suitable for long structural seat belt sleeves. Longer structural seat belt sleeves require linear low density polyethylene.

2 References

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

2.1 External Standards/Specifications.

ISO 188	ISO 527	ISO 1872-2	ISO 11469
ISO 294	ISO 1133	ISO 3795	SAE J1545
ISO 306	ISO 1183		

2.2 GM Standards/Specifications.

GMW3013	GMW3221	GMW3417	GMW14444
GMW3059	GMW3232	GMW14162	GMW15634
GMW3205	GMW3235	GMW14334	GMW16853

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

3 Requirements

Materials approved to this specification shall meet the requirements of GMW3013, **General Requirements for Handling of Technical Terms of Delivery for Plastics.**

3.1 Requirements on Test Specimens. Unless otherwise specified, injection molding of test specimens shall be accomplished per ISO 294 with the conditions for injection molding from ISO 1872-2. Test methods and specimen dimensions are also to be in accordance with ISO 1872-2 unless otherwise specified.

All tests shall be performed on specimens 40 h minimum after molding and immediately following a conditioning period of 24 h minimum in a controlled atmosphere per GMW3221, Code A, unless otherwise specified. All tests shall be performed on unannealed specimens.

The values specified in Table 1 shall be met by test specimens in natural or black.

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 Requirements on Delivery. Important physical, mechanical and thermal properties that characterize the material are summarized in Table 1 and Table 2. The color shall be specified on drawings, in material specifications and otherwise.

3.4 Chemical Requirements. All parts manufactured from molding compounds shall be resistant to the media they contact at their place of use.

3.5 Compound Properties. See Tables 1 and 2. The following are also required for full standard approval. The minimum number of lots per test required for the following properties is one in natural: Poisson's Ratio,

Coefficient of Linear Thermal Expansion (CLTE), Mold Shrinkage, Stress Strain Curve at multiple temperatures (for example -30 °C, 23 °C, 85 °C). See GMW3013 for all test procedures and parameters.

3.6 Performance Requirements. Performance requirements shall be specified on part drawings or in component specifications. All parts manufactured from molding compounds shall be resistant to the media they contact, such as aliphatic and aromatic hydrocarbons, fuels, lubricants, oils, greases and alcohols, at their places of use.

Table 1: Compound Properties (Natural and Black)

Property	Standard ^{Note 1}	Units	Value
Density	ISO 1183	g/cm ³	Target Range 0.915 to 0.919
Melt Flow Rate	ISO 1133 2.15 kg, 190 °C	g/10 minutes	5.9 to 8.0
Tensile Modulus	ISO 527 1 mm/minute	MPa	150 to 170
Tensile Stress at Yield	ISO 527 50 mm/minute	MPa	≥8.5
Tensile Stress at Yield after Heat Aging	ISO 188, ISO 527 1000 h at 90 °C	% Retention	≥75
Vicat Softening Point	ISO 306 50 °C/h, 10 N	°C	≥84
Flammability	GMW3232 or ISO 3795 All reporting must be in accordance with GMW3232	mm/minute	SE or <100
Emission Testing of Interior Materials: For initial approval, test 1 lot in black.	GMW16853		
- Odor	GMW3205-B3	Rating	≥6
- Fogging	GMW3235-B-Y1-T2	mg	Requirements see GMW16853
- Emissions	GMW15634 VOC Value SVOC Value	µg/g µg/g	Requirements see GMW16853 Requirements see GMW16853

Note 1: Standard test specimen and test setup should follow GMW3013.

SVOC: Semi-volatile Organic Compound

VOC: Volatile Organic Compound