



Polybutylene Terephthalate (PBT) + Polycarbonate (PC) Glass Fiber Reinforced, Heat Stabilized, Pellet Form

1 Scope

1.1 Material Description. This specification covers the properties of a glass fiber reinforced, heat stabilized, pellet form, injection molding grade, Polybutylene Terephthalate (PBT) polyester and Polycarbonate (PC) blend.

1.2 Symbols. The material abbreviations according to ISO 11469 are shown in Table 1.

1.3 Applicability. Typical applications include the following: Headlamp grille mounting panels.

1.4 Remarks. The classification into groups is according to the different ranges of glass fiber content. Additional glass ranges will be added as they become necessary.

2 References

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

2.1 External Standards/Specifications.

ISO 75-1/2	ISO 527-1/2	ISO 3451-1	ISO 20028-2
ISO 179/1eA	ISO 1133-1	ISO 3795	
ISO 188	ISO 1183-2	ISO 11357-3	
ISO 294-1	ISO 3146	ISO 11469	

2.2 GM Standards/Specifications.

GMW3013	GMW3232	GMW14797	GMW16853
GMW3059	GMW3235	GMW15634	
GMW3205	GMW14270	GMW16172	

2.3 Additional References.

- Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02

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 294-1 with the conditions for injection molding from ISO 20028-2. Test methods and specimen dimensions are also to be in accordance with ISO 20028-2.

Test specimens shall be conditioned in a controlled atmosphere of $+23\text{ °C} \pm 2\text{ °C}$ and $50\% \pm 5\%$ Relative Humidity (RH) for at least 24 h prior to test. All tests shall be performed on unannealed specimens in a controlled atmosphere of $+23\text{ °C} \pm 2\text{ °C}$ and $50\% \pm 5\%$ RH unless otherwise specified. In addition, tests specified at temperatures below or above $+23\text{ °C} \pm 2\text{ °C}$ and $50\% \pm 5\%$ shall be conducted at the specified temperature using specimens conditioned at the specified temperature for 4 h minimum.

The minimum values in Table 1 shall be met by test specimens in natural, black, or in a standard sampled color if natural or black are not available. For colored grades where other pigment and additive systems (e.g., stabilizer) are used, the impact values shall not decrease more than 10% from the specified minimum value.

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

3.3 Compound Properties (Natural, Black and Integrally Colored). See Table 1. The following are also required for full approval. The minimum number of lots per test required is one (1) unless otherwise specified. See the Polyester tab on the Plastics Submission Template and GMW3013 for test details and parameters.

- Poisson's Ratio
- Stress/strain data points and curves at the following temperatures:
 - -30 °C
 - +23 °C
 - +85 °C
 - +110 °C
 - +125 °C

Note: See GMMPD tab on Plastics Submission Template (located in GM SupplyPower) for test details.

- Coefficient of Linear Thermal Expansion (CLTE) data

Note: See GMMPD tab on Plastics Submission Template (located in GM SupplyPower) for test details.

- Differential Scanning Calorimetry (DSC) curve
- Fourier Transform Infrared (FTIR) spectroscopy curve
- Mold shrinkage

3.4 Paintability. Plastics used for painted applications are required to meet Paint Performance Requirements for New Plastic Materials per GMW16172. Additionally, painted plastic parts are required to meet Painted Plastic Parts Performance Requirements per GMW14797.

3.5 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.