



PBT+PET – 25% Talc Filled, Heat Stabilized

1 Scope

1.1 Material Description. This standard covers the properties of a 25% talc filled, heat stabilized, injection moldable polybutylene terephthalate (PBT) + polyethylene terephthalate (PET).

1.2 Symbols. The material abbreviation according to ISO 11469 is >PBT+PET-T25<.

1.3 Applicability. Typical applications include the following: Lighting components, housings and supports.

2 References

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

2.1 External Standards/Specifications.

ISO 75	ISO 294	ISO 1183	ISO 7792-2
ISO 179/1eA	ISO 527	ISO 3451	ISO 11469
ISO 188			

2.2 GM Standards/Specifications.

GMW3013	GMW3221	GMW14444	GMW16853
GMW3059			

2.3 Additional References.

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

3 Requirements

3.1 Requirements on Test Specimens. Reference GMW3221.

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 charts. The color shall be specified on drawings, in material specifications and otherwise.

Unless otherwise specified, injection molding of test specimens shall be accomplished per ISO 294 with the conditions for injection molding from ISO 7792-2.

All test specimens shall be brought to equilibrium in standard conditions for temperature and moisture and tested in that state as defined in GMW3221, Code A, unless the test method indicates that standard conditioning is not required. Condition specimens for a minimum of 24 h prior to testing or until moisture equilibrium is reached. If specimens are tested outside the conditioned environment, they shall be tested within 10 minutes of removal.

The minimum values specified in the property tables must be met by test specimens in natural, black, or in a standard sampled color if natural or black are not available.

3.3.1 Compound Properties (Natural and Black). See Table 1. The following are also required for full standard approval. The minimum number of lots per test required is one in natural: Poisson's Ratio, Stress Strain Curve at multiple temperatures (for example -30 °C, 23 °C, 85 °C); Coefficient of Linear Thermal Expansion (CLTE), Mold Shrinkage and Fogging. See GMW3013 for the test procedures.

3.4 Performance Requirements. Performance requirements shall be specified on part drawings or in component specifications.

Table 1: Compound Properties (Natural and Black)

Property	Standard	Units	Range
Ash	ISO 3451	%	23 to 27
Density	ISO 1183	g/cm ³	Target Range 1.3 to 1.7
Tensile Modulus	ISO 527	MPa	4900 to 6200
Stress at Break	ISO 527	MPa	≥46
Stress at Break After Heat Aging	ISO 188 ISO 527 1000 h at 140 °C	% Retention	≥75
Notched Charpy Impact Strength At +23 °C At -30 °C	ISO 179/1eA	kJ/m ²	≥2.1 ≥2.1
Notched Charpy Impact Strength after Heat Aging	ISO 188 ISO 179/1eA 1000 h at 140 °C	% Retention	≥75
Heat Deflection Temperature Under Load 1.8 MPa	ISO 75	°C	≥102

4 Manufacturing Process

Not applicable.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.

5.3 Inspection and Rejection. Samples of components or materials released to a GM material specification shall be tested for conformity with the requirements of this material specification and approved by the responsible Engineering department prior to commencement of delivery of bulk supplies.

A new approval must be received for any changes, e.g., properties, manufacturing process, location of manufacture, etc. If not otherwise agreed, all testing and documentation normally required for initial release must be completed.

It is the responsibility of the supplier to inform the customer in a timely manner, without solicitation, and to include documentation of all modifications of materials and/or processes and to apply for a new release.

5.4 Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). For new product submissions, or when a change in chemical composition of an existing product has occurred, a complete copy of the Material Safety Data Sheet/Safety Data Sheet must be submitted in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) requirements or other country-specific MSDS/SDS requirements. In addition, product MSDS/SDS submissions must be in compliance with specific country General Motors TMC003 Material Safety Data Sheet/Safety Data Sheet guidance documents where available.

5.5 All materials supplied to this standard must comply with the requirements of GMW3059, Restricted and Reportable Substances for Parts.