



Polyamide 66 - 25% Glass Fiber Reinforced, Heat Stabilized, Flame Retardant, UV Stabilized

1 Scope

1.1 Material Description. This standard covers the properties of a 25% by mass glass fiber reinforced, heat stabilized, flame retardant, Ultraviolet (UV) stabilized Polyamide 66 (Nylon 66), which is used in injected form for molded components.

Additional characteristics beyond the amount of glass fiber reinforcement will be shown in Table 1.

1.2 Symbols. The material abbreviation according to ISO 11469 is >PA66-GF25-FR(VW+YZ)<. The appropriate flame retardant codes for VW and YZ should be filled in by the resin supplier according to ISO 1043-4. (Do not use VW and YZ in the material symbol.)

1.3 Applicability. Typical applications include the following: Ashtrays.

1.4 Remarks. Interior material for center console mounted ashtrays only. Colorfastness and natural weathering durations deviate from templated polyamide requirements due to targeted application location (center console mounted ashtrays).

2 References

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

2.1 External Standards/Specifications.

ISO 75	ISO 527-1/2	ISO 11357-3	SAE J1885
ISO 179-1/1eA	ISO 1043-4	ISO 11469	UL 94
ISO 188	ISO 1183	ISO 15512	
ISO 294	ISO 3146	ISO 16396-2	
ISO 527	ISO 3451	SAE J1545	

2.2 GM Standards/Specifications.

GMW3013	GMW3235	GMW14270	GMW14444
GMW3059	GMW3417	GMW14334	GMW15634
GMW3205	GMW14162	GMW14335	GMW16853

3 Requirements

3.1 Requirements on Test Specimens. Materials approved to this specification shall meet the requirements of GMW3013.

Unless otherwise specified, injection molding of test specimens shall be accomplished per ISO 294 with the conditions for injection molding from ISO 16396-2.

All values indicated herein are based on material considered to be in the dry-as-molded state with moisture content of 0.2% maximum, ISO 15512, Method A or Method B, or GMW14335. Immediately after molding, specimens shall be sealed in moisture-proof containers and stored at 23 °C ± 2 °C for at least 24 h prior to test as specified in ISO 16396-2. All tests shall be performed on unannealed specimens immediately after their removal from the containers in a controlled atmosphere of 23 °C ± 2 °C and 50% ± 5% Relative Humidity (RH) unless otherwise specified. In addition, tests specified at temperatures below or above 23 °C ± 2 °C shall be conducted at the specified temperature using specimens conditioned at the specified temperature for 4 h minimum.

The minimum values specified 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. The values specified in Table 2 shall be met by four typical interior colors (black, gray, tan/neutral, and either red or blue) for approval to the specification and by test specimens in specific colors as required during color development. See the Polyamide tab on the Plastics Submission Template and GMW3013 for test details and parameters.

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 Compound Properties (Natural, Black and Integrally Colored). See Table 1 and Table 2. The following are also required for full approval. The minimum number of lots per test required is one unless otherwise specified. See the Polyamide 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, +150 °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

Note: See the Polyamide tab on the Plastics Submission Template and GMW3013 for test details.

3.5 Performance Requirements. Performance requirements shall be specified on part drawings or in component specifications. All parts manufactured from this material shall be resistant to the media contacted, such as aliphatic and aromatic hydrocarbons, fuels, lubricants, oils, greases and alcohols, at the places of use.

3.6 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.

Table 1: Compound Properties (Natural and Black)

Property	Standard	Units	Value
Ash	ISO 3451	%	21 to 31
Density ^{Note 1}	ISO 1183	g/cm ³	Target Range 1.30 to 1.65
Tensile Modulus	ISO 527-1/2	MPa	≥ 6500
Stress at Break	ISO 527-1/2	MPa	≥ 115
Stress at Break after Heat Aging ^{Note 2}	ISO 188, ISO 527	% Retention	≥ 90
Strain at Break	ISO 527-1/2	%	≥ 1.8
Notched Charpy Impact Strength At +23 °C At -30 °C	ISO 179-1/1eA	kJ/m ²	≥ 6.5 ≥ 5.0