



Polyamide 66 – Heat Stabilized, Impact Modified, Weatherable

1 Scope

1.1 Material Description. This standard covers properties of heat stabilized, impact modified, weatherable polyamide 66 (nylon 66), which are used in injected form for molded components.

1.2 Symbols. The material abbreviation according to ISO 11469 is >PA66-I<.

1.3 Applicability. Typical applications include: windshield washer system components, wheel nutcaps.

1.4 Remarks. The standard is classified by level of impact modifiers. Additional types will be added as necessary:

- **T1:** High Impact modified (none available at this time).
- **T2:** Very High impact modified.

2 References

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

2.1 External Standards/Specifications.

ASTM D3763	ISO 188	ISO 1874-2	ISO 11469
ASTM D6869	ISO 294	ISO 3146	ISO 15512
ISO 75	ISO 527	ISO 6603-1/2	SAE J1545
ISO 179/1eA	ISO 1183	ISO 11357-3	SAE J1976

2.2 GM Standards/Specifications.

GMW3013	GMW3221	GMW14335	GMW14650
GMW3059			

3 Requirements

Materials approved to this standard 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 1874-2. Test methods and specimen dimensions are also to be in accordance with ISO 1874-2.

All values indicated herein are based on material considered to be in the dry-as-molded state with moisture content of 0.2% maximum (ASTM D6869, ISO 15512 Method A or Method B, or GMW14335). Immediately after molding, per ISO 1874-2, specimens shall be sealed in moisture proof containers and stored at +22 °C ± 3 °C for at least 24 h. All tests shall be performed on unannealed specimens immediately after their removal from the containers in a controlled atmosphere per GMW3221, Code A, unless otherwise specified. In addition, tests specified at temperatures below or above +22 °C ± 3 °C, shall be conducted at the specified temperature using specimens conditioned at the specified temperature for 4 h minimum.

3.1.1 The 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 one (1) specific exterior color for approval to the specification, and by test specimens in specific colors as required during color development.

3.2 Compound Properties. See Table 1 and Table 2. The following are also required for full standard approval. The minimum number of lots per test required for the following properties is one (1) 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, +110 °C)

See GMW3013 for all test procedures and parameters.

3.3 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	Units	Very High Impact Grade, T2
			Value
Density	ISO 1183	g/cm ³	Target Range 1.04 to 1.11
Moisture Content	GMW14335 or ISO 15512, Method A or Method B	%	≤ 0.2
Tensile Modulus	ISO 527	MPa	1500 to 2400
Stress at Break	ISO 527	MPa	40 to 60
Stress at Break after Heat Aging	ISO 188 ISO 527 1000 h at 110 °C	% Retention	≥ 75
Notched Charpy Impact Strength at +23 °C at -30 °C	ISO 179/1eA	kJ/m ²	≥ 60 ≥ 10
Notched Charpy Impact Strength after Heat Aging	ISO 188 ISO 179/1eA 1000 h at 110 °C	% Retention	≥ 75
Multiaxial Impact – Exterior at +23 °C at Low Temperature (LT)	ASTM D3763 2.2 m/s	J at Maximum Load 30/30 Ductile at Room Temperature (RT) 24/30 Ductile at (LT)	≥ 28 ≥ 30 (-30 °C)