| WORLDWIDE ENGINEERING STANDARDS | Material Specification | GMW3038 |
|---|---|---|

# Polyamide 66 – Glass Fiber Reinforced, Heat Stabilized

## 1 Scope

This standard covers properties of various types of glass fiber reinforced, heat stabilized polyamide 66 (nylon 66) that are used in injected form for molded components.

**1.1 Material Description.** Additional characteristics beyond the amount of glass fiber reinforcement will be indicated by code letters as described in Table 1 and shown in Section 8.

**Table 1: Code Letters**

| Property | Code Letter |
|---|---|
| Heat Stabilized | H |
| Increased Heat Stabilization (see 3.5 for details) | J |

**1.2 Symbols.** The material abbreviations according to ISO 11469 are shown in Tables 2a and 2b.

**1.3 Applicability.** Typical applications include the following: Electrical components, pedals, fans, fan shrouds.

**1.4 Remarks.** The classification into groups is according to the different ranges of glass fiber content.

## 2 References

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

**2.1 External Standards/Specifications.**

| | | | |
|---|---|---|---|
| ASTM D6869 | ISO 294-1 | ISO 1874-2 | ISO 3795 |
| ISO 75 | ISO 527-1 | ISO 3146 | ISO 11357-3 |
| ISO 179-1 | ISO 527-2 | ISO 3451-1 | ISO 11469 |
| ISO 179/1eA | ISO 1183-1 | ISO 3451-4 | ISO 15512 |
| ISO 188 | ISO 1183-2 | | |

**2.2 GM Standards/Specifications.**

| | | | |
|---|---|---|---|
| GMW3013 | GMW3221 | GMW3235 | GMW15634 |
| GMW3059 | GMW3232 | GMW14335 | GMW16853 |
| GMW3205 | | | |

**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 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.

**3.3 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 1874-2.

© Copyright 2014 General Motors Company All Rights Reserved



Documents
Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW3038 2014

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 B, or GMW14335). Immediately after molding, specimens shall be sealed in moisture-proof containers and stored at +22 °C ± 3 °C for at least 24 h prior to test as specified in ISO 1874-2. 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.

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

**3.4 Compound Properties (Natural and Black).** See Tables 2a and 2b. 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 all test procedures and parameters.

**3.5 Increased Heat Stabilization.** All glass filled nylons shall meet 75% retention of tensile strength and notched Charpy impact after 1000 h at +140 °C, while those that require increased heat stabilization and are designated by Code J shall meet 75% retention of tensile strength and notched Charpy impact after 1000 h at +160 °C.

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

© Copyright 2014 General Motors Company All Rights Reserved



Documents
Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW3038 2014