



Acrylonitrile Butadiene Styrene - Glass Fiber Reinforced, Heat Stabilized

1 Scope

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose/Material Description. This standard describes glass fiber reinforced, heat stabilized, injection moldable Acrylonitrile Butadiene Styrene (ABS).

1.1.1 Types. The classification into groups is according to the different properties as described in Table 1 and Table 2.

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

1.3 Applicability. Typical applications include exterior and interior substrates/brackets that require high temperature stability, high strength, and low Coefficient of Linear Thermal Expansion (CLTE). This resin is intended for structural, non-visible applications; it is not intended for interior molded-in-color applications as it is not Ultraviolet (UV) stabilized.

2 References

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

2.1 External Standards/Specifications.

ASTM E831	ISO 294	ISO 527-1/2	ISO 11359-2
ISO 75-1	ISO 306	ISO 1183	ISO 11469
ISO 75-1/2	ISO 527	ISO 3167	ISO 19062-2
ISO 179-1/1eA	ISO 527-1	ISO 3451-1	
ISO 188	ISO 527-2	ISO 3795	

2.2 GM Standards/Specifications.

GMW3013	GMW3221	GMW14270	GMW15634
GMW3059	GMW3232	GMW14444	GMW16853
GMW3205	GMW3235	GMW14650	

2.3 Additional References.

Plastic Submission Template

3 Requirements

3.1 Requirements on Test Specimens. Materials approved to this standard 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 19062-2. Test methods and specimen dimensions are also to be in accordance with ISO 19062-2 with the following additions: Use ISO 3167, Type 1A, Thickness 4 mm for tensile and flexural properties.

All tests shall be performed on specimens for 40 h minimum after molding and immediately following a conditioning period of 24 h minimum in a controlled atmosphere per GMW3221, Code A, unless otherwise specified. All tests shall be performed on unannealed specimens. 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 four typical interior colors, i.e., 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 Styrenics tab on the Plastic Submission Template (contact specification owning group named in Section 6 for access), 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.

Note: For each product, the requirements to Table 1 shall be documented by Certification Statement according to GMW3013.

3.4 Compound Properties. See Table 1. The following are also required for full approval. The minimum number of lots per test required is one unless otherwise specified. See the Styrenics tab on the Plastic Submission Template (contact specification owning group named in Section 6 for access), 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.

Note: See GMMPD tab on Plastic Submission Template for test details (contact specification owning group named in Section 6 for access).

- CLTE data.

Note: See GMMPD tab on Plastic Submission Template for test details (contact specification owning group named in Section 6 for access).

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

3.5 Initial Source Approval. No shipments shall be made by any supplier until representative initial production samples have been approved by the appropriate Materials Engineering department(s) as meeting the requirements of this specification.

3.6 Performance Requirements. Performance requirements, e.g., flammability, fogging or resistance to odor, shall be specified on part drawings or in component specifications.

All finished parts for interior applications shall meet the requirements according to GMW14444.

All finished parts for exterior applications shall meet the requirements according to GMW14650.

All parts manufactured from molding compounds shall be resistant to the media contacted at the place of use.

3.7 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 ^{Note 1}	Units	T1	T2	T3	T4	T5	T6	T7
International Organization for Standardization (ISO) Symbol	ISO 11469	-	>ABS-GF10<	>ABS-GF15<	>ABS-GF20<	>ABS-GF25<	>ABS-GF30<	>ABS-GF35<	>ABS-GF40<
Density	ISO 1183, Method A	g/cm ³	1.12 ± 0.03	1.17 ± 0.03	1.21 ± 0.03	1.25 ± 0.05	1.29 ± 0.05	1.33 ± 0.05	1.36 ± 0.05
Ash – Glass Fiber	ISO 3451-1	%	10 ± 3	15 ± 3	20 ± 3	25 ± 3	30 ± 3	35 ± 3	40 ± 3
Tensile Modulus	ISO 527-1/2	MPa	≥ 3000	≥ 4000	≥ 5000	≥ 6000	≥ 7000	≥ 7500	≥ 8000
Tensile Elongation at Yield	ISO 527-1/2	% minimum	Report	Report	Report	Report	Report	Report	Report