



Acrylonitrile Butadiene Styrene Glass Blends

1 Scope

1.1 Material Description. This standard describes material types of filled acrylonitrile butadiene styrene (ABS) and glass blends that are used in injection components.

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 abbreviation according to ISO 11469 is >ABS-GF10<, >ABS-GF15<, >ABS-GF20<, >ABS-GF25<, >ABS-GF30<, >ABS-GF35<, and >ABS-GF40<.

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). Not ultraviolet (UV) stable.

1.4 Remarks. Intended for structural, non-visible applications.

2 References

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

2.1 External Standards/Specifications.

ASTM E831	ISO 306	ISO 2580-2	ISO 11469
ISO 75-1/2	ISO 527-1	ISO 3167	
ISO 179/1eA	ISO 527-2	ISO 3451-1	
ISO 294	ISO 1183-A	ISO 11359-2	

2.2 GM Standards/Specifications.

GMW3013	GMW3221	GMW14444	GMW16853
GMW3059	GMW3232	GMW14650	
GMW3205	GMW3235	GMW15634	

2.3 Additional References.

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

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 2580-2. Test methods and specimen dimensions are also to be in accordance with ISO 2580-2 with the following additions: use ISO 3167, Type 1A, thickness 4 mm, for tensile and flexural properties.

All tests shall be performed on specimens 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 or black. For integrally colored grades where other additive systems (e.g., stabilizer) are used, the impact values shall not decrease more than 10% from the specified minimum value.

3.1.1 Chemical Requirements. All parts manufactured from molding compounds shall be resistant to the media they contact at their place of use.

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

3.4 Compound Properties. See Table 1. The following are also required for full specification approval. The minimum number of lots per test required is one (1) in natural: Stress Strain Curve at multiple temperatures, e.g., +23 °C, +85 °C, -30 °C

3.5 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.

Table 1: Compound Properties (Natural and Black)

Property	Standard Note1	Units	T1 Require- ment	T2 Require- ment	T3 Require- ment	T4 Require- ment	T5 Require- ment	T6 Require- ment	T7 Require- ment
Tensile Modulus	ISO 527-1/2	MPa	≥3000	≥4000	≥5000	≥6000	≥7000	≥7500	≥8000
Tensile Strength @ Yield	ISO 527-1/2	MPa	≥40	≥45	≥50	≥55	≥60	≥65	≥70
Poisson's Ratio (report one lot only)	ISO 527-1 ISO 527-2	No units	Report	Report	Report	Report	Report	Report	Report
Charpy Notched Impact Strength @ +23 °C	ISO 179/1eA	kJ/m ²	≥4	≥4	≥4	≥4	≥4	≥4	≥4
Charpy Notched Impact Strength @ -30 °C	ISO 179/1eA	kJ/m ²	≥3	≥3	≥3	≥3	≥3	≥3	≥3
Density	ISO 1183/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	ISO 3451/1	%	10 ± 3	15 ± 3	20 ± 3	25 ± 3	30 ± 3	35 ± 3	40 ± 3
HDT - 1.8 MPa, flatwise	ISO 75-1/2	°C	≥85	≥90	≥90	≥95	≥95	≥100	≥100
Vicat	ISO 306	°C	≥95	≥100	≥100	≥105	≥105	≥110	≥110
Emissions Testing of Interior Materials (Fogging, Odor, Emissions, Carbonyls, Amines):	GMW16853	-	-	-	-	-	-	-	-
Odor	GMW3205	Rating	See requirements of GMW16853						
Fogging	GMW3235-B-Y1-T2	mg	See requirements of GMW16853						
Emissions	GMW15634 VOC value SVOC value	µg/g	See requirements of GMW16853						
Flammability (report one lot)	GMW3232	mm/minute	≤100 mm/minute	≤100 mm/minute	≤100 mm/minute	≤100 mm/minute	≤100 mm/minute	≤100 mm/minute	≤100 mm/minute

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