



Acrylonitrile Styrene Acrylate Mold in Color Metallic Blends

1 Scope

1.1 Material Description. This specification describes material types of unfilled acrylonitrile styrene acrylate and polycarbonate 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, Table 2 and Table 3.

1.2 Symbols. The material abbreviation according to ISO 11469 for Acrylonitrile Styrene Acrylate (ASA) is >ASA or Acrylonitrile Styrene Acrylate Polycarbonate (PC) (ASA + PC) is >ASA + PC<.

1.3 Applicability. Typical applications include interior and exterior decorative trim not requiring significant impact resistance.

1.4 Remarks. Mold in color metallic resins can be difficult at weld lines, consideration must be taken during design for successful applications.

2 References

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

2.1 External Standards/Specifications.

ASTM D955	ISO 294	ISO 527-1	ISO 3167
ASTM E831	ISO 294-3	ISO 527-2	ISO 11359-2
ISO 75-1	ISO 294-4	ISO 1183	ISO 11469
ISO 75-2	ISO 306	ISO 2580-2	SAE J1885
ISO 179/1eA			

2.2 GM Standards/Specifications.

GMW3013	GMW3232	GMW14162	GMW14650
GMW3059	GMW3235	GMW14334	GMW15634
GMW3205	GMW3417	GMW14444	GMW16853
GMW3221			

2.3 Additional References.

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

3 Requirements

Materials approved to this specification 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 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 integrally colored. Each color will require complete Table 2 testing.

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.

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: 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

Property	Standard Note 1	Units	T1 Requirement	T2 Requirement	T3 Requirement	T4 Requirement
Tensile Modulus	ISO 527-1 ISO 527-2	MPa	≥1900	≥1900	≥2000	≥2000
Tensile Strength at Yield	ISO 527-1 ISO 527-2	MPa	≥30	≥30	≥40	≥40
Tensile Elongation at Break	ISO 527-1 ISO 527-2	MPa	Report	Report	Report	Report
Poisson's Ratio (one lot only)	ISO 527-1 ISO 527-2	No units	Report	Report	Report	Report
Charpy Notched Impact Strength at +23 °C	ISO 179/1eA	kJ/m ²	≥4	≥ 4	≥8	≥8
Density	ISO 1183/A	g/cm ³	1.09 ± 0.10	1.09 ± 0.10	1.14 ± 0.10	1.14 ± 0.10
Mold Shrink - Flow Direction (report one lot for information only)	ISO 294-3 ISO 294-4 or ASTM D955	%	0.5 to 0.8	0.5 to 0.8	0.4 to 0.7	0.4 to 0.7
Mold Shrink - Cross Flow Direction (report one lot for information only)	ISO 294-3 ISO 294-4 or ASTM D955	%	0.5 to 0.8	0.5 to 0.8	0.4 to 0.7	0.4 to 0.7
Heat Deflection Temperature (HDT) - 1.8 MPa, flatwise	ISO 75-1 ISO 75-2	°C	≥70	≥70	≥85	≥85
Vicat	ISO 306	°C	≥85	≥85	≥95	≥95
Coefficient of Linear Thermal Expansion (CLTE) - Flow Direction (report one lot for information only)	ASTM E831 or ISO 11359-2	10 ⁻⁶ mm/(mm*K)	90 to 110	90 to 110	70 to 100	70 to 100
CLTE - Cross Flow Direction (report on lot for information only)	ASTM E831 or ISO 11359-2	10 ⁻⁶ mm/(mm*K)	90 to 110	90 to 110	70 to 100	70 to 100