



Acrylonitrile Styrene Acrylate Blends, Heat Stabilized, Weatherable

1 Scope

1.1 Material Description. This specification describes material types of unfilled, heat stabilized, weatherable acrylonitrile styrene acrylate (ASA) and polycarbonate (PC) blends, which are used in injection components.

1.1.1 Paintability. Approved paint systems that can be used on this material are listed in the GM Approved Paint on Parts Systems (GM APOPS) database.

1.1.2 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 are >ASA< or >ASA+PC<.

1.3 Applicability. Typical applications include exterior trim.

2 ReferencesSAEJ1976

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

2.1 External Standards/Specifications.

ASTM D955	ISO 294-3	ISO 1133	ISO 11469
ISO 75-1	ISO 294-4	ISO 1183	SAE J1545
ISO 75-2	ISO 306	ISO 2580-2	SAE J1976
ISO 179-1	ISO 527-1	ISO 3167	SAE J2527-A
ISO 294	ISO 527-2	ISO 11359-2	

2.2 GM Standards/Specifications.

GMW3013	GMW3221	GMW14444	GMW14650
GMW3059			

2.3 Additio0nal Reference.

- Armor All Products, 6 Liberty Drive Aliso Viejo, CA 92656 - www.armorall.com.
- GM Approved Paint on Parts Systems (GM APOPS) database.

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 Delivery. Important physical, mechanical, and thermal properties that characterize the material are summarized in Table 1 and Table 2.

Note: For each product, the requirements to Table 1 and Table 2 shall be documented by Certification Statement according to GMW3013. The color shall be specified on drawings, in material specifications and otherwise.

3.2 Requirements on Test Specimens. Reference GMW3221.

3.2.1 Unless otherwise specified, injection molding of test specimens shall be accomplished per ISO 294 with the conditions for injection molding from ISO 2580-2.

3.2.2 Test methods and specimen dimensions are 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.

3.2.3 All tests shall be performed on specimen 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.

3.2.4 All tests shall be performed on unannealed specimen.

3.2.5 The values specified in Table 1 shall be met by test specimen in natural or black.

3.2.6 The values specified in Table 2 shall be met by integrally colored test specimen.

3.2.7 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.

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

3.3 Compound Properties. For Compound Property requirements, natural, black and integrally colored, see Table 1 and Table 2. The following are also required for full specification approval.

- The minimum number of lots per test required is one (1) in natural: Poisson's Ratio.
- Stress Strain Curve at +23 °C, +85 °C, -30 °C.
- Differential Scanning Calorimeter (DSC) Curve.
- Multiaxial Impact Curve, and Infrared Spectroscopy Curve.

3.3.1 See the sytrenic certification template for the test procedures.

3.4 Performance Requirements.

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

3.4.2 All finished parts for Interior applications shall meet the requirements according to GMW14444

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

Table 1: Compound Property Requirements (Natural and Black)

Property	Standard ^{Note 1}	Units	T1	T2	T3	T4	T5
Tensile Modulus	ISO 527-1, ISO 527-2	MPa	≥1900	≥ 1900	≥ 2000	≥ 2000	≥ 2000
Tensile Strength at Yield or Break	ISO 527-1, ISO 527-2	MPa	≥ 35	≥ 40	≥ 35	≥ 45	≥ 45
Poisson's Ratio	ISO 527-1, ISO 527-2	No Units	Report	Report	Report	Report	Report
Tensile Strength after Heat Aging	ISO 527-1, ISO 527-2	MPa	Must be 75% retention of original values, age 1000 h at 80 °C				
Tensile Strain at Break after Heat Aging	ISO 527-1, ISO 527-2	%	Must be 75% retention of original values, age 1000 h at 80 °C				
Charpy Notched Impact Strength at +23 °C	ISO 179-1eA	kJ/m ²	≥ 6	≥ 6	≥ 7	≥ 8	≥8
Charpy Notched Impact Strength at 30 °C	ISO 179-1eA	kJ/m ²	≥ 2	≥ 2	≥ 2	≥ 2	≥ 5
Density	ISO 1183/A	g/cm ³	1.08 ± 0.03	1.09 ± 0.03	1.08 ± 0.03	1.15 ± 0.03	1.16 ± 0.03
Melt Flow Rate	ISO 1133	cm ³ /10 minutes	Report	Report	Report	Report	Report
Mold Shrink - Flow Direction (Report for information only)	ISO 294-3, ISO 294-4 or ASTM D955	%	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.7	0.5 to 0.7