



Polypropylene – Phosphorescent, Heat Stabilized

1 Scope

1.1 Material Description. This specification covers the properties of phosphorescent material, pellet form, heat stabilized and injection-molding compound.

1.2 Symbols. The material abbreviation according to ISO 11469 is shown in Table 1.

1.3 Applicability. Typical applications include trunk release handles.

2 References

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

2.1 External Standards/Specifications.

ASTM D3012	ISO 179/1eA	ISO 527-2	ISO 11469
ASTM E2073	ISO 188	ISO 1183	
ISO 75-1	ISO 294-4	ISO 1873-2	
ISO 75-2	ISO 527	ISO 3167	
ISO 75-3	ISO 527-1	ISO 4577	

2.2 GM Standards/Specifications.

GMW3013	GMW3205	GMW3235	GMW15634
GMW3059	GMW3221	GMW14270	GMW16853

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.

3.1.1 Unless otherwise specified, injection molding of test specimens shall be accomplished per ISO 294-4 with the conditions for injection molding from ISO 1873-2. Test methods and specimen dimensions are also to be in accordance with ISO 1873-2 with the following additions:

- Use ISO 3167, Type 1A and thickness 4 mm for tensile properties.

3.1.2 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.

3.1.3 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.

3.2 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 the Certification Statement according to GMW3013. The color shall be specified on drawings, in material specifications and otherwise.

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

3.4 Compound Properties. See Table 1. The following are also required for full specification approval.

- Stress Strain Curve at -30 °C, +23 °, 85 °C, Differential Scanning Calorimeter (DSC), Thermal Gravimetric Analysis (TGA), and Fourier Transform Infra-Red (FTIR) spectra. See GMW3013.

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

Table 1: Compound Properties

Property	Test Method	Units	Requirement
ISO Symbol	ISO 11469		>PP-Ph<
Density	ISO 1183, Method A	g/cm ³	Target Range 1.05 ± 0.10
Tensile Modulus	ISO 527-1/2, Specimen 1A, 1 mm/minute test speed	MPa	1600 to 2800
Tensile Strength at Yield	ISO 527-1/2, specimen 1A, 5 mm/minute test speed	MPa	≥ 22
Tensile Strength at Yield After heat aging Note 1	ISO 527-1/2, specimen 1A, 5 mm/minute test speed	% retention	≥ 75
Notched Charpy Impact Strength at 23 °C	ISO 179/1eA	kJ/m ²	≥ 2
Notched Charpy Impact Strength at +23 °C after heat aging Note 2	ISO 179/1eA	% retention	≥ 75
Heat Deflection Temperature, 0.45 MPa Method A	ISO 75-1, ISO 75-2, ISO 75-3 flatwise	°C	≥ 80
Emission Testing if Interior Materials for initial approval: Test 1 lot	GMW16853		
Odor	GMW3205 B3	Not applicable	Minimum 6