

**PBTP+PETP - 30% GLASS FIBER REINFORCED/MINERAL FILLED,
WEATHERABLE
GMP.PBTP+PETP.001**

1 SCOPE. This specification covers the properties of a 30% glass fiber reinforced/mineral filled, weatherable, pellet form, injection molding, polybutylene terephthalate + polyethylene terephthalate compound.

1.1 APPLICATIONS. Typical applications include the following: Wiper airfoil, window guide.

2 REFERENCED STANDARDS.

GM1000M	ASTM D792	ASTM D4019
ASTM D256	ASTM D1897	ASTM G7
ASTM D638	ASTM D2584	SAE J1545
ASTM D648	ASTM D3418	SAE J1960
ASTM D790	ASTM D3835	

3 TEST PROCEDURES. Tests shall be conducted using the latest issue of the test methods indicated. Suitable precautions should be taken to ensure that applicable safe limits are not exceeded when conducting test procedures, processes, and/or handling the materials required by this specification.

3.1 Moisture content of material when molding and when testing apparent melt viscosity shall be .01% max. This can be accomplished by drying the material in a dehumidifying oven @ 150°C until the required moisture level is achieved. Measure moisture content per ASTM D4019.

3.2 Test specimens shall be injection molded according to ASTM D1897. Test specimens shall be 3.2 ± 0.2 mm thick unless otherwise specified in this GMP specification. Izod specimens shall be cut from the centers of the 127 x 12.7 x 3.2 mm bars.

3.3 Tests shall be conducted 40 h min after molding and immediately following a conditioning period of 24 h min @ 22 ± 3°C and 50 ± 5% RH unless otherwise specified. All testing shall be done on unannealed samples.

3.4 COLORFASTNESS EVALUATION PROCEDURE. The color of each test specimen shall be measured per SAE J1545, CIELAB color space, 10° observer, Illuminant D65, specular included, sphere geometry, before and after exposure.

FOR WASH ONLY PREPARATION:

3.4.1 Prior to making measurements and observations on weathered specimens, wash the specimens with a solution consisting of 2 g No 7 Car Wash Concentrate (distributed by Armor All Products, Aliso Viejo, CA 92656) and 1 L deionized water @ 22 ± 3°C. Use a soft sponge saturated with the solution and scrub the samples with a firm action.

4 COMPOUND PROPERTIES.

4.1 RESTRICTED AND REPORTABLE CHEMICALS (GM1000M). All materials supplied to this specification must comply with the requirements listed in GM1000M, "Restricted and Reportable Chemicals."

4.2 COMPOUND CERTIFICATION. Material suppliers must certify molding compound properties to the specific GM Test Sampling Plan approved for their material.

4.3 COMPOUND PROPERTIES (BLACK). See Table 1.

5 SUGGESTED COMPOUND VERIFICATION.

Inherent compound properties and test procedures that may be used to identify this material are listed below. The test value and test procedure requirements are identical to those listed in Section 4, Compound Properties.

Filler Content
Infrared Characterization Scan
Melt Flow Rate
Apparent Melt Viscosity
Melt Point
Specific Gravity

6 COMPOUND AND SOURCE APPROVAL.

Each vehicle group and component division will have its own approved component list derived from the corporate plastics file. No shipment shall be made by a new source until a sample of the compound manufactured at a production facility has been approved by the appropriate vehicle group and/or component division. Shipment receipt and certification requirements will vary among receiving locations.

6.1 Completed copies of the Material Safety Data Sheet meeting GM information requirements must be submitted with any new submissions or whenever a composition change has occurred.

7 IDENTIFICATION. The molding compound shall be identified by the specification code, the manufacturer's identification code and lot number, along with any additional vehicle group and component division requirements.

8 INSPECTION AND REJECTION. The purchaser reserves the right to sample incoming shipments even though it is the responsibility of the supplier to meet the requirements stated without dependence upon the purchaser's inspection. The supplier (whether prime contractor or subcontractor) will forfeit qualification if a change is made in material, processing methods, testing methods, or location of manufacture without prior written request to and subsequent approval from the purchaser.

9 GENERAL INFORMATION. This standard was originated by the Plastics Committee in 1993 and first published in December, 1995.

**PBTP+PETP - 30% GLASS FIBER REINFORCED/MINERAL FILLED, WEATHERABLE
GMP.PBTP+PETP.001**

TABLE 1 - COMPOUND PROPERTIES (BLACK)

Properties	Test Values	Test Methods
Glass/Mineral Filler	28 - 32%	ASTM D2584
Specific Gravity	1.50 - 1.57	ASTM D792
Melt Point	215 - 220°C	ASTM D3418, 10°C/minute
Apparent Melt Viscosity	40 - 100 Pa·s	ASTM D3835, 20 L/D orifice, 0.762 mm orifice dia, 280°C, 1000 s ⁻¹ shear rate, 6 minutes dwell time. See 3.1 for maximum moisture content allowed at time of testing.
Flexural Modulus	7590 MPa min	ASTM D790 Method I, 1.3 mm/minute, 50 mm span, tangent calculation
Tensile Strength at Break	100 MPa min	ASTM D638, Type I bar, 5 mm/minute
Deflection Temperature Under Load	190°C min	ASTM D648, 1820 kPa
Notched Izod Impact	55 J/m min	ASTM D256, Method A
Weather Resistance Color Change Surface Defects	$\Delta E = 3.0$ max No objectionable defects allowed.	2 years exposure to direct weather in Arizona and Florida per ASTM G7, 5°, open rack. Measure color as defined in 3.4.
Accelerated Weather Resistance Color Change Surface Defects	$\Delta E = 3.0$ max No objectionable defects allowed.	2500 kJ/m ² exposure to exterior xenon arc apparatus per SAE J1960. Measure color as defined in Section 3.