

POLYURETHANE SRIM - 48% DIRECTED FIBER GLASS, 9000 MPa

GMP.PUR.024

1 SCOPE. This specification covers the properties of a polyurethane SRIM compound reinforced with 48% directed fiber glass, and having a flexural modulus of 9000 MPa.

1.1 APPLICATIONS. Typical applications include the following: Bumper beams.

2 REFERENCED STANDARDS.

GM1000M	ASTM D696	ASTM D2584
GM9077P	ASTM D790	
ASTM D638	ASTM D792	

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 Properties shall be determined using test specimens router cut from center gated reaction injection molded test plaques. The plaques shall be 250 mm min x 300 mm min x 6.0 ± 0.2 mm.

3.2 Tests shall be conducted 40 h min after post cure and immediately following a conditioning period of 24 h min @ $22 \pm 3^\circ\text{C}$ and $50 \pm 5\%$ RH unless otherwise specified.

3.3 An equal number of specimens shall be cut from both the longitudinal and transverse plaque directions for each mechanical property. The specimens shall be tested and the results averaged. The average value is the material property value. This value is compared to the required value shown in the Compound Properties table(s).

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 (NATURAL AND 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.

Glass Fiber Content
Infrared Characterization Scan
Specific Gravity

6 COMPOUND AND SOURCE APPROVAL.

Each vehicle group and component division will have its own approved compound list derived from the corporate plastics file (MATSPC). 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 September 1995.

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TABLE 1 - COMPOUND PROPERTIES (NATURAL AND BLACK)

Properties	Test Values	Test Methods
Glass Fiber Reinforcement	41 - 54 %	TGA, GM9077P or ASTM D2584
Specific Gravity	1.56 - 1.72	ASTM D792
Flexural Modulus		ASTM D790, Method I, 1.3 mm/minute, 50 mm span, 25 mm wide specimen, secant calculations at 0.5 and 2.5 mm deflection
@ -30°C		
0.5 mm deflection	11500 MPa max	
2.5 mm deflection	11000 MPa max	
@ +22°C		
0.5 mm deflection	6500 - 11900 MPa	
2.5 mm deflection	6250 - 10600 MPa	
@ +70°C		
0.5 mm deflection	4550 MPa min	
2.5 mm deflection	3600 MPa min	
Flexural Strength		ASTM D790, Method I, 1.3 mm/minute, 50 mm span, 25 mm wide specimen
@ +22°C	230 MPa min	
after 7 days in 100% RH at 38°C	200 MPa min	
Tensile Strength at Break	154 MPa min	ASTM D638, Type I bar, 5 mm/minute
Coefficient of Linear Thermal Expansion	25E-06/°C max	ASTM D696, -30 to +80°C temperature range, measure in material flow direction.