

POLYURETHANE SRIM -60% GLASS, 13 000 MPa FLEXURAL MODULUS GMP.PUR.009

1 SCOPE. This specification covers the properties of a structural reaction injection molded polyurethane molding compound reinforced with 60% of 2415 glass woven fabric and random chopped glass mat.

1.1 APPLICATIONS. Typical applications include the following: Bumper beams, wheel covers.

2 REFERENCED STANDARDS.

GM9077P	ASTM D696	ASTM D792
ASTM D638	ASTM D790	ASTM D2584

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 x 300 mm min x 5.0 ± 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 ± 3°C and 50 ± 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 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.

Filler Content
Glass 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. 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 A completed copy of the GM Material Safety Data Sheet (available from a GM laboratory or engineering department) must be submitted with any new submissions or when 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 March 1991. The latest revisions include:

Rev	Date	Description	Div
A	11/92	70°C flex modulus values revised	PL
B	6/93	Removed Heat Sag reqmt	

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TABLE 1 - COMPOUND PROPERTIES (NATURAL AND BLACK)

Properties	Test Values	Test Methods
Glass Reinforcement	53 - 70%	TGA, GM9077P or ASTM D2584
Specific Gravity	1.56 - 1.74	ASTM D792
Flexural Modulus		ASTM D790, Method I, 1.3 mm/minute, 50 mm span, 25 mm wide specimen, secant calculations @ 0.5 and 2.5 mm deflection
@ -30°C		
0.5 mm deflection	15 500 MPa max	
2.5 mm deflection	15 065 MPa max	
@ +22°C		
0.5 mm deflection	11 500 - 14 725 MPa	
2.5 mm deflection	9850 - 15 850 MPa	
@ +70°C		
0.5 mm deflection	8350 MPa min	
2.5 mm deflection	5150 MPa min	
Flexural Strength		ASTM D790, Method I, 1.3 mm/minute, 50 mm span, 25 mm wide specimen
@ +22°C	325 MPa min	
After 7 days in 100% RH @ 38°C	270 MPa min	
Tensile Strength at Break	210 MPa min	ASTM D638, Type I bar, 5 mm/minute
Coefficient of Linear Thermal Expansion	$18 \times 10^{-6}/^{\circ}\text{C}$ max	ASTM D696, -30 to +30°C temperature range, measure in material flow direction