



**PVC, White Stain Resistant or Integral Colored,
Weatherable, Extrusion Molding Compound
GMN7838**

1 Scope

This specification covers the properties of an integrally colored, weatherable, and stain resistant when required, PVC (Poly Vinyl Chloride) extrusion molding compound. These materials can be used for mold-in-color white and light colors or other integral colored PVC. White and some light colors require added stain resistance. All versions, including added stain resistance, will be defined by their ability to meet the test requirements of this specification. They are identified by "TYPE" and "Grade" to distinguish the Shore Hardness and added stain resistance respectively.

1.1 Material Description. The following types, I,II,III, and grades, A or B, indicate the Shore Hardness of the material or increased Stain Resistance for White or light colors. If no type or grade is indicated on the part drawing, it shall be understood to be Type IA, 60 ± 5 Shore D, stain resistant for White or light colors.

Type I	60 ± 5 Shore D
Type II	50 ± 5 Shore D
Type III	40 ± 5 Shore D
Grade A	Stain Resistant for light colors
Grade B	Integral colored, additional stain resistance not required to meet requirements

e.g., GMP.PVC.093 Type IIB indicates 50 ± 5 Shore D, Integral colored, additional stain resistance not required to meet requirements.

1.3 Symbol. The material abbreviation according to ISO 11469 is "PVC".

1.4 Typical Application. Typical applications include the following: Mold-In-Color body side, windshield reveal & roof ditch moldings.

2 References

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

2.1 External Standards/Specifications.

ISO 37	ISO 11469
ISO 176	SAE J1545
ISO 868	SAE J1960
ISO 1183	SAE J1976
ISO 3451-1	

2.2 GM Standards/Specifications.

GM9303P	GM9689P
GM9328P	GMW3001
GM9329P	GMW3221
GM9503P	GMW3059

3 Requirements

3.1 Sample Conditioning. All samples are to be conditioned prior to each requirement test to GMW3221, Code A.

3.2 Requirements on Delivery. 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.

Tests shall be conducted 40 h minimum after molding and immediately following a conditioning period of 24 h minimum at $22 \pm 3^\circ\text{C}$ and $50 \pm 5\%$ RH unless otherwise specified. All tests shall be performed on unannealed specimens. In addition, tests specified at temperatures below or above $22 \pm 3^\circ\text{C}$ shall be conducted at the specified temperature using specimens conditioned at the specified temperature for 4 h minimum.

Test specimens shall be 1.8 ± 0.2 mm thick unless otherwise specified. Property values are the average of an equal number of specimens cut from both the longitudinal and transverse plaque directions.

The minimum values specified in the property tables must be met by test specimens in natural, black, or in a standard sampled color if natural

or black are not available. For colored grades where other pigment and additive systems (e.g., stabilizer) are used, the impact values shall not decrease more than 10% from the specified minimum value.

3.2.1 Chemical Requirements. All parts manufactured from molding compounds shall be

resistant to the media they contact, such as aliphatic and aromatic hydrocarbons, fuels, lubricants, oils, greases and alcohols, at their places of use.

3.2.2 Mechanical Requirements. See Table 1.

3.2.3 Physical Requirements. See Table 2.

Table 1: Mechanical Requirements

Mech. Properties	Test Methods	Unit	Value
Shore D Hardness	ISO 868, 15 s delay. <i>Note:</i> Refer to the mandrel size selection chart, Table 3.	Shore D	See sub-section 1.1
Tensile Strength	ISO 37, Type 1 dumbbell, 500 mm/minute	MPa	15 MPA
Cold Flexibility	GM9503P, -30°C, ____ mm diameter mandrel. Note: Refer to the mandrel size selection chart, Table 3.	No cracks	No cracks
High Temperature Humidity Resistance	GM9329P	No tackiness	No objectionable tackiness

Table 2: Physical Requirements

Requirement	Test Methods	Unit	Value
Specific Gravity	ISO 1183, Method A	g/cm ³	1.20 to 1.40
Mineral Filler	ISO 3451-1, Method A	% by mass	0 to 20
Pink Stain	GM9303P	No stain	No stain
Mixed Fungal Resistance	GM9328P	No Growth	A zone of inhibition and no fungal growth.
Volatile Loss	ISO 176	%	1.0 max
Gas Asphalt Stain	GM9689P, 50% W/W Solution	Δ E	1.5 max
Solar Weathering Color Change Surface Defects	2 years exposure to Natural weathering in Arizona and Florida per SAE J1976, Procedure A	Δ E	Δ E ≤ 3.0 max No objectionable defects allowed
Accelerated Weathering Color Change Surface Defects	Xenon Arc per SAE J1960, 2500 kJ/m ²	Δ E	Δ E ≤ 3.0 max No objectionable defects allowed

Note: For integrally colored compounds, the color of each test specimen shall be measured per SAE J1545, CIELAB color space, 10 degree observer, illuminant D65, specular included, sphere geometry, before and after exposure. In case of conflict between accelerated weathering and natural weathering, natural weathering takes precedence.

Table 3: Mandrel Size Selection Chart

Hardness – Mandrel Size	Hardness – Mandrel Size
50 to 70 Shore A – 6 mm	37 to 45 Shore D – 25 mm
75 to 95 Shore A – 12 mm	50 to 70 Shore D – 50 mm