



Polyester Sheet Molding Compound (SMC) - Ultraviolet (UV) Resistant, 50% Glass Reinforced

1 Scope

1.1 Material Description. This specification covers the properties of unsaturated polyester sheet molding compound (SMC) that is Black High-Strength Ultraviolet (UV) Resistant Structural Grade with 50% chopped glass fibers that are 25 mm long and randomly oriented.

1.2 Symbols. Not applicable.

1.3 Applicability. Typical applications include the following: Mold in color non-Class A inner and outer panels.

1.4 Remarks. The classification into types is according to application location:

- **Type 1:** Exterior Parts
- **Type 2:** Interior Parts

2 References

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

2.1 External Standards/Specifications.

ISO 62	ISO 527	ISO 1172	ISO 6603-2
ISO 178	ISO 527-1	ISO 1183	ISO 11359-2
ISO 180/U	ISO 527-2	ISO 2577	SAE J1976

2.2 GM Standards/Specifications.

GMW3059	GMW3235	GMW14650	GMW15921
GMW3205	GMW3417	GMW15634	GMW16172
GMW3221	GMW14162	GMW15635	GMW16853
GMW3232	GMW14444		

2.3 Additional References. None.

3 Requirements

3.1 Requirements on Test Specimens. Reference GMW3221.

3.2 Emissions Testing of Interior Materials and Parts. For all Code E designated parts per GMW14444, reference GMW16853 for emissions testing of interior materials and parts.

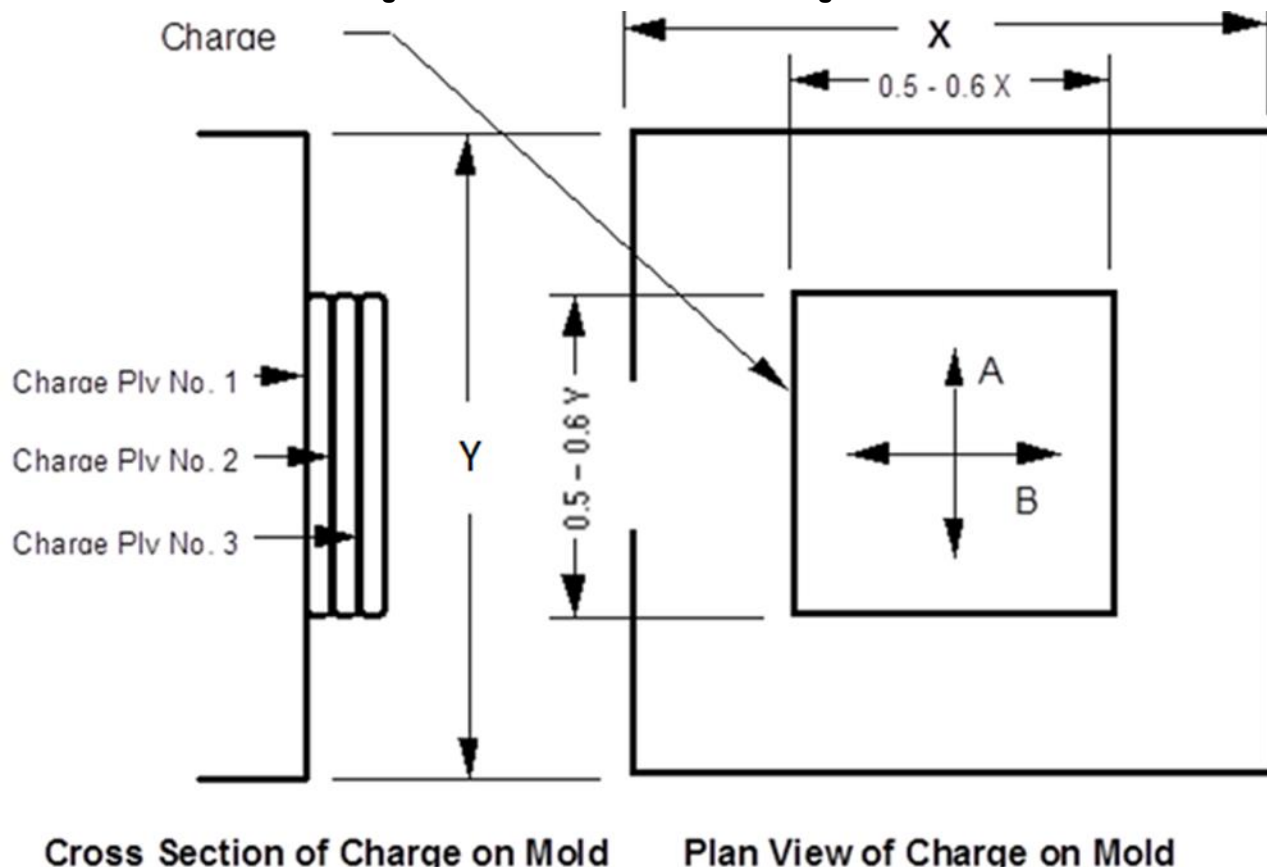
3.3 Bondability. The material must meet the bonding requirements of GMW15921 using both urethane adhesive and an epoxy adhesive that has been previously approved to GMW15921.

3.4 Paintability. Although mold in color is the intended application, the material should be assessed for paintability per GMW16172 for information only.

3.5 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.

3.5.1 Properties shall be determined using test specimens router cut from SMC test plaques. Plaques shall be molded as shown in Figure 1. Plaques shall be molded using the mold temperatures, mold pressure and cure cycle that will be used to mold production parts. Each material vendor shall define these molding conditions in this certifiable data package. The length and width of the test mold, as well as the gate configuration, shall be included in the certification package. Plaques shall be $2.5 \text{ mm} \pm 0.1 \text{ mm}$ thick. Weight variation between plaques shall not exceed $\pm 3.0\%$.

Figure 1: Size of Test Mold and Charge Pattern



Note: X dimension of mold is to be 250 mm to 625 mm
 Y dimension of mold is to be 250 mm to 625 mm
 A indicates machine direction of SMC charge ply numbers 1 and 3
 B indicates cross machine direction of SMC charge ply number 2
 Plaque mold and all charge patterns should be square
 No partial area charge plies allowed

3.5.2 Raw materials used for compounding shall be within their vendor defined shelf life. Plaques shall be molded 7 days maximum after compounding. Plaques shall be uniform in appearance and free from blisters, pre-gels, knit lines, cracks and surface contamination. Porosity shall be one (1) pit maximum per 625 mm^2 . Surfaces shall also be free of external mold release (if external mold release is utilized, mold and scrap a minimum of three (3) plaques before using any plaques for testing).

3.5.3 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 Table 1.

3.5.4 Tests shall be conducted 40 h minimum after molding and immediately following a conditioning period of 24 h minimum at $22^\circ\text{C} \pm 3^\circ\text{C}$ and $50\% \pm 5\%$ relative humidity (RH) unless otherwise specified. All testing shall be done on unannealed samples.