GM	WORLDWIDE ENGINEERING STANDARDS	Material Specification	GMW17425

Polyester Sheet Molding Composite (SMC) - Low Profile, 27.5% Glass Reinforced (Smooth)

1 Scope

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose/Material Description. This specification covers the properties of a low profile unsaturated polyester sheet molding compound that is reinforced with 27.5% chopped glass fibers that are 25 mm long and randomly oriented. This material can be coated in the molding press to seal porosity In-Mold Coat (IMC), bonded, and painted. Laser Optical Reflected Image Analyzer (LORIA) readings < 85 are required to meet this specification.

1.2 Symbols. Not applicable.

1.3 Applicability. Typical applications include exterior and interior body panels.

1.4 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

ASTM D570	ASTM D790	ASTM D2584	ASTM D4812
ASTM D638	ASTM D792		

2.2 GM Standards/Specifications.

9984157	GMW3059	GMW14444	GMW16853
9984804	GMW3221	GMW14797	GMW17891
9984815	GMW14270	GMW15921	

2.3 Additional References.

- Approved Paint on Plastics System (APOPS), available at https://gmsupplypower.covisint.com

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 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.

3.4.1 Properties shall be determined using test specimen router cut from compression molded test plaques. 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 the certifiable data package. The length and width of the test mold, as well as the charge pattern, shall be as shown in Figure 1. Plaques shall be 2.5 mm ± 0.1 mm thick. Weight variation between plaques shall not exceed ± 3.0%.

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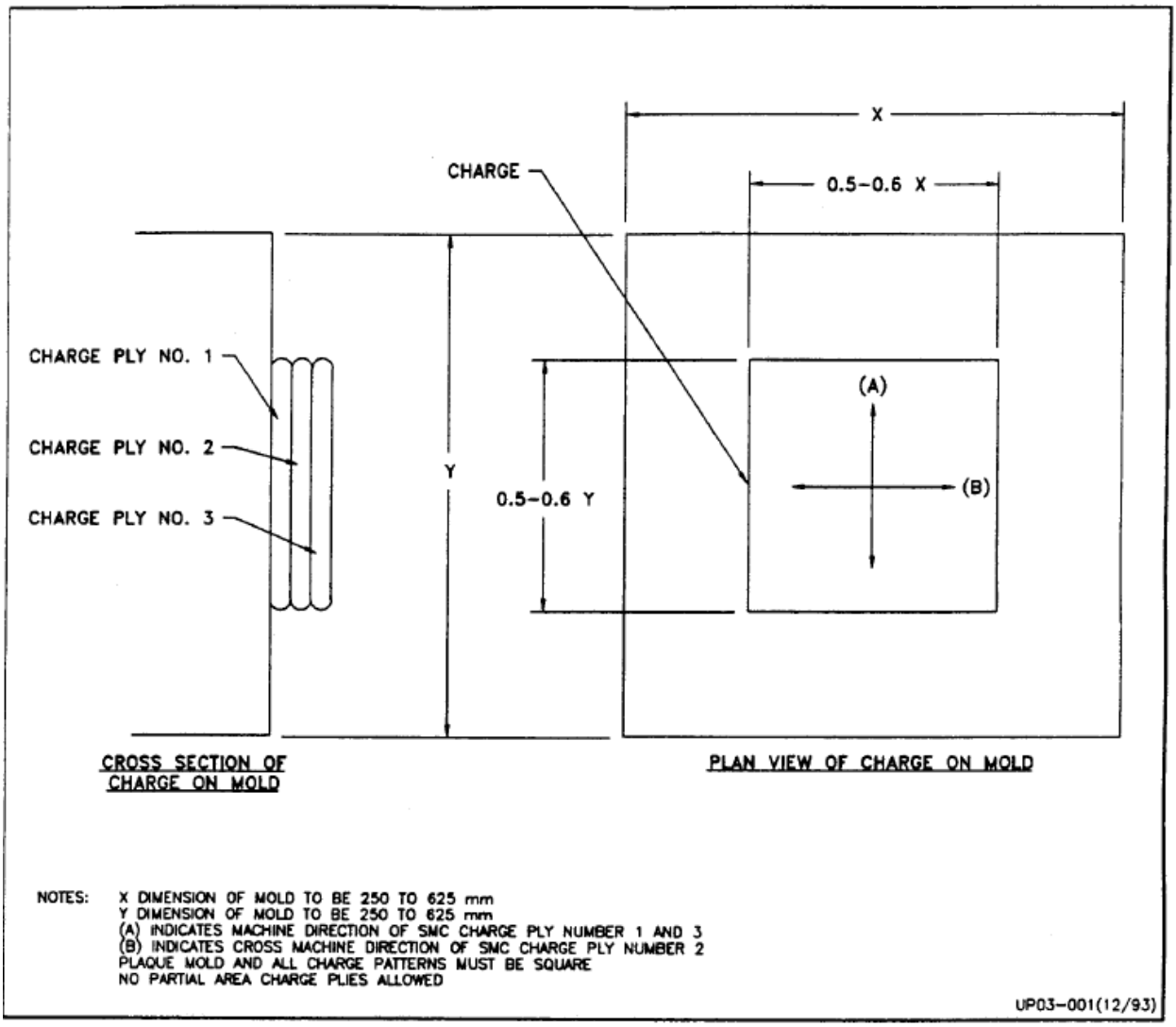
3.4.2 Raw materials used for compounding shall be within their vendor defined shelf life. Plaques shall be molded seven (7) days maximum after compounding. Plaques shall be uniform in appearance and free from blisters, pre-gels, knit lines, cracks, and surface contamination. Porosity shall be 1 pit maximum/625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

3.4.3 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). Reference Table 1.

3.4.4 Tests shall be conducted 40 h minimum after molding, and immediately following a conditioning period of 24 h minimum at 22 °C ± 3 °C and 50% Relative Humidity (RH) ± 5% RH unless otherwise specified. All testing shall be done on unannealed samples.



Note: No. = Number

Figure 1: Size of Test Mold and Charge Pattern

3.5 Compound Properties. Natural, Gray and Black, see Table 1.

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