GM	WORLDWIDE ENGINEERING STANDARDS	Material Specification	GMW17638

Polyester Sheet Molding Compound (SMC) - 50% Carbon Reinforced

1 Scope

1.1 Material Description. This specification covers the properties of unsaturated vinyl ester sheet molding compound (SMC) that is reinforced with 50% chopped carbon fibers that are 25 mm long and randomly oriented.

1.2 Symbols. Not applicable.

1.3 Applicability. Typical applications include; inner panels, reinforcement panels and non-Class A surfaces.

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.

ASTM D2584	ISO 180/U	ISO 527-2	ISO 6603-2
ISO 62	ISO 527	ISO 1183	ISO 11359-2
ISO 178	ISO 527-1	ISO 2577	

2.2 GM Standards/Specifications.

GMW3059	GMW3232	GMW14444	GMW15921
GMW3205	GMW3235	GMW15634	GMW16172
GMW3221	GMW14270	GMW15635	GMW16853

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.

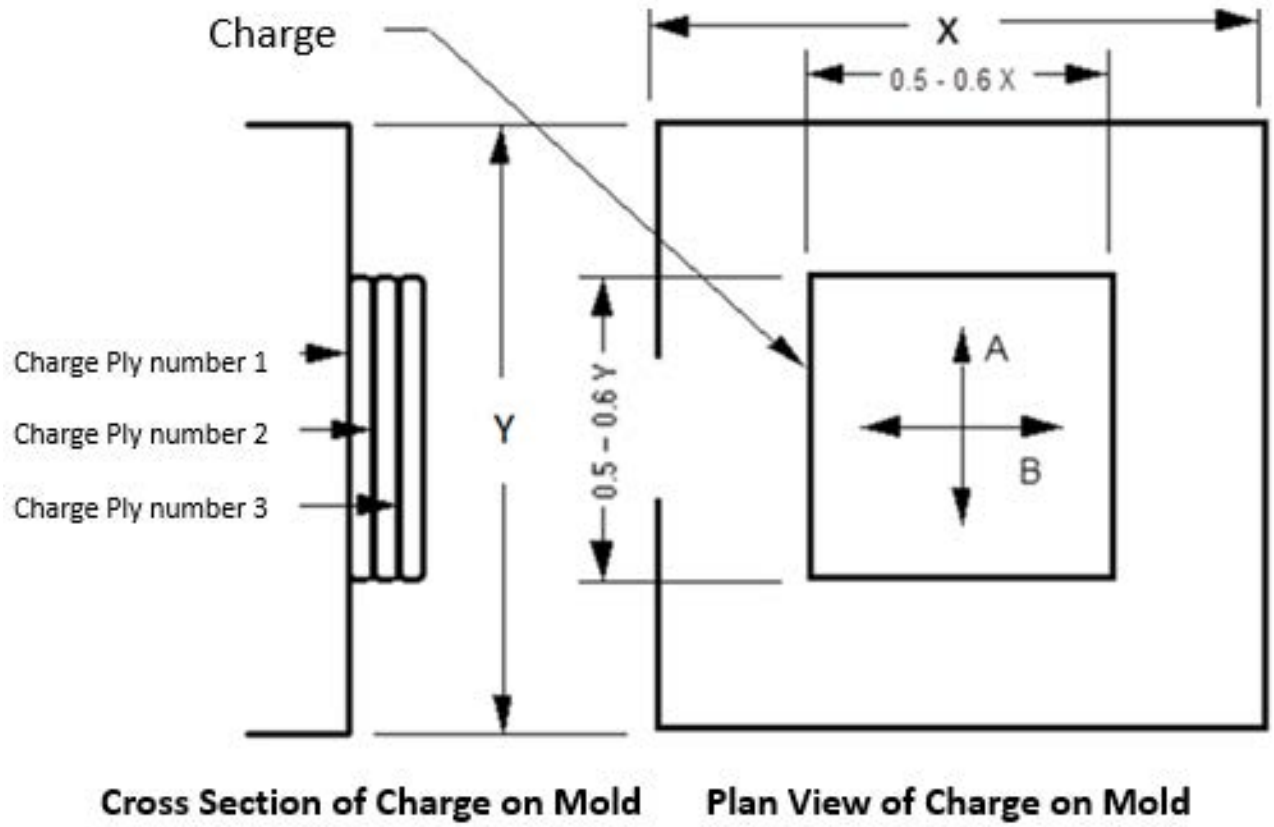
© Copyright 2016 General Motors Company All Rights Reserved

Documents
Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW17638 2016

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 mm ± 0.1 mm thick. Weight variation between plaques shall not exceed ± 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).

© Copyright 2016 General Motors Company All Rights Reserved

Documents
Document Sharing Hub
Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW17638 2016