



Mold Coating Conductive for Sheet Molded Compound (SMC)

1 Scope

1.1 Material Description. This specification covers the requirements for a conductive molded coating for use over plastics (i.e., sheet molded compound (SMC)). The coating shall provide a smooth, adhesion promoting, conductive surface for electrostatic application of subsequent coatings. The coating must be sandable, and the ability to fill minor surface imperfections in the substrate, and act as a barrier to prevent popping of topcoats during subsequent bakes.

1.2 Symbols. Not applicable.

1.3 Applicability. The coating is part of a total painted product system and must meet requirements set forth in the material specifications for the materials with which it is used. The material must be paintable using the paint system being applied at the target assembly plant. Performance must meet GMW14797.

1.4 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

ASTM D870	ASTM D3170	ISO 2802	SAE J400
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2.2 GM Standards/Specifications.

GMW3059	GMW14333	GMW14797	GMW17065
GMW14124	GMW14700	GMW14829	GMW17105
GMW14270	GMW14729	GMW15777	

2.3 Additional References.

Approved Paint on Plastics Systems (APOPS) Manual
Manufacturer's Bake Recommendations
Material Specifications
Part Prints

3 Requirements

3.1 See GMW17105 for additional requirements not listed in this specification. The following requirements (from GMW17105) shall be met on all surfaces of the part or as designated by the applicable product engineering documents, except for the following:

- Resistivity of Reduced Primer
- Tukon Hardness
- Cure Test
- Smoke Characteristics
- Solvent Emission

3.2 Application. These coatings are applied in the mold during the molding operation. There are several molded coating application techniques and machines. The machines are usable and operate in the following general manner, see Table 1, Table 2 and Table 3.

Table 1: Technical Data

Property	Test Values
Viscosity	3000 cps to 6000 cps at 30 °C (86 °F)
Weight per Gallon (Liter)	1.2 kg/L (10.4 lb/gal)
Effective Weight Solids	100%
Effective Volatile Organic Compound (VOC)	0%
Shelf Life	Six (6) months at 25 °C (77 °F)
Coverage	13.1 m ² /L, 10.74 m ² /kg at 76 µm (535 ft ² /gal, 52.5 ft ² /lb at 3.0 mils)
Pot Life	14 days at 77 °F (25 °C)
Recommended Film Thickness	12.7 µm to 127 µm (0.5 mil to 5.0 mil)
Flash Point	34 °C (93 °F)

Table 2: Typical Cured Performance Properties

Property	Test Values
Adhesion to Substrate	Excellent when properly applied and cured.
Conductivity	>140 Ransburg units <1 MΩ
Gravelometer	per SAE J400 or ASTM D3170
Pencil Hardness	H
Color/Appearance	Smooth, Black, Glossy

Table 3: Sheet Molded Compound (SMC) Application Data

Property	Test Values
Mold Temperature	130 °C to 160 °C (265 °F to 320 °F)
Mold Pressure	17 bar to 83 bar (250 psi to 1200 psi)

3.2.1 The sheet molded compound part is cured, then immediately the in-mold coating is injected onto the Class A surface of the part and molding pressure is reapplied. After cure, the coated part is removed from the mold.

3.2.2 The cure schedule for the in-mold coating (IMC) is 45 s at 150 °C (300 °F), with 1.5 weight percent t-butyl Peroxybenzoate (TBPB) added as a catalyst. Catalyst level may be adjusted between 0.8 weight percent to 1.5 weight percent to adjust the cure time.

3.3 Appearance. Must meet the requirements of GMW15777 except, gloss is not required.

3.4 System Qualification. All qualification testing (see Table 4) shall be run at nominal film build and bake cycles only. Qualification testing shall be run on systems including the SMC, IMC, and primer. Testing methods are described further in GMW14797 and GMW17105.