



Sealer – Pumpable, Air Dry, Paintable

1 Scope

This specification details the requirements of pumpable, paintable sealers. These materials are air drying in nature. These materials must not degrade in the presence of gasoline.

1.1 Material Description. The materials must be smooth homogeneous mixtures free of air, lumps, unmixed particles, and foreign materials.

1.1.1 The material must adhere to all production Electrocoat (e-coat), topcoats and other paint coatings. It must have good durability and must not accelerate the rusting of steel over which it is applied.

1.2 Symbols. Not applicable.

1.3 Applicability. These materials are intended for use as repair materials after paint shop to seal interior and exterior joints against water, dust, and air intrusion.

1.4 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

ASTM D638	ASTM D1475	ASTM D2369	SAE J1524
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2.2 GM Standards/Specifications.

GMW3019	GMW14124	GMW14729	GMW16853
GMW3059	GMW14270	GMW15481	GMW17405
GMW3205	GMW14444	GMW15735	

3 Requirements

Specific material requirements and appropriate test methods are listed under properties.

3.1 Physical Properties.

3.1.1 Specific Gravity (ASTM D1475). An individual specific gravity range for each approved source will be set at the time of approval to this specification. That range will then become a requirement for the material. This information shall be included in the material approval submission package.

3.1.2 Volatile Organic Compound (VOC) (Environmental Protection Agency (EPA) Method 24, Section 2.2, ASTM D2369, Procedure B). Put a paperclip in the aluminum dish when taring. Use this clip to stir and disperse the sealer in the solvent, and, so that no sealer is removed from the dish after stirring, leave the clip in the dish during the bake and subsequent weighing. Since the clip was included in the tare weight of the dish after stirring, leave the clip in the dish during the bake and subsequent weighing. Since the clip was included in the tare weight of the dish its weight will be factored out. The final VOC as well as all weights and calculations are to be identified and reported as data.

3.1.3 Viscosity (Press-Flow or Castor Severs) (SAE J1524).

- Orifice: 2.64 mm.
- Pressure: 275 kPa.
- Sample Weight: 20 g.
- Seconds: The viscosity for each approved source will be set at the time of approval to this specification. That viscosity range will then become a requirement of the material.

3.1.4 Odor (GMW3205). Prepare a "cured film" of sealer that is 3 mm $\pm$ 0.5 mm thick baked at the appropriate nominal bake conditions in Table 1. Cut test specimens from this cured film of material, then condition for seven (7) days at 23 °C $\pm$ 5 °C before initiating test procedure. Evaluate using the Wet Condition – Coding A and volume ratio Coding Five (5) from GMW3205, see Table 1. The material shall have a tolerable or better odor; minimum rating of six (6) from GMW3205, see Table 3, Odor Classification. See GMW3205, Appendix A1 for further test methods regarding odor.

3.1.5 Toxicity. The material must not adversely affect the personnel handling it.

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 Performance Requirements.

3.3.1 Adhesion. These materials must have good adhesion to a variety of substrates: e-coat, primer surfacer, basecoat only, and Basecoat (BC)/Clearcoat (CC). A set of sealer panels shall be prepared for each environment listed in Table 2 using the substrate listed in 3.3.1a thru 3.3.1c.

- All current production e-coat.
- At least one current technology of primer surfacer from each major paint supplier. At least two (2) colors must be run.
- At least on current technology of BC/CC from each major paint supplier. The colors white, red, black, and light blue or silver metallic shall be used for each technology.

The sample panels shall be prepared with and without the Table 1, Sealer Materials Bake Cycle (i.e., final line repair bake cycle).

Table 1: Sealer Materials Bake Cycle

Bake System	Time and Temperature
Ambient	8 minutes at ambient temperature plus 20 minutes at 87 °C

3.3.1.1 Material samples prepared according to 3.3.1 must not crack or lose adhesion during or after the conditions listed in Table 2.

Table 2: Sealer Material Test Conditions

Environmental Conditions	Requirements
Initial	After cooling to ambient temperatures
Heat Aging	336 h at 70 °C
Humidity	168 h at 38 °C and 100% Relative Humidity (RH)
Exterior Cycle (GMW14124, Cycle F)	12 Cycles
Cold Resistance	Two (2) impacts of 1.7 J

3.3.2 Appearance. A set of sealer panels shall be prepared using a current production topcoat technology from each of the major suppliers and at least one current production technology e-coat from each major supplier. A sealer bead 3 mm x 40 mm x 200 mm shall be applied to each substrate panel and allowed to air dry for 30 minutes. The panel shall then be painted with approved repair paint systems. Panels prepared per Section 3 must not exhibit any loss of gloss, cracking, yellowing or discoloration, tack, drag or loss of adhesion during or after exposure to the conditions in Table 2.

3.3.3 Elongation (ASTM D638). Material must have a minimum of 100% elongation.

3.3.4 Shrinkage (GMW15481). Material baked per Table 1 shall be allowed a maximum shrinkage of 5%.

3.3.5 Corrosion Resistance. Apply two (2) beads of sealer, 3 mm x 40 mm x 200 mm, to the surface of a phosphated steel panel (inspect panel first to be sure it is free of surface corrosion). Bake panel for 1 h at 110 °C. After bake remove the panel from the oven and allow it to cool to room temperature.

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