



Sealer; Pumpable, Air Dry, Paintable, Fuel Resistant

1 Scope

This specification details the requirements of pumpable, paintable sealers intended for applications after the paint shop bake ovens. These materials are either nondrying or air drying in nature and are intended for use as repair materials after paint shop to seal interior and exterior joints against water, dust and air intrusion. These materials must not degrade in the presence of gasoline.

1.1 Material Description. These materials must be a smooth homogeneous mixture free of air, lumps, unmixed particles, and foreign materials.

1.1.1 These materials must adhere to all production electrocoat (e-coat), topcoat and other paint coatings. These materials 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 material 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 D1475	ASTM D2369	EPA Method 24	SAE J1524
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2.2 GM Standards/Specifications.

GMW3059	GMW14270	GMW14729	GMW16853
GMW3205	GMW14444	GMW15735	GMW17405
GMW14124			

2.3 Additional References. None.

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) (EPA Method 24, See 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.

3.1.3.1 Report Viscosity Timing in Seconds (s). Report how long (in seconds) it takes to reach 20 g when tested thru the 2.64 mm orifice and a pressure of 275 kPa. **Note:** The viscosity, for each approved source, will be set at the time of approval to this specification. That viscosity range reported in seconds (s) 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 GMW3205, Table 1; Wet Condition – Coding A and volume ratio Coding 5. The material shall have a tolerable or better odor; minimum rating of six (6) in GMW3205, 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, i.e., e-coat, primer surfacer, basecoat only, and base coat/clear coat (BC/CC). A set of sealer panels shall be prepared for each environmental condition listed in Table 2 using the following substrates.

3.3.1.1 Substrates.

3.3.1.1.1 Electrocoat. A current production e-coat from each approved supplier. Samples shall be prepared using the sealer and prepared both with and without the final line repair bake system listed in Table 1.

3.3.1.1.2 Primer Surfacer. At least one (1) current technology of primer surfacer from each major paint supplier. Samples shall be prepared using the sealer and prepared both with and without the final line repair bake system listed in Table 1.

3.3.1.1.3 Base Coat Only. At least one (1) current technology of primer surfacer from each major paint supplier. Samples shall be prepared using the sealer and prepared both with and without the final line repair bake system listed in Table 1.

3.3.1.1.4 Base Coat/Clear Coat. At least one current technology of BC/CC from each major paint supplier, in the following colors for each technology: white, red, black, and light blue or silver metallic. Samples shall be prepared using the sealer and prepared both with and without the final line repair bake system listed in Table 1.

Table 1: Sealer Materials Bake Cycle

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

3.3.1.2 Material samples prepared according to 3.3.1 must not crack or lose adhesion during or after the environmental 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