



## Sealer, Preformed, Paint Shop, Drain Plugs - Generic Qualification

### 1 Scope

**1.1 Material Description.** The material, a preformed sealer, used with plastic gauge or drain hole "plug assemblies", must be a smooth and homogeneous mixture free of air, lumps, unmixed particles, or foreign materials.

**1.1.1** It must not have a noxious or toxic odor in either the uncured or cured state.

**1.1.2** In addition, the material must not adversely affect those personnel handling it.

**1.1.3** The material must adhere to all approved production electrocoat (e-coat) and plastic plug materials.

**1.1.4** It must not have corrosion causing ingredients.

**1.2 Symbols.** Not applicable.

**1.3 Applicability.** These sealers, as part of the plug assemblies, are installed to the body manually, on the paint shop sealer line.

**1.4 Remarks.** This specification details the material and performance requirements of a preformed sealer, used with plastic gauge or drain hole "plug assemblies". The sealant compound, depending upon its formulation, slightly melts or expands, when processed through the paint shop sealer/primer bake oven. This bake, seals the plug assembly to the body, preventing water, dust, or air intrusion. The sealer must cure to a tack free surface. It must adhere to electrocoated metal and plastic plug material. Expanding sealers are expected to meet either the High Bake (Type A) or Low Bake (Type B) requirements. Non-expanding sealers are expected to meet both the High Bake and Low Bake requirements (Type C). Material must show no sign of trapped air from either an external observation or a sectional view before and after curing. (See Table 1).

Table 1: Material Types

| Type | Description                                        |
|------|----------------------------------------------------|
| A    | Expanding, High Bake                               |
| B    | Expanding, Low Bake <sup>Note 1</sup>              |
| C    | Non-Expanding, High and Low Bake <sup>Note 1</sup> |

**Note 1:** Includes "three (3)-wet" bake range.

### 2 References

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

#### 2.1 External Standards/Specifications.

|            |               |            |          |
|------------|---------------|------------|----------|
| ASTM D1876 | EPA Method 24 | IATF 16949 | ISO 1183 |
|------------|---------------|------------|----------|

#### 2.2 GM Standards/Specifications.

|         |          |          |          |
|---------|----------|----------|----------|
| GMW3008 | GMW3221  | GMW14729 | GMW16152 |
| GMW3016 | GMW3232  | GMW15481 | GMW16447 |
| GMW3019 | GMW14124 | GMW15634 | GMW17056 |
| GMW3059 | GMW14270 | GMW15635 |          |
| GMW3205 | GMW14706 | GMW15735 |          |

## 2.3 Additional References.

Advanced Product Quality Planning (APQP)

Material Submission Book

Productive Material Review (PMRV) Process

Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02

## 3 Requirements

All bake schedules are specified in time at substrate temperature.

### 3.1 Requirements on Delivery.

**3.1.1 Specific Gravity (ISO 1183, Part 1, Method B).** The typical range for the material in the uncured state is 0.9 sp.g to 1.5 sp.g. A specific gravity range will be set at the time of approval and become a requirement for the material.

**3.1.2 Odor (GMW3205). Note:** odor testing is to be completed after GMW15635 and GMW15735. The material shall have a tolerable or better odor; minimum rating of six (6). Test sample shall be baked at target bake per Table 3, and then conditioned for seven (7) days at 23 °C ± 5 °C before initiating test procedure. Use test volume ratio per GMW3205 coding four (4) (1:500 ratio) and wet condition; Method A.

**3.1.3 Volatile and Semi-Volatile Organic Compounds (SVOC) from Interior Materials (GMW15634).** Test sample shall be baked at target bake per GMW15634; see 3.3.1.3, and then conditioned for seven (7) days at 23 °C ± 5 °C before initiating test procedure. After this conditioning, packaging is done as described for other test materials in GMW15634. Evaluate SVOC using 60 minutes at 120 °C per GMW15634; see 4.2.2.1.

**3.1.4 Plant Emissions Volatile Organic Compounds (VOC) GMW3016 and Environmental Protection Agency (EPA) EPA Method 24, for the United States.** Test and report per the Productive Material Review (PMRV) Process and in the material submission book.

**3.1.4.1 Solids Content.** The solids content must be ≥ 97% of the material mass.

**3.1.5 Aldehyde and Ketone Emissions from Interior Materials (GMW15635).** Test sample shall be baked using target bake per Table 3 and tested within seven (7) days of baking and reported per the PMRV and in the material submission book.

**3.1.6 Flame Resistance (GMW3232).** After target bake per Table 3, the cured material shall not exhibit a burn rate > 100 mm/minute.

### 3.2 Performance Requirements.

**3.2.1 Test Specimen Preparation.** The sealer material test specimens shall be prepared per GMW3221. The sealer material test specimens shall be applied, in 1 mm × 25 mm × 200 mm strips, to each of the substrate conditions as shown in Table 2.

Table 2: Substrate Conditions

| Substrate Name    | Substrate Condition                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------|
| Baked Electrocoat | Any steel panel with a GMW3008 approved e-coat.<br>E-coat applied per target film thickness and target bake. |
| Plastic           | Nylon 66 per GMW16447, or as specified by the product engineering release engineer.                          |

**3.2.2 Test Panel Preparation.** E-coat or plastic test panel size is to be a minimum of 100 mm × 300 mm. Allow test pieces to age for a minimum of 24 h at 23 °C ± 5 °C following any specified bake, prior to exposure to any test environments, unless otherwise specified.