



Sealer – Preformed, Extrudable, Weldable and Expandable

1 Scope

This specification details the requirements of an extrudable weld-through material which may be applied in the Metal Center, Assembly Plant Body Shop or, at an outside source.

1.1 Material Description. This type of material is a smooth and homogeneous mixture, free of: air; lumps; unmixed particles and foreign matter. These sealing materials are extruded into parts, intended for use between two pieces of (oily) metal that will be welded together. The material is typically tacky throughout and can be referred to as “two side tacky”. A thin, dry film may be applied to one side of the extruded part to improve handling or weldability of the part and is referred to as “one side tacky”.

The material has low-expansion capability and will expand (Table 1) and cure upon heating in the Paint Shop Electrocoat (E-Coat) Oven. This material is intended to seal interior or exterior body joints against water, dust and air intrusion.

Table 1: Sealer Types and Expansion Requirements

Sealer Type	Description
A	0% to 50% expansion, one side tacky
B	0% to 50% expansion, two side tacky
C	100% to 200% expansion, one side tacky
D	100% to 200% expansion, two side tacky

1.2 Symbols. Not applicable.

1.3 Applicability. Applicable to preform sealer materials that are formed into parts and installed prior to the assembly Plant Paint Shop, between two layers of metal.

2 References

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

2.1 External Standards/Specifications.

ASTM D5 ASTM D792

2.2 GM Standards/Specifications.

GM4389M	GMW3016	GMW14124	GMW15735
GMW2	GMW3059	GMW14729	
GMW8	GMW3205	GMW15192	
GMW11	GMW3221	GMW15477	
GMW3008	GMW3232	GMW15481	

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

3 Requirements

Specific material requirements and appropriate test methods are listed throughout Section 3.

General: The material must be a smooth and homogeneous mixture, free of: air; lumps; unmixed particles and foreign matter.

3.1 Physical Requirements.

3.1.1 Volatile Organic Content (GMW3016). Test and report per the Paint Material Review (PMRV) process.

3.1.2 Odor (GMW3205, Section 4 Procedure). The material shall have a neutral odor before and after curing. In addition, the ED50 value of its toxicity may be required at the time of approval if requested.

3.1.3 Tack The material shall meet the following tack test prior to curing. Press a piece of material 10 mm x 25 mm x 25 mm onto an oily metal panel and hold for 2 s. When the finger is lifted off, there shall be no material transfer to the skin nor lifting of the sealer from the panel.

3.1.4 Density (ASTM D792). A density value of 1.2 kg/m³ at 23 °C is typical. However, an individual range for each material will be set at the time of approval to this specification.

3.1.5 Solids Content. The solids mass must be ≥ 95% of the material mass.

3.1.6 Hardness (ASTM D5 – For Information Only). The hardness measurement of the uncured material at 25 °C using a needle penetrometer with a 50 g load and a 5 s duration shall be 5 mm to 15 mm.

3.1.7 Flame Resistance. The material must resist 50 passes with an open flame and be self-extinguishing or meet the requirements of GMW3232.

3.1.8 Smoking Resistance. The sealer must not smoke at ≤ 177 °C with slight smoke allowed > 177 °C to ≤ 191 °C.

3.2 Performance Requirements.

3.2.1 Weldability. The material must be capable of being welded, with low expansion (per Table 1) and adhere to oily metal substrates as shown in Table 2 or additionally, as specified by the requesting GM Engineer.

3.2.2 Expansion (GMW15481). Material baked per Table 3 shall demonstrate the required expansion per Table 1.

3.2.3 Adhesion. The material must visually exhibit good adhesion to the substrate per Table 5 with no cracking, separation or other deleterious effects.

3.2.4 Corrosion Resistance. There must not be any corrosion on the panel surface underneath the sealer footprint per Table 5.

3.2.4.1 Apply two pieces of sealer 3 mm high x 40 mm wide x 200 mm long to the surface of an uncoated steel panel (inspect panel first to be sure it is free of surface corrosion).

3.2.4.2 Bake panel for 1 h at 205 °C. Remove from the oven and allow panel to cool to room temperature.

3.2.4.3 Remove the second sealer piece from the surface of the panel after humidity test.

3.2.5 Test Panel Preparation. Prepare three (3) sets of test panels for each oiled substrate shown in Table 2 and each Bake Condition per Table 3 and each Test Environment per Table 4.

Table 2: Metal Substrates for Test Panels

Oily Cold Rolled Steel (CRS) (GMW2)
Oily Hot-Dipped Galvanized (HDG) Steel (GMW8), 60 g/m ² Galvanized Coating Weight
Oily Electrogalvanized Steel (EG) (GMW11), 60 g/m ² Galvanized Coating Weight
Oily Aluminum (Al) (GMW15192)
Oily Cold Rolled Steel (CRS) (GMW2) with Co-processed Electrocoat

3.2.5.1 Prepare the oily substrate test panels per GMW15477 with lubricants as defined by the requesting GM Engineer.

3.2.5.2 Prepare the material test specimens per GMW3221, Code D.

3.2.5.3 Apply the material test specimens to the test panels.

3.2.5.4 Apply pretreatment and E-Coat (approved per GMW3008) to one set of (3) panels, for each Electrocoat as directed by the requesting Engineer. Maintain an additional set of three (3) panels, without pretreatment or E-Coat.