



Waterborne Coating, Underhood and Undervehicle

1 Scope

This specification describes the requirements for a sprayable, waterborne paint that is heat resistant to 260 °C. Typical applications include rear axles, prop shafts, non-braking surfaces of brake components and integral steering gears. The coating is suitable for spray application at room temperature (22 °C) over steel, cast iron, cast aluminum and forgings.

Two (2) coatings are described: Type One (1) and Type Two (2). Type Two (2) is a high performance coating. Type One (1) is the coating that shall apply if the coating type is not defined on the drawing or specification.

1.1 Material Description. Waterborne paint for chassis spray applications. Type One (1) and Type Two (2) coatings are described.

1.2 Symbols. Not applicable.

1.3 Applicability. Rear axles, prop shafts and brake components.

1.4 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

ISO 2808

2.2 GM Standards/Specifications.

GMW3059	GMW14700	GMW15272	GMW17332
GMW3286	GMW14729	GMW15357	
GMW14270	GMW14829	GMW15891	
GMW14333	GMW14872	GMW16177	

2.3 Additional References.

Paint Performance Requirements

3 Requirements

3.1 Requirements on Test Specimens.

3.1.1 Type One (1) Coating. Two (2) sets of painted test parts/panels shall be evaluated to this specification. The first set shall be tested after 168 h of air dry. The second set shall be exposed to a heat soak for 16 h at 260 °C (500 °F) and shall be tested after 168 h of air dry.

3.1.2 Type Two (2) Coating. Test parts/panels shall be tested after 168 h of air dry.

3.2 Paint Qualification Testing. Tests are to be performed on cast iron, cast aluminum, hot rolled steel and cold rolled steel panels. Coated panels must be aged for 168 h prior to testing.

3.3 Production Process Testing. Testing is to be performed on panels of representative materials being coated e.g., cast iron and steel. Sections from the part may be used as an alternate representative material versus panels. Sections from the part shall include all materials being coated.

3.4 Painted Part Requirements. Painted parts or panels as described in 3.1 shall meet the requirements of Table 1.

Table 1: Painted Part Requirements

Properties	Type One (1)	Type Two (2)	Test Methods
Color	Black	Black	Visual
Dry Time	10 minutes	10 minutes	Dry to touch without drips at time of shipment
Thickness	75 μm $\pm$ 15 μm	75 μm $\pm$ 15 μm	ISO 2808
Cure	zero (0) or one (1)	zero (0) or one (1)	GMW15891
Adhesion	zero (0) or one (1)	zero (0) or one (1)	GMW14829
Salt Spray Resistance	Less than 10% red rust after 168 h	Not required	GMW3286
Cyclic Corrosion	Not required	Rating of eight (8) or better per GMW15357 at Exposure A	Cyclic Corrosion per GMW14872, (UB) All, 4 sp, Method 1/2
Humidity Resistance	No blistering, peeling, or fading after 240 h	No blistering, peeling, or fading after 336 h	GMW14729

Note: Underbody (UB) All = Mounting Location of Component, Four (4) Salt Sprays (4 sp), Method 1/2 = Method 1 or Method 2 from GMW15272.

3.5 Production Part Approval Process (PPAP) and New Material Approval. For initial PPAP and/or new material approval, the requirements of Table 1 and Table 2 shall be met.

Table 2: PPAP and New Material Approval

Properties	Type One (1)	Type Two (2)	Test Methods
Cyclic Corrosion	Rating of eight (8) or better per GMW15357 at Exposure A	Rating of nine (9) or better per GMW15357 at Exposure A. Rating of eight (8) or better at Exposure D	Cyclic Corrosion per GMW14872, (UB) All, 4 sp, Method 1/2
Chip Resistance	Rating: Cast Iron/Cast Aluminum; six (6) or better HRS/CRS; seven (7) or better	Rating: Cast Iron/Cast Aluminum; six (6) or better HRS/CRS; seven (7) or better	GMW14700 method A or B
Heat Resistance	No blistering, peeling, or fading.	No blistering, peeling, or fading.	16 h at 260 °C (500 °F)
Fuel Resistance	Rating two (2)	Rating two (2)	GMW14333, Method A
Oil Resistance	After cooling to +23 °C $\pm$ 5 °C, the paint film shall show no separation or softening	After cooling to +23 °C $\pm$ 5 °C, the paint film shall show no separation or softening	Sample immersed in engine oil (GMW17332 and GMW16177) and then exposed for 24 h $\pm$ 5 h in a drying oven at +100 °C $\pm$ 3 °C.
Thermal Cycling	No discoloration, peeling, fading or cracking after eight (8) cycles	No discoloration, peeling, fading or cracking after eight (8) cycles	Cool panel to -40 °C, hold for 1 h, then heat panel to 135 °C. Maintain 135 °C for 1 h then cool to -40 °C. Repeat for eight (8) cycles

Note: Hot Rolled Steel (HRS), Cold Rolled Steel (CRS), Underbody (UB) All = Mounting Location of Component, Four (4) Salt Sprays (4 sp), Method 1/2 = Method 1 or Method 2 from GMW15272.

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