



Topcoat System, High Bake, 1K Solventborne Basecoat/Matte Finish (Low Gloss), 2K Clearcoat

1 Scope

This specification covers the qualification and performance requirements for exterior, one component (1K) solventborne basecoat and two component (2K), matte finish i.e., low gloss solventborne clearcoat topcoats that perform over a bake latitude of 115 °C to 135 °C (240 °F to 275 °F).

1.1 Material Description. Basecoat components of these systems are typically 1K (solvent) acrylic melamine. Clearcoat components of these systems are flexible 2K (solvent) urethane or urethane blends. Each combination of specific basecoat and clearcoat must be tested and approved as a basecoat/clearcoat (BC/CC) system. The individual components are not interchangeable and are approved for use only with combinations i.e., the basecoat/clearcoat used in qualification testing of the total paint system. This specification shall be used in conjunction with the Approved Paint on Plastics Systems (APOPS), found in the GM Materials Approved Source List, which lists approved substrate, cleaning, priming, and topcoat combinations. APOPS test requirements are defined in GMW14797.

1.2 Symbols. Not applicable.

1.3 Applicability. Topcoats designed for application over a baked primer or adhesion promoter. All Thermoplastic Polyolefin (TPO) substrates using 9984864 must be over an adhesion promoter (9984808 or 9984810) or flame treatment per GMW16133.

1.4 Remarks. None.

2 References

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

2.1 External Standards/Specifications.

IATF 16949

2.2 GM Standards/Specifications.

9984801	GMW3059	GMW14797	GMW17434
9984808	GMW14124	GMW14829	
9984810	GMW14270	GMW15777	
GMW3005	GMW14729	GMW16133	

2.3 Additional References.

- Advanced Product Quality Plan (APQP)
- Applicable Primer Specification
- Approved Paint on Plastics Systems (APOPS) (found in the GM Materials Approved Source List)
- GM Manufacturing Engineering Vehicle Systems Paint Approved Color Source List
- Jacksonville Rating Scale
- Local Plant Safety Procedures, Agreements, and Monitoring Procedures
- Manufacturing Control Plans
- Original Equipment Manufacturer (OEM) Body System Controls (for a given etch resistance exposure test)
- Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02

3 Requirements

3.1 The submission requirements of GMW3005 must be completed prior to approval of the topcoat BC/CC system. The supplier must clearly define the usage target.

3.2 Gloss Level. Testing must be completed at the specified gloss levels at the time of submission (e.g., 20 gloss, 30 gloss, and/or 50 gloss, using a 60 degree gloss meter).

3.2.1 Establishing Gloss Range. New model year colors will have individual and distinct gloss ranges and shall be derived through the following methodology. Using a sealed aluminum panel (e.g., ACT, APR16353, TRU Aluminum, 10.16 cm x 15.24 cm x 0.635 cm (4 in x 6 in x 0.025 in), unpolished, coil coated: gray), apply low-gloss clear, minimum 38 μ m (1.5 mil) to target final gloss range, i.e., 30 gloss $\pm$ 5 gloss using a 60 degree gloss meter. This will establish clearcoat gloss position. Using this low-gloss clearcoat applied to other colors will identify required gloss level. As an example, red basecoat with a 30 gloss clear could result in a final finish of 25 gloss, which would then be reported as 25 gloss $\pm$ 5 gloss. These ranges as established through a standardized clearcoat are to be reported on the panel label affixed to the back of each panel when developing certified standards.

3.3 Durability Performance. Systems approved under this specification must meet the minimum performance requirements of a class two (2) topcoat as described in GMW3005. Topcoat type B and/or type C testing requirements shall be determined by the targeted usage.

3.3.1 Additional Submission Requirements. Table 1 of this specification must be completed prior to approval of the product.

3.4 Processing Requirements. These topcoats are designed to be applied over a baked primer or an adhesion promoter. Any wet-on-wet applications over primer must be evaluated as a separate paint system per this specification and applicable primer specification.

3.5 Etch Resistance. Coatings approved under this specification are expected to provide to the customer a finish that will prevent or minimize environmental etch and water spot damage. Minimum etch rating is six (6) per the Jacksonville rating scale or equal to typical Original Equipment Manufacturer (OEM) body system controls for a given etch resistance exposure test.

3.6 Appearance. The topcoat system i.e., BC/CC system, must meet or exceed GM specification as designated in GMW15777.

Table 1: In-Line Repair Matrix

OEM Film and Bake	Aging Before Recoat	Adhesion Promoter Before Recoat	Recoat Film and Bake	Initial Adhesion GMW14829	Humidity plus Adhesion GMW14729 GMW14829	Environnemental Cycle A GMW14124 GMW14729 GMW14829
Low/High (L/H)	72 h	No	Target/Target (T/T)			
Low/High (L/H)	72 h	Yes	T/T			
High/Low (H/L)	72 h	No	T/T			
High/Low (H/L)	72 h	Yes	T/T			
Low/High (L/H)	2 weeks	No	T/T			
Low/High (L/H)	2 weeks	Yes	T/T			
High/Low (H/L)	2 weeks	No	T/T			
High/Low (H/L)	2 weeks	Yes	T/T			

Key: High (H), Low (L), Target (T)

3.7 Panel Preparation. Panels are to be prepared for type B and/or type C materials.