GM ENGINEERING STANDARDS	Material Specification	9986268

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

1 Scope

This specification covers the performance and qualification requirements for exterior, two-component (2K) solventborne basecoat and two-component (2K), matte finish (low gloss), solventborne clearcoat topcoats that perform over bake latitude of 82 °C to 135 °C (180 °F to 275 °F).

1.1 Material Description. Basecoat components of these systems are typically 2K (solvent) urethane or urethane blends. Clearcoat components of these systems are 2K (solvent) urethane or urethane blends. Each combination of specific basecoat and clearcoat must be tested and approved as a basecoat/clearcoat system. The individual components are not interchangeable and are approved for use only with combinations of basecoat/clearcoat of the total paint system that were used in qualification testing.

1.1.1 Qualified to this Material Specification. Each combination of specific basecoat and clearcoat must be tested and approved as a basecoat/clearcoat topcoat system. The individual components are not interchangeable. This specification shall be used in conjunction with the GMW14797: Approved Paint on Plastic System (APOPS), a section of the GM Materials Approval Source List, which lists the approved substrate, cleaning, priming, and topcoat combinations. In addition, the topcoat system is part of the total coating system and must meet qualifications set forth in this specification and those shown on engineering drawings for appearance and durability.

1.2 Symbols. Not applicable.

1.3 Applicability. These topcoats can be used on heat sensitive plastics, flexible or rigid plastic parts and are designed to be applied over a baked primer or adhesion promoter.

Note: All Thermoplastic Polyolefin (TPO) substrates using 9986268 must be primed with a 9984905 or 9984908 adhesion promoter or flame treatment per GMW16133.

1.4 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

ISO 2808	ISO/TS 16949

2.2 GM Standards/Specifications.

9984801	9984908	GMW14270	GMW16133
9984842	GMW3005	GMW14797	GMW17434
9984905	GMW3059	GMW15777	

2.3 Additional References.

Advanced Product Quality Planning (APQP)

Engineering Drawings

Jacksonville Rating Scale

Original Equipment Manufacturer (OEM)

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3 Requirements

3.1 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to submit a full material composition disclosure to GM via the International Material Data System (IMDS) or via a completed GMW3059 report form.

3.2 Submission. The submission requirements of GMW3005 must be completed prior to approval of the topcoat (basecoat/clearcoat) system. The supplier must clearly define the usage target.

3.2.1 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).

3.2.1.1 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 µm (1.5 mil) to target final gloss range, i.e., 30 gloss ± 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 gloss of 25 gloss, which would then be reported as 25 gloss ± 5 gloss. These ranges as established through a standardized clearcoat and are to be reported on the panel label affixed to the back of each panel when developing certified standards.

3.3 Durability Performance. Materials approved to this specification must meet all of the minimum requirements of GMW3005, Class 2, Type B and Type C.

3.4 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) painted parts systems for a given exposure test.

3.5 Processing Requirements. These topcoats are designed to be applied over a baked low bake primer or an adhesion promoter. Any wet-on-wet applications over primer must be evaluated as a separate paint system per 9984842: Wet on Wet Primer/Basecoat/Clearcoat Systems.

3.6 Appearance. The topcoat system (basecoat/clearcoat) must meet or exceed requirements as designated in GMW15777.

3.7 Compatibility. Compatibility with associated materials is evaluated for Type B and Type C usage per GMW3005.

3.8 Panel Preparation. Panels are to be prepared for Type B and Type C materials per GMW3005.

Note: Power washing per 9984801 is required. Deviation must be approved by the involved GM Vehicle Systems Engineering Paint Engineer.

3.8.1 Processability. General processability must be demonstrated per GMW3005. The process used to create the test panels must be production capable.

3.8.2 Film Build (ISO 2808). The clearcoat must meet all specified appearance and durability requirements at a minimum film of 38 µm (1.5 mil). Individual basecoat colors may have higher minimum film builds than the technology minimum due to hiding or Ultraviolet (UV)/Visible (UV/VIS) transmission requirements. The acceptable range for a color will be established during annual pigmentation evaluation and will be released by GM Vehicle Systems Engineering - Paint as the GMW17434 Approved Color Source List, available by model year from the paint source.

3.8.2.1 Film Build Latitude. The specific clearcoat film build range for individual technologies must be established by designed experiment or a matrix ranging from 25.4 µm to 63.5 µm (1.0 mil to 2.5 mil).

3.8.2.2 Performance criteria are Xenon Weatherometer, Florida exposure, flexibility, humidity adhesion and chip resistance. Values will be noted on the Approved Color Source List for the specific technology.

3.8.3 Flash. A flash time of one (1) minute to two (2) minutes between coats of basecoat or coats of clearcoat, and three (3) minutes between basecoat and clearcoat application is typical. Clearcoats are applied wet-on-wet over basecoats. Six (6) minutes of flash is typical prior to oven entrance. Refer to the approving paint engineer for additional information regarding exceptions to the typical processing flash time ranges.

3.8.4 Bake. Products that are approved to this standard have a typical bake range of 82 °C to 96 °C (180 °F to 205 °F) and are evaluated up to 135 °C (275 °F). Time at substrate temperature typically varies from

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