



Topcoat System, Flexible Solventborne Basecoat/One Component Clearcoat

1 Scope

This specification covers the qualifications and performance requirements for flexible, exterior, one component (1K), solventborne basecoat/1K solventborne clearcoat topcoats for use over plastic substrates, typically thermoplastic olefin, over a bake latitude of approximately 115 °C to 135 °C (240 °F to 275 °F). This topcoat system **is not intended for** use on large exterior surfaces such as fascia, spoilers, and rocker panels on vehicles produced for the North American market.

1.1 Material Description. Basecoat (BC) components of these systems are typically 1K (solvent) acrylic/melamine. Clearcoat (CC) components of these systems are 1K (solvent) technologies with varying cross-linking chemistries, but typically acrylic/melamine. Typical volume solids as sprayed are typically 35% to 50% for BCs and 45% to 60% for CCs. Each combination of specific BC and CC must be tested and approved as a BC/CC system. The individual components are **not interchangeable** and are approved for use only with combinations of BC/CC of the total paint system which was used in the qualification testing. It must also be compatible with specific adhesion promoters and/or primers used with specific plastics. This specification shall be used in conjunction with the GMW14797, Approved Paint on Plastics Systems (APOPS), a section of GM Materials Approved Source List which lists approved substrate, cleaning, priming, and topcoat combinations.

1.2 Symbols. Not applicable.

1.3 Applicability. These topcoats are designed to be applied over an approved adhesion promoter or baked primer. All thermoplastic polyolefin substrates using 9984852 must be applied 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	GMW3005	GMW14797	GMW17434
9984808	GMW3059	GMW15777	
9984810	GMW14270	GMW16133	

2.3 Additional References. None.

3 Requirements

3.1 Submission. 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 Durability Performance. Systems approved under this specification must meet the minimum performance requirements of a Class 3, Type B or C topcoat as described in GMW3005.

Note: Class 3 topcoat systems provide a 3 year exterior durability in environmental testing, i.e., Florida exposure.

3.3 Panel Preparation. Panels are to be prepared for Types B and C materials. Note that power wash per 9984801 is required. Deviation must be approved by GM Manufacturing Engineering Vehicle Systems- Paint.

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

3.5 Appearance. The topcoat system (BC/CC) must meet or exceed the requirements as designated in GMW15777.

3.6 Additional Requirements.

3.6.1 Flash. A flash time of 1 minutes to 2 minutes between coats of BC or coats of CC and 3 minutes between BC and CC application is typical. 6 minutes of flash is typical prior to oven entrance. Refer to the approving Paint Engineer for additional information in regard to exceptions for the typical processing flash time ranges.

3.6.2 Film Build. The CC must meet all specified appearance and durability requirements at a minimum film of 38 µm (1.5 mil). Individual BC colors may have higher minimum film builds than the technology minimum due to hiding or ultraviolet (UV) opacity. The acceptable range for a color will be established during annual pigmentation evaluation (GMW17434) and will be released by GM Manufacturing Engineering Vehicle Systems – Paint, as the GMW17434 Approved Color Source List available by model year from the paint source. Refer to the approving Paint Engineer for additional information in regard to exceptions for the typical processing film build ranges.

3.6.2.1 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).

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

3.6.3 Bake. Products that are approved to this standard have a typical bake range of 115 °C to 135 °C (240 °F to 275 °F). Time at substrate temperature typically varies from 20 minutes to 90 minutes. Refer to the approving Paint Engineer for additional information in regard to exceptions for the typical processing bake temperature and time ranges.

3.6.4 Bake Window. Cure charts must be developed as specified in GMW3005 to define technology limits for each product. Once developed and approved, the bake chart is signed by GM Vehicle Systems Engineering - Paint and is the only acceptable document for defining cure.

3.7 Additional Requirements. Product approval is required under established guidelines outlined in IATF 16949. At product approval, the supplier is expected to have reviewed to GM's satisfaction specific documentation outlined in Advanced Product Quality Planning (APQP), i.e., Design Failure Mode and Effects Analysis (DFMEA), Process Failure and Effects Analysis (PFMEA), Key Product Characteristic (KPC), Key Control Characteristic (KCC) and Manufacturing Control Plans.

3.8 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to obtain a GM-approved International Material Data System (IMDS) submission.

4 Manufacturing Process

All shipments of material or parts under contract or purchase order manufactured to this specification shall be equivalent in every respect to the initial samples approved by engineering. There shall be no changes in either formulation or manufacturing processes permitted without prior notification and approval by engineering. Lack of notification by the supplier constitutes grounds for rejection of any shipment. While samples may be taken from incoming shipments and checked for conformance to this specification, the supplier shall accept the responsibility for incoming shipments meeting this specification without dependence upon purchaser's inspection. In addition, the supplier shall be responsible for submitting a Certificate of Analysis (COA) with each batch of material arriving at a plant.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.