



Ultraviolet Curing, Sunscreen Lotion-Resistant Interior Paints and Coatings

1 Scope

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

This specification covers the requirements for water or solventborne, ultraviolet (UV), curable, sunscreen lotion-resistant interior paint systems. All paints approved to this specification shall be suitable for monocoats, basecoat/clearcoat or laser etch applications. All UV curable coating systems approved to the requirements of this specification must first pass the requirements of GMW14867.

1.1 Material Description. The paint system can be a 1, 2, or 3-layer coating system. Each layer of each coating must be able to cure to the touch by UV radiation. There shall be two classes of materials.

1.1.1 Monocure Coatings. These coatings contain unsaturated acrylic resins that, when exposed to UV radiation, cure rapidly to yield high-quality coatings.

1.1.2 Dual Cure Coatings. These coatings contain unsaturated acrylic resins along with hydroxyl and isocyanate (urethane)-containing resins. Initial cure to the touch is achieved by UV radiation, but a subsequent conventional or infrared (IR) curing oven is required to achieve the final urethane cure.

1.1.3 Paint Feel. Paint layer systems approved to this specification shall be required to carry a type suffix to indicate the haptic feel that it has to the human skin. The suffix system shall be as follows:

- Type A: Soft Touch
- Type B: Fabric Feel
- Type C: Hard Touch
- Type D: Semi-Soft Touch

1.2 Symbols. Paint layer systems approved to this specification shall be identified for application based on the following symbols with parentheses:

- (M): Monocoat

- (LE): Laser Etch
- (BC): Basecoat/Clearcoat

1.3 Typical Applications. Buttons, switches, heating, ventilation, air condition (HVAC) and radio faceplates for laser etch applications; moldings, faceplates, etc., for basecoat/clearcoat applications.

1.4 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059	GMW14867
GMW3208	GMW15572
GMW3221	GMW15581
GMW3417	GMW16727

2.3 Additional References.

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

3 Requirements

3.1 Requirements on Test Specimens. All samples are to be conditioned prior to each required test according to GMW3221, Code A.

3.2 Paint System Requirements. The paint system tested on the panels must be identical to the production-intent paint system. The minimum film builds of the paint systems to be tested shall be specified in writing by the paint supplier.

3.3 Paint Technology Approval. All paint technology approvals for this specification must pass the requirements of GMW14867.

3.4 Sample Preparation and Identification. The plastic substrates and paint system shall be identified per 3.4.1. and 3.4.2.

3.4.1 Substrates. Approved Polycarbonate (PC), (GMW16727), Polycarbonate Acrylonitrile Butadiene Styrene (PC-ABS) (GMW15581), and

PC-Acrylic substrates for laser etch applications or approved PC, PC-ABS, and ABS, (GMW15572), for base/clear applications.

- Vendor
- Compound number

3.4.2 Paint System.

- Vendor
- Paint formulation
- Processing conditions, including all reduction parameters, surface preparation, flash and cure times, and temperatures and dry film thickness for each film of paint applied.

3.5 Coating Combinations. All testing must be performed on the combination of paint layers intended for production. Some of the testing must be performed on laser etched areas of the panel in order to prove durability and shall be specified in the required section. The MATSPC approval shall reflect which system was tested for approval.

3.6 Appearance. The finished coating layer system shall be smooth, uniform and continuous in appearance.

3.7 Laserability. Paint systems for laser etch applications must be proven to be laser etched without exhibiting any objectionable defects, i.e., yellowing of graphics, non-clarity of graphics.

3.8 Effects of Cleaners and Lotions.

3.8.1 Laser Etch Applications. Wedge painted test plates for this test shall be submitted. The test plates in the as-received condition shall be resistant to sunscreen lotion and all cleaners when tested at the different paint layer interfaces of test plates when tested to GMW14867.

3.9 Wear Resistance. (GMW3208) The surface finish shall show no wear through the top paint layer or other adverse effects after 1000 cycles per nominal topcoat film build of 25 µm dry film build of the abrader wear tester per GMW3208, CS-10 wheel with a 500 g load.

3.10 Color Approval. In addition, each topcoat color of an approved technology must be tested to the properties listed below using the test methods outlined in GMW14867.

3.10.1 Cure. See GMW14867.

3.10.2 Adhesion. See GMW14867.

3.10.3 Effects of Cleaners and Lotions. See GMW14867.

3.10.4 Color Crock. See GMW14867.

3.10.5 Taber Abrasion. See GMW14867.

3.10.6 Mar Resistance. See GMW14867.

3.10.7 Xenon. See GMW14867.

3.10.8 Weathering. Plaques per GMW16727 shall be painted and exposed according to the following callout: GMW3417-L1-F2-G1-T6 for duration of 25°000, 55 000 and 105 000 Langleys. No objectionable color or gloss change shall be acceptable.

4 Manufacturing Process

All coatings approved to this specification must be applied and cured according to the submitted paint processing requirements per GMW14867. Any painted plastic parts which do not conform to the cure, film build or appearance requirements shall be cause for rejection.

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.

5.3 Inspection and Rejection. Samples of components or materials released to a GM material specification shall be tested for conformity with the requirements of this material specification and approved by the responsible Engineering department prior to commencement of delivery of bulk supplies.

A new approval must be received for any changes, e.g., properties, manufacturing process, location of manufacture, etc. If not otherwise agreed, all testing and documentation normally required for initial release must be completed.

It is the responsibility of the supplier to inform the customer in a timely manner, without solicitation, and to include documentation of all modifications of materials and/or processes and to apply for a new release.

If not otherwise agreed, all release tests shall be repeated and documented by the supplier prior to commencement of delivery of non-conforming bulk supplies. In individual cases, a shorter test can be agreed to between the responsible Engineering department and the supplier.

5.4 Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). For new product submissions, or when a change in chemical composition of an existing product has occurred, a complete copy of the Material Safety Data Sheet/Safety Data Sheet must be submitted in compliance with the Globally Harmonized System