



Modified Acrylic Low Gloss Exterior Paint

1 Scope

This specification describes the requirements for a modified acrylic low gloss topcoat to be used on certain exterior components such as wiper arms and blades for passenger cars and trucks.

1.1 Material Description. Modified acrylic low gloss topcoat.

1.2 Symbols. Not applicable.

1.3 Applicability. On certain exterior components such as wiper arms and blades for passenger cars and trucks.

2 References

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

2.1 External Standards/Specifications.

ASTM D3363 SAE J2527

2.2 GM Standards/Specifications.

9985670	GMW14700	GMW14872	GMW15622
GMW3059	GMW14704	GMW14873	GMW15919
GMW14270	GMW14729	GMW15282	
GMW14664	GMW14829	GMW15545	

2.3 Additional References.

- Applicable Drawings for the Parts
- GM Engineering Corrosion Standards

3 Requirements

Materials approved to this specification must meet all the minimum requirements herein. Once qualified to these requirements, routine testing of parts is covered by the performance (GMW15622 or GMW14664) on the Applicable Drawings for the Parts.

3.1 Physical Requirements.

3.1.1 Film Build.

3.1.1.1 The minimum topcoat dry film, build shall be determined by the Ultraviolet (UV) transmission results, as determined in 3.1.2, and all other test results. The minimum required film build for each approved product will be 20% greater than the minimum film build that passes the ultraviolet transmission test, and will be listed in the remarks column of the GM Materials Approved Source List (see GMW14270) entry for that product.

3.1.1.2 The material shall not sag at wet film builds which dry to 2.5 times the minimum specified dry film build that is shown in the GM Materials Approved Source List (see GMW14270).

3.1.2 Ultraviolet Transmission. (See GMW15545. The spectrophotometer used must have an integrating sphere). The coating must be opaque to UV transmission to the underlying primer layer or substrate, at a film thickness 20% less than the minimum of the recommended film build range. The coating shall have been baked at the maximum of the acceptable cure range on its bake time and temperature process control chart. Testing must be conducted with wavelengths from 290 nm to 700 nm. No more than 0.1% transmission is allowed from 290 nm to 360 nm. No more than 0.5% transmission is allowed at 400 nm.

The following tests (see 3.1.3 to 3.1.15) shall be performed on painted panels, after aging a minimum of 72 h, after baking and the drying cycle.

3.1.3 Appearance. The coating shall present a smooth, uniform, continuous appearance. No blisters, run outs, rinsing residues or other surface defects are permitted.

3.1.4 Cure. The supplier must develop a solvent rub test for cure for the applicators to use in production. Panels must be submitted that have been tested per the test.

3.1.5 Pencil Hardness. After all laboratory tests and allocated recovery periods, the pencil hardness of the cured film shall be no more than one unit higher or lower than the initial hardness when tested per ASTM D3363.

3.1.6 As-Received Tape Adhesion. There shall be no evidence of blisters, cracking, film lifting, or any other adverse appearance effects when examined immediately after as-received tape adhesion testing per GMW14829, both methods.

3.1.7 Humidity plus Tape Adhesion. There shall be no evidence of blisters, cracking, film lifting or any other adverse appearance effects when examined immediately after 96 h in humidity per GMW14729 followed by tape adhesion testing per GMW14829, both methods.

3.1.8 Water Immersion. After 7 h of water immersion per GMW14704 at 38 °C, there shall be no more than 1.5 mm creepage or loss of adhesion from a scribe line per GMW15282. None of the paint should be removed from unscribed areas after the air blow-off adhesion test, except for 1.0 mm or less at the edges. There shall be no adverse appearance effects, such as blisters, cracking, and film lifting, etc., when examined immediately after removal of the part from the water.

3.1.9 Gravelometer. The panels shall exhibit a rating of seven or better after the gravelometer test per GMW14700.

3.1.10 Gravelometer Plus Thermal Shock. Painted panels shall be subjected to gravelometer per GMW14700 followed by thermal shock per GMW15919. After thermal shock, there shall be no blushing nor any peeling of paint from the gravelometer chips.

3.1.11 Accelerated Corrosion. Painted panels shall be scribed per GMW15282. After exposure per GMW14872, Exterior Exposure C, the panels shall rate eight points or better on GM Engineering Corrosion Standards (less than 10% red rust and less than 5 mm creepback both sides when evaluated per GMW15282).

3.1.12 Xenon Weatherometer Exposure. (See SAE J2527; Exterior Cycle + 96 h Humidity per GMW14729 and Tape Adhesion per GMW14829, Both Methods). Pull one sample at 1980 kJ/m². Run an additional sample to failure, evaluating every 500 kJ/m². Rate panels for gloss retention, cracking and color change. Unpolished gloss retention shall be a minimum of 80%. There shall be no significant color change, no cracking and no loss of film integrity after 96 h humidity. There shall be a minimum of 95% adhesion after tape adhesion testing.

3.1.13 Florida Exposure. Panels for Florida exposure shall be prepared with the minimum topcoat film build (See 3.1.1) applied over Electrodeposition Paint Operation (ELPO) and baked at the maximum recommended bake temperature. Two (2) panels shall be exposed, one (1) for appearance review and one (1) for humidity plus tape testing after exposure.

3.1.13.1 Painted panels shall be capable of withstanding one (1) year of Florida exposure per GMW14873 (5 degrees from horizontal facing due south, on black boxes). One (1) year of Florida exposure shall equal or exceed 6276 MJ/m². Any year that the exposure does not meet 6276 MJ/m², the samples must continue to be exposed until the exposure level reaches 6276 MJ/m². Unpolished gloss retention shall be a minimum of 80%. There shall be no visual color change.

3.1.13.2 Painted panels shall show no evidence of blisters, cracking, film lifting or any other adverse appearance effects when examined immediately after one (1) year of Florida exposure (or 6276 MJ/m²) plus 96 h humidity per GMW14729 followed by tape adhesion testing per GMW14829, both methods. There shall be a minimum of 95% adhesion after tape adhesion testing.

3.1.14 Extended Evaluation. Submit (for development purposes) two (2) tested panels, prepared per 3.1.13, each year after the following exposures:

Florida exposure per GMW14873 at 5 degrees from horizontal facing due south, on black boxes for; 12 552 MJ/m², 18 828 MJ/m², 25 104 MJ/m², and 31 380 MJ/m², (approximately 2 years, 3 years, 4 years and 5 years of exposure). One (1) of the exposed panels each year shall be submitted for appearance review.