



Cathodic Electrodeposition Paint, Low-Friction Electrocoat for Small Parts

1 Scope

1.1 Material Description. This specification covers the pretreatment, paint materials and some processing requirements for a waterborne, anti-friction, black, cathodic electrodeposition paint used on small parts. Paint durability requirements are also included. Small parts requiring low, medium and high Electrocoat (e-coat) paint film thickness applications are intended to be covered by this specification.

1.2 Symbols. Not applicable.

1.3 Applicability. Typical uses are seat rails or any sliding bracket system.

1.4 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

ASTM D523

2.2 GM Standards/Specifications.

9984123	GMW14270	GMW15282	GMW15357
GMW3008	GMW14669	GMW15288	GMW15359
GMW3059	GMW14872	GMW15356	GMW17218

2.3 Additional References.

Engineering Part Drawing

3 Requirements

3.1 Pretreatment Requirements. Clean, and zinc phosphate per 9984123 with approved products as shown in the GM Materials File for spray and/or immersion processes. Processing parameters should conform to those recommended by the chemical suppliers. Deionized water rinses must be properly maintained in order to meet the performance requirements of this specification. Alternate processes must receive engineering department approval.

Note: Online treatments using more than one chemical supplier are unacceptable. Any deviation to this must have engineering approval.

Note: If a phosphate sealer is used, it must be approved.

3.2 Repair Requirements. Contact paint supplier for recommended repair procedure.

3.3 Performance Requirements. Initial material approval submissions and are to be conducted on test panels per 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5 and 3.3.6. See 3.3.1 as it is applicable for regular tests and is to be conducted on actual parts.

3.3.1 Finish Durability. Finish shall meet GMW14669 Type B1 for film thickness < 15 µm, and GMW14669 Type A1 or Type A2 for film thickness ≥ 15 µm unless otherwise specified on the Engineering Part Drawing.

3.3.2 Throw Box, GMW3008. There shall be a minimum of 150 mm throw. Throw is the distance from the immersed opening to the point where dry film thickness drops to 0.0025 mm.

3.3.3 Scab Corrosion (GMW15288). There shall be a maximum 3 mm total creepback (reference GMW15282) on zinc phosphate panels after 20 cycles (four (4) weeks).

3.3.4 Cyclic Corrosion, GMW14872. Finish shall withstand Duration A for film thickness < 15 µm, and Duration C for film thickness ≥ 15 µm. "Withstanding" consists of all of the following (see 3.3.4.a thru 3.3.4.c).

- a. Rating eight (8) or better when evaluated per GMW15356, GMW15357 or GMW15359.
- b. Less than 10% red or white rust.
- c. Less than 6 mm total scribe creepback (reference GMW15282) on steel or iron-surface parts, or 3 mm total on all other surfaces.

3.3.5 Knife-Edge Corrosion Protection. (GMW17218). At a minimum film thickness of < 15 µm the number of rust spots on an average of three (3) blades should be < 40.

3.3.6 Film Coefficient of Friction (COF). The coefficient of static friction shall be < 15 µm when evaluated per the Appendix A. (By comparison, the coefficient of friction for a typical e-coat primer is 0.35 µm) Coefficient of friction tests are required for initial approval of the finish material. Suppliers/Applicators can run coefficient of friction test for quality control.

3.3.7 Additional Painted Product Requirements. When applied over cleaned and phosphate surfaces of requirements of all critical surfaces or as designated on the applicable engineering part drawing.

3.3.7.1 Appearance. The visual appearance of the paint may be an indication of its durability performance. Visual inspection shall be performed in a well-lit area prior to additional surface finishing. The baked e-coat shall present a smooth, uniform surface. No blister, runouts, rinsing residues or other surface defects are permitted.

3.3.7.2 Color. The color must be black.

3.3.7.3 Gloss. Gloss should be < 40 on a 60 degree gloss meter per ASTM D523.

3.3.7.4 Film Thickness. Unless otherwise specified on the engineering part drawing, film thickness shall be as follows (see 3.3.7.4 a and 3.3.7.4 b) for the example applications.

- a. Interior (no floor contact): 10 µm to 15 µm.
- b. Interior (contacting floor), underhood or undervehicle: 15 µm to 25 µm.

Note: With materials engineering approval, thinner coatings may be used for tightly-toleranced parts.

4 Manufacturing Process

Not applicable.

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.

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 of Classification and Labeling of Chemicals (GHS) requirements or other country-specific MSDS/SDS requirements.