



Metal Surface Preparation

1 Scope

This specification covers the requirements for the surface condition of metal which will subsequently be pretreated and then painted.

1.1 Material Description. Metal surface preparation to be capable of accepting a pretreatment coating.

1.2 Symbols. Not applicable.

1.3 Applicability. Metal with surface condition critical to a total coating system.

1.4 Remarks. Surface conditioning is intended to provide a surface which is capable of accepting a pretreatment coating in order to meet Painted Products Specifications covering the appropriate pretreatment process. Parts that are surface conditioned in accordance with this specification and subsequently coated, pretreated and then painted are a system and have additional requirements listed in appropriate Coating Specifications. Conformance to requirements is critical to the total coating system.

2 References

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

2.1 External Standards/Specifications.

ISO/TS 16949

2.2 GM Standards/Specifications.

GMW3011	GMW14019	GMW14699	GMW16170
GMW3059	GMW14270	GMW15420	GMW16823

2.3 Additional References.

- Coating Specifications
- Painted Products Specifications
- Quality Process Control Procedures
- Specification Requirements

3 Requirements

3.1 Chemical Requirements.

3.1.1 Metallic Oxides. Metallic surfaces shall be free of any oxides or contaminants that may negatively affect material processing, manufacturability or permanence. Some examples of commonly found surface oxides and contaminants that are not acceptable can be found in GMW16823.

3.1.2 Surface Contaminant. Surface contaminants such as copper, lead and nickel may cause paint durability problems. Polymerized oils, varnish, smut, etc., will interfere with the application of an acceptable pretreated coating which may result in paint durability problems. Therefore, contaminants mentioned here are unacceptable on the metal surface. The contaminants must be removed before or during the cleaning stage in the paint pretreatment system (see GMW3011 and GMW16170).

3.1.3 Surface Texture (Exposed Applications Only). Cold rolled steel, zinc coated steel and aluminum must meet GMW16823 requirements. This test method includes measurements in both longitudinal and transverse directions with respect to rolling direction.

3.2 Processing Requirements.

3.2.1 Mill Oils Edge Coating and Dry Film Lubricants. Approved mill oils, edge coating and dry film lubricants shall be compatible with metal cleaners in the phosphating system and meet the requirements given in GMW14019.

3.2.2 Chemical Requirements. Silicone compounds on the surface of the metal are unacceptable.

3.2.3 Surface Treatment. Zinc coated steel shall not be chemically treated.

3.2.4 Steel Mill/Blanking Facilities/Metal Fabrication. Drawing compounds, flex oils and pre-lubes shall meet GMW14019 requirements.

3.2.5 Mechanical Defects. The surface shall be free of dings, dents, pimples, scratches, severe grind marks, etc., which after painting require the removal of the paint coating system to the bare substrate in repair operations and detracts from the uniform appearance of the assembled vehicle.

3.2.6 Assembly and Finishing Requirements.

3.2.6.1 Solder Wipe (ACID). The solder wipe area adjacent to the solder area shall be metal finished before phosphating.

3.2.6.2 Foreign Materials. The visible surface before pretreatment shall be free of papers and other materials such as body sealers, solder, highlighting oils, inks, crayons, grease marks, adhesives, over sprayed primers, etc., where not specified.

3.3 Performance Requirements. The performance of the substrate surface preparation before phosphating is determined as part of the total coating system performance. The requirements are set forth in the specifications for subsequent coatings being used.

3.4 Initial Source Approval. No shipments shall be made by any supplier until preliminary technical approval (inclusive material tests at supplier and/or GM) has been obtained. Requirements for steel qualification may be found in GMW14699 and GMW15420 for aluminum qualification.

3.5 Quality Requirements. The supplier shall have Quality Process Control Procedures compliant with ISO/TS 16949 or as required by GM Global Purchasing and Supply Chain (GPSC) demonstrating that the product will conform to all Specification Requirements. The data required to be submitted for this specification for each shipment will be determined by the regional manufacturing location.

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.

5.5 All materials supplied to this standard must comply with the requirements of the International Material Data System (IMDS) and GMW3059, **Restricted and Reportable Substances**.