Designation: D1730 – 09

StandardPractices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting[1]

This standard is issued under the fixed designation D1730; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 These practices cover four types of treatment for preparation of aluminum and aluminum-alloy surfaces for painting, as follows:

1.1.1 Type A—Solvent Cleaning.

1.1.2 Type B—Chemical Treatments.

1.1.3 Type C—Anodic Treatments.

1.1.4 Type D—Mechanical Treatments. These four types cover a number of procedures, as described herein.

1.2 Variations in surface treatment produce end conditions which differ, and which do not necessarily yield identical results when paints are applied. Service conditions will dictate the type of surface preparation that should be selected, although the quality produced by any individual method may vary with different alloys.

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products

2.2 *Military Standards:*[3]

MIL-A-8625 Anodic Coatings for Aluminum and Aluminum Alloys

MIL-DTL-5541 Chemical Conversion Coatings on Aluminum and Aluminum Alloys

MIL-M-10578B Metal Conditioner and Rust Remover (Phosphoric Acid Type)

MIL-P-15328bB Coating Compound – Metal Pretreatment Resin Resistant

2.3 *Federal Specification:*[3]

TT-C-490 Chemical Conversion Coatings and Pretreatments for Ferrous Surfaces (Base for Organic Coatings)

3. Type A—Solvent Cleaning

3.1 Solvent cleaning does not disturb the natural oxide film on the metal and may prove adequate for some applications, such as ambient indoor or very mild service conditions. Three methods may be employed, as follows:

3.1.1 *Method 1, Manual Swabbing or Dip-Washing,* with a solvent such as mineral spirits or high-flask solvent naphtha. With this method it is extremely difficult to prevent accumulation of contaminants on the swab or in the solvent. This method is only recommended when other treatments are impractical.

3.1.2 *Method 2, Solvent Spray Cleaning* , in accordance with Method A, Procedure 1 of Practice D609.

3.1.3 *Method 3, Vapor Degreasing* , in special equipment employing trichloroethylene vapor, in accordance with Method A, Procedure 2 of Practice D609.

4. Type B—Chemical Treatments

NOTE 1—Materials and procedures employed in these methods of treatment are available from a number of sources as proprietary compounds or methods. Selection may be made from available sources. The hexavalent chromium methods given are not recommended as hexavalent chromium is a known carcinogen.

4.1 *Method 1, Alkaline Cleaners*—Alkaline solutions, such as caustic soda, etch the metal, thus destroying the natural oxide film. They are followed by an acid treatment, preferably nitric acid or phosphoric acid. They shall not be used on assembled structures. Inhibited alkaline cleaners are sometimes employed as a pretreatment to remove grease and oil prior to an acid treatment. Inhibited alkaline cleaners do not etch the

[1] These practices are under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatingsand is the direct responsibility of B08.07 Conversion Coatingson Chromate Conversion Coatings.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098