SAE Aerospace
An SAE International Group

AEROSPACE RECOMMENDED PRACTICE

SAE ARP5130A

Issued 1997-03
Reaffirmed 2004-01
Cancelled 2009-02

Requirements for Alternative Coatings Used in Lieu of Nickel-Chromium Plating for Aerospace Hand Tools

RATIONALE

ARP5130 has been superseded by AS4984. Coating Requirements for Aerospace Hand Tools.

CANCELLATION NOTICE

This document has been declared "CANCELLED" as of February 2009 and has been superseded by AS4984. By this action, this document will remain listed in the Numerical Section of the Aerospace Standards Index noting that it is superseded by AS4984.

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http://www.sae.org/technical/standards/ARP5130A

1. SCOPE:

This SAE Aerospace Recommended Practice (ARP) covers the requirements for alternative coatings used in lieu of nickel-chromium plating and the surface finish requirements for aerospace hand tools. It is intended as a guide toward standard practice and is subject to change to keep pace with experience and technical advances.

1.1 Classification:

Coating covered by this document shall be of the following types, as specified:

Type I and Type II are those coatings specified in AS4984
Type III - Alternative coatings, used in lieu of nickel-chromium plating

NOTE: The contents of this document are to be included in AS4984 at a later date.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 117	Standard Test Method of Salt Spray (Fog) Testing
ASTM B 537	Standard Practice for Rating of Electroplated Panels Subjected to Atmospheric Exposure
ASTM B 571	Standard Test Methods for Adhesion of Metallic Coatings
ASTM D 968	Standard Test Method for Abrasion Resistance of Organic Coatings by the Falling Abrasive Tester

3. REQUIREMENTS:

3.1 Alternative Coatings:

The tool shall be coated with an alternative coating used in lieu of nickel-chromium plating meeting the appearance, corrosion, adhesion, and abrasion requirements as specified herein.

3.1.1 Appearance: The coating shall be a bright, reflective, continuous, and consistent coating, similar in appearance to the surfaces of nickel-chromium plating. In agreement with customers and manufacturers/suppliers, the shading between the alternative coating and a nickel-chromium plating are acceptable as agreed upon.

3.1.2 Corrosion: Any coating supplied shall be capable of withstanding 72 h of exposure to the salt spray test specified in 4.4, without falling below the ASTM B 537 rating of 7, with a rating of 6 as a failure.

3.1.3 Adhesion: Any coating supplied shall be subjected to the adhesion impact test as specified in 4.5. The plated specimen shall have "perfect" adhesion, and shall exhibit no peeling, flaking, lifting, or blistering as defined in ASTM B 571.

3.1.4 Abrasion: Any coating supplied shall have no underlying steel exposed on surface when subjected to the abrasion test as specified in 4.6.

3.2 Surface Finish:

Hand tools having alternative coatings must meet all surface finish requirements for nickel-chromium tools in the standards cited in Section 5.

4. TEST PROCEDURES (QUALIFICATION TEST FOR PROCESS OR PRODUCT):

4.1 Samples:

The quantity and condition of the samples used for the examinations and testing set forth herein shall be mutually agreed upon by the supplier and customer. The coating used on the samples shall be in accordance with the manufacturer's standard operating guidelines and be representative of the manufacturer's full scale production process. Retesting shall be required whenever a significant change occurs in the process and/or the materials used in the process.

4.1.1 Test Samples: The samples used for the examination and testing set forth shall represent the alternative coating used by the supplier under their standard operating guidelines and be representative of the supplier's full scale production process. The base material of the samples shall be similar to that used in the manufacturing. The preferable tool to be used as a test specimen is a 3/4 in combination wrench. The actual tool, other representative tools or flat steel panels may be used as the test specimen when mutually agreed upon by the supplier and the customer.

4.2 Test Reports:

4.2.1 The test reports shall contain the actual data recorded during the examination and testing. Information in addition to the previous may include calibration certification of test equipment, serial numbers of equipment, calibration dates, and in-process control chart.

4.3 Alternative Coating Appearance:

4.3.1 Appearance Examination: The appearance examination shall be conducted as outlined in 4.1 with all the samples having the same alternative coating. All samples must meet the appearance requirements specified in 3.1.1.

4.3.2 Subsequent to completion of the appearance examination, all or a portion of the samples used for the appearance examination may be used for either the corrosion testing, adhesion testing, or abrasion testing.

4.4 Alternative Coating Corrosion:

4.4.1 Samples: The corrosion test shall be performed on the selected samples as outlined in 4.1.

4.4.2 Preparation of Parts: Samples shall be cleaned with mild dish washing detergent prior to testing. After cleaning, the samples shall be dried. The samples shall be handled with lint free gloves after cleaning.