



AEROSPACE MATERIAL SPECIFICATION

AMS2405**REV. E**

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Superseding AMS2405D

Electroless Nickel Plating
Low Phosphorus

RATIONALE

AMS2405E stabilizes this document because applications are adequately covered by other specifications containing similar technical requirements.

STABILIZED NOTICE

AMS2405E has been declared "Stabilized" by AMS Committee B. This document will no longer be subjected to periodic reviews for currency and may no longer represent standard industry practice. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist. Users of this document should refer any certification issues (such as exceptions listed on the certification report) to the cognizant engineering organization for their disposition. CAUTION: In many cases the purchaser is not the cognizant engineering organization (i.e. purchaser may be a sub tier supplier).

The SAE Aerospace Materials Division lists the following similar but not necessarily technically equivalent specifications for your consideration. This listing does not constitute authority to substitute the specification for the "STABILIZED" specification.

AMS2404 Electroless Nickel Plating

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Documents

Document Sharing Hub

ORDERING INFORMATION: The following information shall be provided to the plating processor by the purchaser.

1) Purchase order shall specify not less than the following:

- AMS2405E
- Plating thickness desired
- Basis metal to be plated
- Tensile strength or hardness of the basis metal (steel alloys only)
- Pre-plate stress relief to be performed by plating processor (time and temperature) if different from 3.1.4.
- Special features, geometry or processing present on parts that require special attention by the processor
- Hydrogen embrittlement relief to be performed by plating processor if different from 3.3
- Post plating bake to be performed by plating processor (to harden plating on substrates capable of high temperature, or to improve adhesion) (See 3.3.3)
- Quantity of pieces to be plated

2) Parts manufacturing operations such as heat treating, forming, joining and media finishing can affect the condition of the substrate for plating, or if performed after plating, could adversely affect the plated part. The sequencing of these types of operations should be specified by the cognizant engineering organization or purchaser and is not controlled by this specification.

1. SCOPE

1.1 Purpose

This specification covers the engineering requirements for electroless deposition of low-phosphorus nickel on various materials and the properties of the deposit.

1.2 Application

Primarily to provide hard, wear-resistant, and corrosion-resistant surfaces for operation up to 1000 °F (540 °C) and to provide uniform build-up on complex shapes. Maximum hardness and wear resistance are obtained by heating parts as in 3.3.2.

1.2.1 Application of electroless nickel plating to steel parts having a hardness of 46HRC (ultimate tensile strength of 220 ksi (1517 MPa) or higher shall not be performed unless authorized by the design documentation or specific approval has been received from the cognizant engineering organization.

1.3 Safety – Hazardous Materials

1.4 While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2350 Standards and Test Methods

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 117 Salt Spray (Fog) Testing

ASTM B 487 Measurement of Metal and Oxide Coating Thicknesses by Microscopical Examination of a Cross Section

ASTM E 290 Semi-Guided Bend Test for Ductility of Metallic Materials

2.3 U.S. Government Publications

Available from DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: (215) 697-6396, <http://quicksearch.dla.mil/>.

MIL-STD-2073-1 Standard Practice for Military Packaging