



# AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York, N.Y. 10017

**AMS 2404A**

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## ELECTROLESS NICKEL PLATING

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1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Primarily intended to provide hard, ductile, wear-resistant, and corrosion-resistant surfaces for operation at temperatures up to 1000 F (538 C) and to provide uniform build-up on complex shapes.
3. **PREPARATION:**
  3. 1 Welding or brazing shall be completed before parts or assemblies are plated, unless surfaces are plated to aid in joining by brazing.
  3. 2 Surfaces of metal parts to be plated shall be smooth and substantially free from blemishes, pits, tool marks, and other irregularities, unless otherwise specified.
  3. 3 Surfaces of non-metallic parts shall not show marks other than those necessary to provide a freshly abraded surface.
  3. 4 Unless otherwise specified, parts having hardness higher than Rockwell C 40 and which have been machined or ground after heat treatment shall be suitably stress-relieved before plating. Temperatures to which parts are heated shall be such that maximum stress-relief is obtained without reducing hardness of parts below drawing limits.
  3. 5 Before placing parts in the plating solutions, they shall have chemically clean surfaces prepared with minimum abrasion, erosion, or pitting.
4. **PROCEDURE:**
  4. 1 Plating shall be performed by chemical deposition of an amorphous high nickel, low phosphorus metallic compound on a catalytic surface from a chemical nickel bath. Unless otherwise specified, the nickel-phosphorus plate shall be deposited directly on the basis metal without a prior flash coating of other metal.
  4. 2 After plating, washing, and drying, parts shall be heat treated as follows, unless they are to be heat treated as in 4. 3 or unless otherwise permitted to remove hydrogen embrittlement due to cleaning and plating; heating shall be in air, preferably in a circulating air furnace.
    4. 2. 1 Parts, including roll-threaded parts, cold worked after being heat treated by hardening and tempering, and springs and all other parts having hardness of Rockwell C 33 or over, shall be heated to 375 F  $\pm$  10 (190. 6 C  $\pm$  5. 6) and held at heat for not less than 3 hr, except as specified in 4. 2. 2.
    4. 2. 2 Parts and assemblies, including carburized parts, which will decrease in hardness or be otherwise deleteriously affected by heating to 375 F (190. 6 C) shall be heated to 275 F  $\pm$  10 (135 C  $\pm$  5. 6) and held at heat for not less than 5 hr, except parts requiring special handling which shall be treated as agreed upon by purchaser and vendor.