



AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

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

AMS 2404A

Superseding AMS 2404

Issued 9-15-57

Revised 9-30-66

ELECTROLESS NICKEL PLATING

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 $375\text{ F} \pm 10$ ($190.6\text{ C} \pm 5.6$) 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 $275\text{ F} \pm 10$ ($135\text{ C} \pm 5.6$) 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.

SAE Technical Board rules provide that: "All technical reports, including standards, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."