

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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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 for moderate corrosion and oxidation resistance.
3. **TECHNICAL REQUIREMENTS:**
 - 3.1 Surfaces of parts to be plated shall be smooth and substantially free from blemishes, pits, tool marks, and other irregularities.
 - 3.2 Unless otherwise specified, parts having hardness higher than Rockwell C 40 and which have been ground after heat treatment shall be suitably stress-relieved before cleaning for plating. Temperatures to which parts are heated shall be such that maximum stress-relief is obtained without reducing hardness of parts below drawing limits.
 - 3.3 Before placing parts in plating solutions, they shall have chemically clean surfaces, prepared with minimum abrasion, erosion, or pitting.
 - 3.4 Tight electrical connections shall be made and maintained for satisfactory plating.
 - 3.5 Plating shall be performed by electrodeposition of nickel from a chloride or sulfate-chloride solution containing no organic addition agents. Unless otherwise specified, nickel shall be deposited directly on the basis metal without a prior flash coating of other metal, except in the case of parts made of aluminum or aluminum alloys. A preliminary chemical coating, immersion plate, and/or metal flash is permissible on aluminum and aluminum alloys.
 - 3.6 After plating, washing, and drying, steel parts shall be treated as follows, unless otherwise permitted, to remove hydrogen embrittlement due to cleaning and plating.
 - 3.6.1 Parts, including roll threaded parts, cold worked after being heat treated by hardening and tempering, shall be heated to $375\text{ F} \pm 10$ in air, preferably in a circulating air furnace, and held at temperature for not less than 3 hours.
 - 3.6.2 Springs and all other parts, excluding parts covered by 3.6.3, having hardness of Rockwell C 33 or over shall be heated to $375\text{ F} \pm 10$ in air, preferably in a circulating air furnace, and held at temperature for not less than 3 hours.

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