

# AERONAUTICAL MATERIAL SPECIFICATION

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## BEARINGS, PLATED SILVER Steel Back

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. TYPE: Steel back having silver electrodeposited on one or both faces.
3. COMPOSITION:
  - 3.1 Silver: Shall be not less than 99.9% pure as plated, but actual determination of purity shall not be required as a routine inspection procedure; the plating process shall be controlled to produce this purity.
  - 3.2 Back: Shall conform to the following, unless otherwise specified on the drawing:

Carbon	0.10 - 0.25
Manganese	0.30 - 1.0
Phosphorus	0.040 max
Sulfur	0.050 max

4. TECHNICAL REQUIREMENTS:

- 4.1 Preparation:

- 4.1.1 Unless otherwise specified, roughness of surfaces to be plated shall be not greater than 80 microinches rms prior to cleaning.
    - 4.1.2 Bearings having hardness higher than Rockwell C 55 in any area which is ground before plating shall be suitably stress relieved between grinding and cleaning for plating.
    - 4.1.3 Bearings shall be clean when immersed in plating solutions.

- 4.2 Plating:

- 4.2.1 Electrical contacts shall be made in such manner as will ensure that no chemical or immersion deposition will occur.
    - 4.2.2 Unless otherwise specified on drawing, plating of bearings shall be conducted in the following sequence: nickel strike, unless copper strike is authorized; silver strike; silver plate.
  - 4.3 Heating: Unless otherwise specified, bearings shall be heated as follows after plating.

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- 4.3.1 Nickel Strike: Bearings shall be heated to 940 - 960 F and held at that temperature for not less than 20 min. and not more than 1 hr; temperature of the bearings shall not be over 400 F for more than 7 hr, and above 400 F the heating and cooling medium shall be a neutral or reducing atmosphere or a neutral or non-oxidizing molten salt bath.
- 4.3.2 Copper Strike: Bearings shall be heated to 325 - 500 F and held at temperature for not less than 2 hr, unless such heating would reduce hardness below drawing limits, in which case heating shall be at the highest practicable temperature which will maintain specified properties. Parts shall be so heated as to prevent harmful oxidation.
- 4.4 Bond Testing: Bearings shall be capable of withstanding, before and after heating, a shear or chisel test so conducted as to indicate quality of bond. Silver shall shear away with no parting of plate and basis metal.
5. QUALITY:
- 5.1 Silver plate which is not subsequently machined shall be smooth, continuous, uniform in color, and free from blisters and other defects detrimental to performance of parts. Boundaries between plated and unplated areas shall be sharply defined.
- 5.2 Silver plate which is to be machined shall be sound, and free from excessive nodulation or treeing at edges. Silver shall be free from visible pits, excessive porosity, and other defects detrimental to fabrication or to performance of parts.
- 5.3 Plated metal shall be firmly and continuously bonded to the underlying metal. Bearings, after heating as in 4.3, shall show no blisters or other indications of poor bond.
- 5.4 Bearing metal and back shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external defects detrimental to their performance.
- 5.5 Inspection standards and procedures shall be as agreed upon by purchaser and vendor.
6. REPORTS: Unless otherwise specified, the vendor of bearings shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the requirements of this specification or stating that the bearings conform to the requirements specified. This report shall include the purchase order number, material specification number, part number, and quantity.
7. IDENTIFICATION: Bearings shall be identified in accordance with the latest issue of AMS 2800.
8. PROTECTIVE TREATMENT: Bearings shall be protected during shipment and storage by a coating of suitable corrosion-preventive compound which is readily removable by washing in hydrocarbon solvents.