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Revised -----

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## AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.

29 West 39th Street

New York City

AMS

6242

### STEEL - CARBURIZING 5% Nickel

1. **ACKNOWLEDGMENT:** A vendor must mention this specification number and its last revision in all quotations and when acknowledging purchase orders.
2. **FORM:** Bars, billets, forgings or as ordered.
3. **COMPOSITION:**

Carbon	0.15 - 0.19
Manganese	0.30 - 0.60
Phosphorus	0.040 max
Sulphur	0.050 max
Nickel	4.75 - 5.25
4. **GRAIN SIZE:** Five or finer, A.S.T.M. E19-39T, Method a.
5. **HARDENABILITY:** Specimens with sections 3/4" in thickness cut from a bar or forging shall be ground and copper plated, placed in an electric furnace which is at 1475°F and allowed to heat to 1475°F, held 25 minutes and quenched in water. The specimens shall then have a Brinell hardness on the surface within the limits of 387 to 444.
6. **CONDITION:** (a) Bar stock must be supplied in a machinable condition with a Brinell hardness of not more than 229 unless otherwise ordered. Forgings are to be supplied as ordered.  
  
(b) Stock ordered for forgings must be supplied in the condition and finish ordered by the forging manufacturer.
7. **QUALITY:** (a) This material must be aircraft quality. It shall be sound, clean, commercially straight, and must not develop material defects during forging, heat treating or machining.  
  
(b) Unless otherwise stated, finished parts made from this steel are subject to magnetic inspection.
8. **REPORTS:** The manufacturer shall furnish three copies of a certified report of the results of chemical analysis and grain size on each heat and size on each shipment. This report shall include the purchase order number, heat number, material specification number, size, part number, if parts are supplied, and quantity in each heat. If forgings are supplied, the part number and size of steel used to make the forgings shall also be included.
9. **SHIPMENTS:** A shipment of material shall not contain more than one heat of steel, for each forging part number or each bar size. More than one heat of steel shall not be supplied on a purchase order without permission, unless the order is for more than 5 tons.