

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 7705

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Revised

MAGNETIC ALLOY Nickel-Iron Alloy

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Bars, forgings, and forging stock.
3. APPLICATION: Primarily for parts used in magnetic circuits requiring high magnetic permeability at low flux densities after high temperature annealing in hydrogen.
4. COMPOSITION: Shall be a metallic alloy containing nickel, iron, plus other alloying elements, in such proportions as to meet the technical requirements.
5. CONDITION:
 - 5.1 Bars: Unless otherwise specified, bars shall be annealed and descaled; actual acceptance and rejection standards shall be as agreed upon by purchaser and vendor.
 - 5.2 Forgings: As ordered.
 - 5.3 Forging Stock: As ordered by the forging manufacturer.
6. TECHNICAL REQUIREMENTS:
 - 6.1 Hardness: Unless otherwise specified, material shall have hardness not higher than Rockwell B 75 or equivalent.
 - 6.2 Magnetic Properties After Heat Treatment: Material shall conform to the following requirements after annealing by heating to $2050\text{ F} \pm 25$ in a dry hydrogen atmosphere (-60 F max dew point), holding at heat for 4 hr, and cooling to 1100 F or below at a rate not greater than 100 F per hour in a non-oxidizing atmosphere.
 - 6.2.1 Maximum Permeability, min 70,000 ASTM A341-55
 - 6.2.2 Permeability at 100 gaussess, min 15,000 ASTM A341-55
 - 6.2.3 Induction at 100 oersteds, gaussess, min 6,500 ASTM A341-55

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