AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
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AMS 5398

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Revised

STEEL CASTINGS, SAND, CORROSION RESISTANT
17Cr - 4Ni - 4Cu

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily for small parts such as aircraft accessory components requiring corrosion resistance and strength up to 600 F and minimum distortion during fabrication.

3. COMPOSITION:

Carbon	0.07 max
Manganese	1.0 max
Silicon	1.0 max
Phosphorus	0.04 max
Sulfur	0.04 max
Chromium	15.5 - 17.5
Nickel	3.0 - 5.0
Columbium + Tantalum	0.45 max
Copper	3.0 - 5.0
Nitrogen	0.05 max

4. CONDITION: Solution heat treated, unless otherwise specified.

5. TECHNICAL REQUIREMENTS:

5.1 Casting: A melt shall be the metal poured from a single ladle of 5000 lb or less.

5.2 Test Specimens:

5.2.1 Tensile Test Coupons: Shall be attached to castings, if practicable, or shall be standard keel blocks as shown in Figure 1, unless purchaser permits use of cast to size specimens. Coupons shall be cast with each melt of metal for castings and, when requested, shall be supplied with the castings. Keel blocks shall be cast in molds made of suitable core sand, shall be poured directly after pouring the castings, and shall be left in the mold until black. Metal for the coupons shall be part of the melt which is used for the castings.

5.2.2 Chemical Analysis Specimens: When required by purchaser, shall be of size and shape agreed upon by purchaser and vendor.

5.3 Heat Treatment: All castings and tensile test specimens representing them shall be heat treated as follows:

5.3.1 Tensile test specimens from each melt, together with production castings, shall be heated to 1925 F ± 25 unless otherwise specified, held at heat for 1 hr per inch of section but in no case less than 30 min., and cooled as required.

5.4 Hardness: Shall be not higher than Brinell 341 or equivalent.

5.5 Properties After Precipitation Heat Treatment: Tensile test specimens produced in accordance with 5.2 and heat treated as in 5.3 shall conform to the following requirements after being heated to 900 F ± 25, held at heat for 1 hr, and cooled in air.

5.5.1 Tensile Properties:

Tensile Strength, psi	180,000 min
Yield Strength at 0.2% Offset or at 0.0150 in. in 2 in. Extension Under Load (E = 29,000,000), psi	160,000 min
Elongation, % in 4D	6 min

5.5.2 Hardness: Not lower than Rockwell C 37.

6. QUALITY:

6.1 Castings shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts. Castings shall have smooth surfaces and shall be well cleaned.

6.2 When castings are broken for fracture test, the fracture shall have uniform color and be substantially free from oxides and other defects.

6.3 Radiographic and other quality standards shall be as agreed upon by purchaser and vendor.

6.4 Unless otherwise specified, castings shall be produced under radiographic control. This shall consist of radiographic examination of castings until proper foundry technique, which will produce castings free from harmful internal defects, is established for each part number, and of production castings as necessary to ensure maintenance of satisfactory quality.

6.5 Castings shall not be repaired by plugging, welding, or other methods, without written permission from purchaser.

7. REPORTS:

7.1 Unless otherwise specified, the vendor of castings shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each melt and a statement that the castings conform to the technical requirements of this specification. This report shall include the purchase order number, melt number, material specification number, part number, and quantity from each melt.

7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of castings, part number, and quantity. When castings for making parts are produced or purchased by the parts vendor, that vendor shall inspect castings from each melt represented to determine conformance to the requirements of this specification, and shall include in the report a statement that the castings conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.