AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5350B

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STEEL CASTINGS, PRECISION INVESTMENT, CORROSION RESISTANT

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

2. APPLICATION: Small parts, such as compressor blades and vanes, for use at temperatures up to 1000 F.

3. COMPOSITION: Castings shall conform to the following:

Carbon	0.15 max
Manganese	1.00 max
Silicon	1.00 max
Phosphorus	0.04 max
Sulfur	0.03 max
Chromium	11.50 - 13.50
Nickel	0.50 max
Molybdenum	0.50 max
Copper	0.50 max

4. CASTING: Castings shall be poured either from remelted master heat metal or directly from a master heat. A master heat is previously refined metal of a single furnace charge, except when produced in the form of shot. A master heat, in the form of shot, shall be the uniformly blended product of one or more furnace charges, with total weight not exceeding 7000 pounds. Gates, sprues, risers and rejected castings shall only be used in preparation of a master heat; they shall not be remelted directly, without refining, for pouring of castings.

5. TEST SPECIMENS:

5.1 Tensile Test Specimens: Unless otherwise specified, tensile test specimens shall be cast to represent each master heat of metal in castings and, when requested, shall be supplied with the castings. The specimens shall be of standard proportions with 0.25 in. diameter at the reduced parallel section and shall be cast to size in molds made of the same refractory and heated to the same temperature as the molds for castings, and shall be cooled at approximately the same rate as the castings. Center gating may be used, but if specimens are so gated, the gate shall be completely removed before testing. If the metal for castings is given any treatment such as fluxing or cooling and reheating, metal for the specimens shall be so treated and during such treatment be heated to the same maximum temperature and held for approximately the same length of time as the molten metal for castings. The temperature of the metal during pouring of the specimens shall not be lower than the temperature of the metal during pouring of the castings.

5.2 Bend Test Specimens: Three specimens at least 0.090 in. in diameter or thickness and approximately 2 in. in length shall be cast in each mold along with each cast part or parts.

6. CONDITION: As cast, unless otherwise specified.

7. TECHNICAL REQUIREMENTS:

7.1 Physical Properties: Tensile test specimens produced in accordance with 5.1 shall be capable of developing the following physical properties when properly heated to 1750 F + 10, held for 30 min., cooled in still air, and then tempered at not lower than 1100 F:

Ø	Tensile Strength, psi	95,000 min
	Yield Strength at 0.2% Offset, psi	75,000 min
	Elongation, % in 1 in.	8 min
	Reduction of Area, %	20 min
	Hardness, Rockwell	B 94-100

7.2 Bending: At least two of the specimens cast in each mold in accordance with 5.2 shall withstand, without cracking, bending at room temperature through an angle of 30 degrees around a 0.5-in. diameter. If more than one specimen from a mold fails to pass this test, the disposition of the castings from that mold may be determined by applying a similar test to an actual casting or specimens cut from castings, gates or runners. Such specimens shall be not less than 0.090 in. in diameter or thickness. Failure of any such additional specimens will be cause for rejection of the castings.

8. QUALITY:

8.1 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. Unless otherwise specified, metallic shot or grit shall not be used for final cleaning.

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

8.3 Unless otherwise specified, castings shall be produced under radiographic control.

8.4 Inspection standards and procedures shall be as agreed upon by purchaser and vendor.

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

9. REPORTS:

9.1 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 at least one casting from each master heat represented and a statement that the castings conform to the requirements of this specification. This report shall include the purchase order number, master heat number (and code symbol if used), material specification number, part number, and quantity from each heat.

9.2 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 master heat represented, 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.