AEROSPACE
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 5362D

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STEEL CASTINGS, INVESTMENT, CORROSION AND HEAT RESISTANT 19Cr - 12Ni - (Cb + Ta)

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

2. APPLICATION: Primarily for small parts, such as exhaust couplings, stator vanes, and turbine nozzle vanes, and where welding during fabrication may be required, for use at temperatures up to 1500 F, but useful at that temperature only when stresses are low.

3. COMPOSITION: Castings shall conform to the following:

Carbon	0.12 max
Manganese	2.0 max
Silicon	1.5 max
Phosphorus	0.04 max
Sulfur	0.03 max
Chromium	18.0 - 19.5
Nickel	10.0 - 14.0
Columbium + Tantalum	10xC - 1.5
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 refined metal of a single furnace charge. Gates, sprues, risers, and rejected castings shall be used only in preparation of master heats; they shall not be remelted directly, without refining, for pouring of castings. When permitted by purchaser, metal in the form of shot from more than one master heat may be uniformly blended together to form a master heat lot; the total weight of metal in a master heat lot shall not exceed 7000 pounds.

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

6. TECHNICAL REQUIREMENTS:

6.1 Hardness: Castings shall have hardness not higher than Rockwell B 88 or equivalent.

6.2 Embrittlement: Material shall be capable of meeting the following tests:

6.2.1 Test specimens, after being heated at 1200 F ± 10 for 2 hr and air cooled, shall withstand immersion for 48 hr in a boiling aqueous solution containing 100 g of $CuSO_4.5H_2O$ and 100 ml of H_2SO_4 (sp gr 1.84) per liter of solution under a reflux condenser, without evidence of intercrystalline surface attack.

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7. QUALITY:

7.1 Castings shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external imperfections 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.

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

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

7.4 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 imperfections, is established for each part number, and of production castings as necessary to ensure maintenance of satisfactory quality.

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

8. REPORTS:

8.1 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 or master heat lot represented. This report shall include the purchase order number, master heat or master heat lot number (and code symbol if used), material specification number, part number, and quantity from each heat.

8.2 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 or master heat lot 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.

9. IDENTIFICATION: Unless otherwise specified, each casting shall be identified as to part number and master heat or master heat lot number or code symbol. Methods of applying identifying characters shall be as agreed upon by purchaser and vendor. Marking materials shall have no deleterious effects on the castings or their performance.

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