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

AMS 5349

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Revised

STEEL CASTINGS, INVESTMENT, CORROSION RESISTANT 13Cr - 0.25S (SAE 60416)

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

2. APPLICATION: Primarily for small parts for use at temperatures up to 1000 F (540 C). Corrosion resistance is lower than that of AMS 5350 but machinability is better.

3. COMPOSITION: Castings shall conform to the following:

Carbon	0.15 max
Manganese	1.25 max
Silicon	1.5 max
Phosphorus	0.05 max
Sulfur	0.15 - 0.35
Chromium	11.5 - 14.0
Nickel	0.5 max
Molybdenum	0.5 max
Copper	0.5 max
Zirconium	0.5 max

4. CONDITION: Hardened (air-cooled from austenitizing temperature) and tempered, having hardness of Rockwell B 90 - 105 or equivalent, unless otherwise specified.

5. TECHNICAL REQUIREMENTS:

5.1 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. Gates, sprues, risers, and rejected castings shall not be remelted directly, without refining, for pouring of castings; they may be used in preparation of master heats. 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.

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5.2 Test Specimens:

5.2.1 Tensile Test Specimens: Unless otherwise specified, tensile test specimens shall be cast to represent each master heat or master heat lot 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, shall be cast to size in molds made of the same refractory and heated to the same temperature as the molds for casting, 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.

5.3 Hardenability: Castings shall be capable of developing hardness not lower than Rockwell C 35 after being heated to 1750 F ± 10 (954.4 C ± 5.6), held at heat for 1 hr per inch of maximum section, and cooled in air.

5.4 Properties After Heat Treatment: Cast tensile specimens and, unless otherwise agreed upon by purchaser and vendor, tensile specimens cut from any portion of castings shall be capable of meeting the following requirements after being heated to 1750 F ± 10 (954.4 C ± 5.6), held at heat for 30 min., cooled in still air, and then tempered at not lower than 1050 F (566 C). Specimens cut from castings are not required for routine examination; however, properties obtained from such specimens may be basis for acceptance or rejection of castings.

5.4.1 Tensile Properties:

Tensile Strength, psi	90,000 min
Yield Strength at 0.2% Offset or at 0.0042 in. in 1 in. Extension Under Load (E = 29,000,000), psi	65,000 min
Elongation, % in 4D	8 min
Reduction of Area, %	15 min

5.4.2 Hardness: Rockwell B 90 - 100 or equivalent.

6. QUALITY:

6.1 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 permitted, metallic shot or grit shall not be used for final cleaning.

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

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