AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 4214A

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ALUMINUM ALLOY CASTINGS (Sand)
5% Silicon (Solution and Overaged)

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

2. COMPOSITION:

Silicon	4.5 - 5.5
Copper	1.0 - 1.5
Magnesium	0.4 - 0.6
Chromium + Titanium	0.08 - 0.30
Iron	0.60 max
Manganese	0.30 max
Zinc	0.10 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

3. CASTING: (a) All the metal which is melted for castings shall conform to Section 2 ingot; gates, risers and rejected castings, may be used but shall first be converted into such ingot.

(b) During melting, the metal shall be heated to not over 1450°F. The metal being poured into the mold shall not exceed a temperature of 1400°F. Written permission must be obtained from the purchaser by letter or by revising the drawing before deviating from the requirements of this paragraph.

(c) The metal for making tensile test bars of the standard size for testing shall form a part of the melt or heat which is used for the castings. In the event the metal for the castings is given any treatment such as fluxing, or cooling and reheating, the metal for the test bars shall form a portion of the metal so treated. The metal for the test bars and castings may be separated into lots for pouring, but the variation in temperature between the lots in the pouring ladles shall not exceed 20°F at the time the final temperature reading is made, which shall be immediately before pouring into the molds. The mold shall be made with the regular foundry mix of green sand without using chills.

4. HEAT TREATMENT: (a) The test bars, together with any portion of the castings which they represent, shall be heated to the required temperature and time for the solution treatment, and quenched in water which is boiling before the quench.

(b) The test bars, together with any portion of the castings which they represent, after the solution treatment as in paragraph 4(a), shall be heated uniformly to 485°F, held at heat for not less than 5 hours and cooled in air. This temperature may be varied by plus or minus 15°F to obtain the required hardness of the castings, which shall be within the limits of Brinell 65-86 using 500 kg load and the 10 mm ball, or the equivalent, or Brinell 70-90 using 1000 kg load and the 10 mm ball.

5. TEST BARS: (a) Tensile test bars shall be cast with each melt of castings, unless otherwise specified. A melt shall mean a furnace charge (1000 pounds or less) of metal as melted for pouring castings. Test bars are to be supplied with the castings when requested.