

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4214

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Revised

CAST ALUMINUM ALLOY 5% Silicon (Solution and Overaged)

1. ACKNOWLEDGMENT: A vendor must mention this specification number 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	.08 - .30
Iron	0.50 max
Manganese	0.05 max
Zinc	0.03 max
Other impurities, each	0.05 max
Aluminum	remainder
3. CASTINGS: (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 physical properties on the drawing before deviating from the requirements of this paragraph.

(c) The molten metal for making tensile test bars of the standard size for testing shall be taken from the same melt as the castings immediately before or after the metal for the castings is taken. The test bars shall be poured at the temperature of pouring the castings with a runner length not greater than that of the castings. 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 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 the castings which they represent, after the solution treatment as in paragraph 4(a), shall be heated uniformly to 460°F, held at heat for not less than 5 hours and cooled in air. This temperature may be varied by plus or minus 30°F to obtain the required hardness, which shall be 65-85 Brinell using 1000 Kg load and the 10 mm ball, or 60-80 Brinell using 500 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.

(b) Unless otherwise specified or noted on the drawing, the test bars poured and treated as specified in sections 3 and 4 shall conform to the following minimum physical properties: