

# AERONAUTICAL MATERIAL SPECIFICATION

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

## AMS4240 A

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### ALUMINUM ALLOY CASTINGS (Sand) 10% Magnesium (220-T4)

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

2. <u>COMPOSITION</u> :	Magnesium	9.50 - 10.60
	Copper	0.30 max
	Silicon	0.30 max
	Iron	0.30 max
	Manganese	0.10 max
	Zinc	0.10 max
	Other Elements, each	0.05 max
	Other Elements, 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) 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. 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) The test bars, poured as specified in section 3 and heat treated with the castings which they represent, shall conform to the following minimum physical properties:

Tensile Strength, lb per sq in	42,000
Yield Strength (0.2% Set), lb per sq in	22,000
Equivalent Extension Under Load, inch in 2 in.	0.0084
Elongation, % in 2 in.	12

5. QUALITY: (a) Castings must be homogeneous and free from shrinkage defects, cracks, blowholes, porosity, hard spots, foreign matter and other injurious defects, and must not disclose defects during machining. The castings shall be smooth and well cleaned.

(b) Castings when broken for fracture test must show a uniform color and be substantially free from oxides, and other defects.