

Issued Dec. 5, 1939.  
Revised .....  
Revised .....

AERONAUTICAL MATERIAL SPECIFICATION  
Society of Automotive Engineers, Inc.  
29 West 33rd Street  
New York City

AMS  
4424

CAST MAGNESIUM ALLOY  
Solution Precipitation Heat Treated

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

Aluminum	5.3 - 6.7
Manganese	0.15 min
Zinc	2.5 - 3.5
Silicon	0.3 max
Copper	0.05 max
Nickel	0.01 max
Iron	0.03 max
Total Other Impurities	0.30 max
Magnesium	Remainder
3. **TEST BARS:** (a) Three tensile test bars shall be supplied, unless otherwise specified, with each melt of castings. It is not necessary to pull more than one of these test bars unless the first one fails to meet the specification requirements, in which case the remaining two must meet the requirements before acceptance of the melt. A melt shall mean a furnace charge of metal as melted for pouring castings.  

(b) The molten metal for these test bars shall be taken from the same melt as the castings immediately before or after the metal for the castings is taken and cast in the same sand mixture as the castings without use of chills or artificial means of cooling. These test bars shall be cast to the standard size for testing and at the same temperature from which the castings are poured.

(c) These test bars when properly heat treated with the castings shall conform to the following minimum physical properties:

Tensile Strength, lb per sq in.	34,000
Yield Strength, lb per sq in.	16,000
Elongation, % in 2 in.	3
Brinell Hardness	65
4. **HARDNESS:** Castings shall have a Brinell hardness of 65-85, but the impression is not to be taken at a sprue or riser. If the hardness of the castings is outside of these limits one casting may be rejected and examined as in paragraph 5(c); if all requirements are fulfilled the lot may be accepted.
5. **QUALITY:** (a) Castings must be homogeneous and free from shrinkage cracks, blowholes, sand holes, hard spots, foreign matter and other injurious defects, and must not disclosed defects in 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 or other defects, particularly in locations subject to stresses in service.