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AERONAUTICAL MATERIAL SPECIFICATION

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

AMS
2560

IMPREGNATION
MAGNESIUM ALLOY CASTINGS

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

2. OBJECT: Primarily to make porous magnesium alloy castings pressure tight.

3. APPLICATION: All parts shall be pressure tested with water or air. Those which leak equivalent to more than 25 drops of water per minute on a local area shall be rejected. Those which leak equivalent to a rate of 5 to 25 drops of water per minute may be impregnated. Those which leak equivalent to less than 5 drops of water per minute are acceptable without impregnation unless the leakage would be into the induction system or through an external surface, in which case they must be impregnated. The Purchaser's Inspection Department may vary this requirement after giving consideration to the use of the part, the location of the leaks, and other pertinent factors.

4. PROCESS: Consists of suitable cleaning of the castings, extraction of air from the porous sections by vacuum, pressure filling the evacuated pores with tung oil, and subsequent polymerization and swelling of the oil retained by the pores.

5. OPTIONAL PROCESS: Any other process may be substituted for the one outlined above, if approved.

6. PREPARATION OF CASTINGS: (a) Rough castings shall first be thoroughly cleaned by the customary clean-up methods. Rough castings cleaned as above, as well as rough machined castings, shall be pickled in a sulphuric acid (H_2SO_4) bath to remove 0.002 inch from each surface. A 15 second pickle in fresh 2% sulphuric acid should be sufficient but the time will vary with change in temperature and acid concentration. The pickling operation shall be followed by rinsing in cold running water and then in hot water to facilitate rapid drying. Castings shall be dried at 300°F for 2 hours.

(b) Finished or semi-finished castings shall have the oil completely removed by careful scrubbing and rinsing with organic solvents which do not attack the metal. Parts freshly dichromate treated are in a satisfactory condition for impregnation. Castings shall be dried at 300°F for 2 hours.

7. MATERIALS: (a) The tung oil shall be the best grade possible with water content at the very minimum. The oil shall conform to the properties specified in A.S.T.M. Specification D12-33.

(b) The mineral oil shall be equivalent to the grade known as Bright Stock, which has a viscosity of 140-160 S.U.V. at 210°F and a minimum flash point of 500°F, or to Pennsylvania Refined Steam Cylinder Stock No. 600 or 610.

(c) The kerosene shall be the regular commercial grade.

(d) Hydroquinone, in the proportion of one ounce to a gallon of tung oil, may be used as an inhibitor.