

# AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 4275

Issued 5-1-48

Revised

## ALUMINUM ALLOY CASTINGS, PERMANENT MOLD 6Sn - 1Cu - 1Ni (750-T5) Stress Relieved

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily for bearings.

3. COMPOSITION:

|                         |             |
|-------------------------|-------------|
| Tin                     | 5.50 - 7.00 |
| Copper                  | 0.70 - 1.30 |
| Nickel                  | 0.70 - 1.30 |
| Iron                    | 0.70 max    |
| Silicon                 | 0.70 max    |
| Titanium                | 0.20 max    |
| Manganese               | 0.10 max    |
| Other Impurities, total | 0.30 max    |
| Aluminum                | remainder   |

4. CONDITION: Stress relieved.

5. TECHNICAL REQUIREMENTS:

5.1 Casting:

5.1.1 All metal which is poured into castings shall conform in composition to Section 3 above.

5.1.2 A lot of castings shall be not more than 1000 pounds of cleaned castings produced in a pouring period of not more than 8 consecutive hours from molten metal consisting of ingot from a single heat, and gates, risers and defective castings from that heat of ingot. When the lot is changed by reason of a change in the heat of ingot used in a remelting or holding pot, foundry scrap from the preceding lot may be used.

5.1.3 Castings shall be chilled at a sufficiently rapid rate to promote internal soundness but not so fast as to cause cracks.

5.1.4 Castings, after removal from molds, shall be cooled at rates which will be as uniform as practicable for castings of each part number.

5.2 Heat Treatment: All castings shall be stress relieved by heating uniformly to 420 - 440 F, holding at heat for not less than 5 hours and cooling in air.

5.3 Hardness: Hardness of castings, except at sprues and risers, shall be Brinell 35 - 50 using 500 kg load and 10 mm ball.

6. QUALITY:

- 6.1 Castings shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts. Castings shall have smooth surfaces and shall be well cleaned.
- 6.2 Unless otherwise specified, castings shall be produced under radiographic control. This shall consist of radiographic examination of castings until proper foundry technique, which will produce castings free from harmful internal defects, is established for each mold, and of production castings as necessary to insure maintenance of satisfactory quality.
- 6.3 Radiographic and other quality standards shall be as agreed upon by purchaser and vendor.
- 6.4 Castings shall not be repaired by plugging, welding or other methods without written permission from the purchaser.
- 6.5 Castings shall not be impregnated, chemically treated or coated to prevent leaking, unless specified or allowed by written permission which states the method to be used. Impregnated castings shall be marked IMP.
7. REPORTS:
- 7.1 Unless otherwise specified, the vendor of castings shall furnish with each shipment three copies of a notarized report showing the results of tests to determine conformance of the castings to the requirements of this specification. This report shall show the chemical composition of the castings, melt numbers, material specification number, purchase order number, part number, and quantity. If the accuracy of control is adequate, each melt need not be analyzed, but the frequency of analysis shall be as agreed upon by purchaser and vendor.
- 7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, contractor or other direct supplier of castings, part number, and quantity. When castings for making parts are produced or purchased by the parts vendor, that vendor shall inspect each shipment or melt of castings to determine conformance to the requirements of this specification, and shall include in the report a certification that the castings conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.
8. IDENTIFICATION: Unless otherwise specified, castings shall be identified in accordance with the latest issue of AMS 2804.
9. APPROVAL:
- 9.1 Unless otherwise ordered, sample castings from new or reworked molds shall be approved by purchaser before production castings are supplied.
- 9.2 Vendor shall use the same foundry practices and the same heat treating procedures for production castings as for sample castings. If any change is found necessary, vendor shall notify purchaser prior to the first shipment of castings embodying such change.