AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 4071

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Revised

ALUMINUM ALLOY TUBING
Hydraulic
Magnesium Chromium (52S)

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

2. COMPOSITION:

Magnesium	2.20 - 2.80
Chromium	0.15 - 0.35
Iron plus Silicon	0.45 max
Manganese	0.10 max
Copper	0.10 max
Zinc	0.10 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

3. CONDITION: (a) Annealed, then drawn if required to meet dimensional tolerances, and unless otherwise specified, conforming to the following physical properties:

Tensile Strength, lb per sq in.	35,000 max
Yield Strength (Offset 0.2%), lb per sq in.	20,000 max
Equivalent Extension Under Load, inch in 2 in.	0.0079

(b) The tubing shall be capable of being flattened sidewise under a gradually applied load, without cracking, into an oval shape until the minimum outside dimension is three times the wall thickness.

(c) The tubing shall be capable of being flared sufficiently, for use in standard compression type fittings using shop equipment and practices. After flaring, the inner and outer surfaces of the flare shall be smooth and free from grooves or other defects that might prevent the assembly of pressure tight joints.

(d) Unless otherwise specified, the manufacturer shall apply an air pressure of 250 pounds per square inch to the inside of each tube 1½ inches or less in diameter, for a period of not less than 5 seconds, while the tube is immersed in water or other suitable liquid. The pressure test may be applied to the tube after reduction to size but before final anneal. Any tube which leaks, as indicated by the formation of air bubbles in the liquid, shall be rejected.

(e) Unless otherwise specified, the tubing shall be supplied unground with an as drawn surface finish.

4. QUALITY: (a) The tubing shall be seamless and uniform in quality and temper. The exterior and interior surfaces shall be clean, smooth, and free from seams, slivers, laminations, grooves, cracks, blisters, and other injurious defects, within the limits of best commercial manufacturing methods. Material revealing defects during fabrication is subject to rejection.

(b) Cleanliness of Tubing.- The tubing shall be free from grease or other foreign matter and shall have a good workmanlike finish. The inner bore of the tubing shall show no metallic flakes or particles when a clean white cloth is drawn through the length of the bore of a test sample. The presence of metallic flakes or particles on the cloth shall be cause for rejection. Discoloration of the cloth, without the presence of flakes or grit, shall not be cause for rejection.

5. TOLERANCES: The permissible variation in dimensions shall be as specified in AMS 2203 for 52S tubing. The exception noted for annealed tubing shall not be applicable to this material.

6. REPORTS: (a) Unless otherwise specified, the tubing supplier shall furnish three copies of a notarized report stating that the chemical composition and physical properties of the material conform to requirements specified. This report shall include the purchase order number, material specification number, size, and quantity.

(b) The vendor of finished or semi-finished machined 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 material, part number, and quantity. When material for making parts is supplied by the machined parts vendor, the vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the above report a certification that the material conforms, or shall include copies of the laboratory report showing the results of tests to determine conformance.

7. IDENTIFICATION: (a) Unless otherwise specified, each tube 5/8 inch in diameter and over shall be marked with the manufacturer's identification, and, in addition the alloy name or number and AMS 4071. The characters shall be not less than 1/8 inch in height and shall be applied continuously at intervals not exceeding 2 feet. The characters shall be clearly legible and applied to the material by suitable means and suitable marking fluid, and shall not be obliterated by normal handling or heat treatment.

(b) Tubes less than 5/8 inch in diameter may be identified by other means as agreed upon by the vendor and purchaser.

8. REJECTIONS: Material not conforming to this specification or to modifications specified on the drawing or purchase order shall be subject to rejection. Rejected material or parts will be returned to vendor at vendor's expense, unless purchaser receives, within three weeks of notification of rejection, other instructions for disposition.