



AEROSPACE MATERIAL SPECIFICATION

AMS4071™**REV. P**

Issued 1945-05
Reaffirmed 2011-08
Revised 2023-05

Superseding AMS4071N

Aluminum Alloy, Drawn, Round, Seamless Hydraulic Tubing
2.5Mg - 0.25Cr (5052-O)
Annealed
(Composition similar to UNS A95052)

RATIONALE

AMS4071P results from a Five-Year Review and update of this specification with changes to prohibit unauthorized exceptions (3.3.1.1, 3.6, 4.4.1, 5.1.1, and 8.4), relocate definitions (2.4), update applicable documents (Section 2), sampling and testing for flarability (4.3.1), and ordering information (8.5), and allow the use of the immediate prior specification revision (8.3).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of drawn, round seamless tubing having a wall thickness of 0.010 to 0.450 inch (0.25 to 11.43 mm), inclusive, and nominal outside diameters of 0.125 to 3.000 inch (3.18 to 76.2 mm), inclusive (see 8.5).

1.2 Application

This tubing has been used typically for parts, such as hydraulic systems and fuel and oil lines, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2355 Quality Assurance, Sampling and Testing, Aluminum Alloys and Magnesium Alloy, Wrought Products (Except Forging Stock), and Rolled, Forged, or Flash Welded Rings

AS4330 Tubing, Flared, Standard Dimensions for, Design Standard

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For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4071P/>

Documents
Document Sharing Hub

AS33583 Tubing End, Double Flare, Standard Dimensions for

AS7766 Terms Used in Aerospace Metals Specifications

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B666/B666M Identification Marking of Aluminum and Magnesium Alloy Products

ASTM E215 Standardizing Equipment and Electromagnetic Examination of Seamless Aluminum-Alloy Tube

2.3 ANSI Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ANSI H35.2 Dimensional Tolerances for Aluminum Mill Products

ANSI H35.2M Dimensional Tolerances for Aluminum Mill Products (Metric)

2.4 Definitions

Terms used in AMS are defined in AS7766.

2.4.1 A double flare is similar to a standard single flare except that the flare is folded back on itself such that the cut edge is inside the flare near the ID of the tube. Definitions and illustration of single flaring are shown in AS4330; double flaring is defined and illustrated in AS33583.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2355.

Table 1 - Composition

Element	Min	Max
Silicon	--	0.25
Iron	--	0.40
Copper	--	0.10
Manganese	--	0.10
Magnesium	2.2	2.8
Chromium	0.15	0.35
Zinc	--	0.10
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Annealed.

3.2.1 Tubing shall be supplied unground with an as-drawn surface finish, unless otherwise specified.

3.3 Properties

Tubing shall conform to the following requirements, determined in accordance with AMS2355 on the mill produced size:

3.3.1 Tensile Properties

Shall be as shown in Table 2 for tubing having nominal wall thickness of 0.010 to 0.450 inch (0.25 to 11.43 mm), inclusive.

Table 2 - Tensile properties

Property	Value
Tensile Strength	25.0 to 35.0 ksi (172 to 241 MPa)
Yield Strength at 0.2% Offset, minimum	10.0 ksi (68.9 MPa)

3.3.1.1 Mechanical property requirements for product outside of the ranges covered by 3.3.1 shall be agreed upon between the purchaser and producer and reported per 4.4.1 (see 8.5).

3.3.2 Flattening

Tubing having nominal wall thickness less than 10% of the nominal OD shall withstand, without cracking, flattening sideways under a load applied gradually at room temperature until the outside dimension under load is equal to three times the nominal wall thickness.

3.3.2.1 If tubing does not pass the flattening test of 3.3.2, a section of tube not less than 1/2 inch (12.7 mm) in length and embracing one-third to one-half the circumference of the tube shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the nominal wall thickness of the tubing with axis of bend parallel to axis of tube and with inside of tube on inside of bend.

3.3.3 Flarability

Tubing with a nominal OD of 0.125 to 0.312 inch (3.18 to 7.92 mm) and wall thickness up to 0.035 inch (0.89 mm) and tubing with a nominal OD of 0.313 to 0.375 inch (7.95 to 9.52 mm) and nominal wall thickness not greater than 0.049 inch (1.24 mm) shall withstand being double-flared, and tubing with nominal OD over 0.375 inch (9.52 mm) shall withstand being single-flared without formation of cracks or other visible defects by being forced axially, at room temperature, with steady pressure over a hardened and polished tapered steel pin having a 74 degree included angle to produce a flare having a permanent expanded OD not less than specified in Table 3 (see 2.4.1).

Table 3A - Minimum flarability, inch/pound units

Nominal OD Inches	Expanded OD Inches	Nominal OD Inches	Expanded OD Inches
0.125	0.224	1.000	1.187
0.188	0.302	1.250	1.500
0.250	0.359	1.500	1.721
0.312	0.421	1.750	2.106
0.375	0.484	2.000	2.356
0.500	0.656	2.500	2.856
0.625	0.781	3.000	3.356
0.750	0.937		