AEROSPACE MATERIAL SPECIFICATION

AMS4480

Issued 2015-01

Aluminum Alloy, Seamless Drawn Tubing
1.0Mg - 0.60Si - 0.28Cu - 0.20Cr (6061-T4)
Solution Heat Treated and Naturally Aged
(Composition similar to UNS A96061)

RATIONALE

AMS4480 is a new document for 6061-T4 seamless drawn tubing to facilitate stabilization of AMS-WW-T-700/6.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of seamless, drawn tubing.

1.1.1 This specification covers products from 0.025 inches to 0.500 inches (0.64 to 12.70 mm) in wall thickness (See 8.5).

1.2 Application

This tubing has been used typically for parts, such as brackets, conduits, and low-pressure liquid lines, requiring moderate strength at ambient temperatures, 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 document 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 724-776-4970 (outside USA), www.sae.org.

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

AMS2772 Heat Treatment of Aluminum Alloy Raw Materials

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS4480

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 B 660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B 666/B 666M Identification Marking of Aluminum Products

2.3 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036, Tel: 212-642-4900, www.ansi.org.

ANSI H35.2 Dimensional Tolerances for Aluminum Mill Products

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

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	0.40	0.8
Iron	--	0.7
Copper	0.15	0.40
Manganese	--	0.15
Magnesium	0.8	1.2
Chromium	0.04	0.35
Zinc	--	0.25
Titanium	--	0.15
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Solution heat treated and naturally aged in accordance with AMS2772.

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

3.3 Properties

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

3.3.1 Mechanical property requirements for product outside of the range covered by Table 2 shall be agreed upon between purchaser and producer

3.3.2 Tensile Properties

Shall be as shown in Table 2.

TABLE 2A - Minimum Tensile Properties, Inch/Pound Units (See 8.5)

Nominal Wall Thickness Inch	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D % Cut Out Specimen	Elongation in 2 Inches or 4D % Full Section Specimen
0.025 to 0.049, incl	30.0	16.0	14	16
Over 0.049 to 0.259, incl	30.0	16.0	16	18
Over 0.259 to 0.500, incl	30.0	16.0	18	20

TABLE 2B - Minimum Tensile Properties, SI Units (See 8.5)

Nominal Wall Thickness Millimeters	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, min	Elongation in 50.8 mm or 4D % Cut Out Specimen	Elongation in 50.8 mm or 4D % Full Section Specimen
0.64 to 1.24, incl	207	110	14	16
Over 1.24 to 6.58, incl	207	110	16	18
Over 6.58 to 12.70, incl	207	110	18	20

3.4 Quality

Tubing, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the tubing.

3.4.1 Detrimental imperfections include, but are not limited to, cracks, splits, seams, inclusions, or severe crosshatching (surface breaks) that cannot be removed by light hand sanding using 180 grit or finer sandpaper.

3.5 Tolerances

Shall conform to all applicable requirements of ANSI H35.2 or ANSI H 35.2M.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of tubing shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the tubing conforms to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and, except for composition, shall be performed on each lot.

4.3 Sampling and Testing

Shall be in accordance with AMS2355.

4.4 Reports

The vendor of tubing shall furnish with each shipment a report stating that the tubing conforms to the composition and tolerances, and showing the numerical results of tests on each inspection lot to determine conformance to the other acceptance test requirements and periodic test requirements when performed. This report shall include the purchase order number, inspection lot number(s), AMS4480, size, and quantity. The report shall also identify the producer, the product form, and the size of the mill product.