AEROSPACE MATERIAL SPECIFICATION

AMS4066	REV. C

Issued 1992-01
Revised 2003-10
Reaffirmed 2013-12

Superseding AMS4066B

Aluminum Alloy, Drawn, Round Seamless Tubing
6.3Cu - 0.30Mn - 0.18Zr - 0.10V - 0.06Ti - (2219-T8511)
Solution Heat Treated, Stress Relieved by Stretching and Precipitation Heat Treated
(Composition similar to UNS A92219)

RATIONALE

AMS4066C has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

1.1 Form: This specification covers an aluminum alloy in the form of drawn, round seamless tubing 0.500 inch (12.70 mm) and over in OD with wall thickness of 0.029 to 0.500 inch (0.74 to 12.70 mm).

1.2 Application:

This tubing has been used typically for structures requiring good fusion weldability and a combination of good strength and resistance to stress-corrosion cracking, 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, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
AMS 2772	Heat Treatment of Aluminum Alloy Raw Materials
AS 1990	Aluminum Alloy Tempers

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/AMS4066C

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or www.astm.org.

ASTM B 660	Packaging/Packing of Aluminum and Magnesium Products
ASTM B 666/B 666M	Identification Marking of Aluminum and Magnesium Products

2.3 ANSI Publications:

Available from ANSI, 25 West 43rd Street, New York, NY 10036 or www.ansi.org.

ANSI H 35.2	Dimensional Tolerances for Aluminum Mill Products
ANSI H 35.2M	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 AMS 2355.

TABLE 1 - Composition

Element	min	max
Silicon	--	0.20
Iron	--	0.30
Copper	5.8	6.8
Manganese	0.20	0.40
Magnesium	--	0.02
Zinc	--	0.10
Titanium	0.02	0.10
Vanadium	0.05	0.15
Zirconium	0.10	0.25
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition:

Solution heat treated, stress relieved by stretching to produce a permanent set of 1/2 to 3%, and precipitation heat treated to the T8511 temper (see AS 1990). solution and precipitation heat treatments shall be performed in accordance with AMS 2772.

3.3 Properties:

Tubing shall conform to the following requirements, determined in accordance with AMS 2355:

3.3.1 Tensile Properties: Shall be as specified in Table 2.

TABLE 2A - Minimum Tensile Properties, Inch/Pound Units

Nominal Wall Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 inches % Strip	Elongation in 2 inches % Full Section
0.029 to 0.049, incl	60.0	42.0	--	6
Over 0.049 to 0.500, incl	60.0	42.0	6	8

TABLE 2B - Minimum Tensile Properties, SI Units

Nominal Wall Thickness mm	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm % Strip	Elongation in 50.8 mm % Full Section
0.74 to 1.24, incl	414	290	--	6
Over 1.24 to 12.70, incl	414	290	6	8

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.

3.5 Tolerances:

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

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 the specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Composition (3.1), tensile properties (3.3.1) and tolerances (3.5) are acceptance tests and except for composition, shall be performed on each inspection lot.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2355.

4.4 Reports:

The vendor of tubing shall furnish with each shipment a report stating that the tubing conforms to the composition requirements, tolerances and showing the numerical results of tensile tests on each inspection lot and stating that the tubing is in conformance to other technical requirements. This report shall include the purchase order number, lot number, AMS 4066C, size, quantity, identification of the producer and the size of the mill product.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355.

5. PREPARATION FOR DELIVERY:

5.1 Identification:

Shall be in accordance with ASTM B 666/B 666M.

5.2 Tubing shall be prepared for shipment in accordance with ASTM B 660 and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the tubing to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT:

A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS:

Tubing not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES:

8.1 The change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this specification. An (R) symbol to the left of the document title indicates a complete revision of the specification, including technical revisions. Change bars and (R) are not used in original publications, nor in specifications that contain editorial changes only.

8.2 Dimensions and properties in inch/pound units are primary; dimensions and properties in SI units are shown as the approximate equivalents of the primary units and are presented only for information.

8.3 Terms used in AMS are clarified in ARP1917.