

# AEROSPACE MATERIAL SPECIFICATION



AMS 4082N

Issued SEP 1940  
Revised JUL 2000  
Reaffirmed APR 2006  
Superseding AMS 4082M

Aluminum Alloy, Seamless Drawn Tubing  
1.0Mg - 0.60Si - 0.28Cu - 0.20Cr (6061-T6)  
Solution and Precipitation Heat Treated

UNS A96061

## 1. SCOPE:

### 1.1 Form:

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

### 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 form 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 canceled 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.

AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
MAM 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings, Metric (SI) Units
AMS 2772	Heat Treatment of Aluminum Alloy Raw Materials

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## 2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

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, Inc., 11 West 42nd Street, New York, NY 10036.

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 AMS 2355 or MAM 2355.

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 and precipitation heat treated in accordance with AMS 2772.

## 3.2.1 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 AMS 2355 or MAM 2355:

## 3.3.1 Tensile Properties: Shall be as shown in Table 2.

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

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	42.0	35.0	8	10
Over 0.049 to 0.259, incl	42.0	35.0	10	12
Over 0.259 to 0.500, incl	42.0	35.0	12	14

TABLE 2B - Minimum Tensile Properties, SI Units

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	290	241	8	10
Over 1.24 to 6.58, incl	290	241	10	12
Over 6.58 to 12.70, incl	290	241	12	14

## 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 cross-hatching (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 the 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 AMS 2355 or MAM 2355.

##### 4.4 Reports:

The vendor of tubing shall furnish with each shipment a report stating that the tubing conforms to the chemical composition and tolerances (and NDT inspection, when required); 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), AMS 4082N, size, and quantity. The report shall also identify the producer, the product form, and the size of the mill product.

##### 4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355 or MAM 2355.

#### 5. PREPARATION FOR DELIVERY:

##### 5.1 Identification:

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

##### 5.2 Packaging:

5.2.1 When specified, tubing shall be coated, prior to shipment, with a light corrosion-inhibiting oil.

5.2.2 Tubing shall be prepared for shipment in accordance with ASTM B 660, Commercial Practice, 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.