

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

Aluminum Alloy, Bar, Rod, and Wire,
Rolled, Drawn, or Cold Finished, 2011

UNS A92011

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The complete requirements for procuring 2011 aluminum alloy, bar, rod, and wire, rolled, drawn, or cold finished shall consist of the specification and the latest issue of AMS-AMS-QQ-A-225.

1. SCOPE AND CLASSIFICATION:

1.1 Scope:

This specification covers the specific requirements for aluminum alloy 2011 bar, rod, and wire produced by rolling, drawing, or cold finishing.

1.2 Classification:

1.2.1 Tempers: Bar, rod, and wire are of the following tempers as specified (See 6.2): T3, T4, T8, or T451 temper. Definitions of these tempers are specified in AMS-QQ-A225.

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2. APPLICABLE DOCUMENTS:

See AMS-QQ-A-225.

3. REQUIREMENTS:

3.1 Chemical Composition:

3.1.1 The chemical composition shall conform to the requirements specified in Table I. ³

TABLE I. Chemical Composition ^{1/}

Elements	Percent	
	Minimum	Maximum
Copper	5.0	6.0
Bismuth	0.20	0.6
Lead	0.20	0.6
Iron	-	0.7
Silicon	-	0.40
Zinc	-	0.30
Other Elements, each	-	0.05
Other Elements, total	-	0.15
Aluminum	Remainder	

^{1/} Analysis shall routinely be made only for the elements specifically mentioned in Table I. If, however, the presence of other elements is indicated or suspected in the course of routine analysis, further analysis shall be made to determine that the total of other elements is not in excess of the limits specified.

3.2 Mechanical Properties:

3.2.1 Mechanical Properties of Material as Supplied: The mechanical properties in the direction of working shall conform to requirements of Table II for the temper specified.

TABLE II. Mechanical Properties (See 6.5)

Temper	Diameter or Thickness	Tensile Strength minimum ksi	Yield Strength at 0.2 percent Offset minimum ^{1/} ksi	Elongation in 2 inches or 4 times dia. ^{1/} , minimum Percent
T3	0.125 to 1.500, incl	45.0	38.0	10
	1.501 to 2.000, incl	43.0	34.0	12
	2.001 to 3.250, incl	42.0	30.0	14
T8	0.125 to 3.250, incl	54.0	40.0	10
T4	Up to 8.000, incl	40.0	18.0	16
T451	0.500 to 8.000, incl	40.0	18.0	16

^{1/} The measurement of elongation and yield strength is not required for wire less than 0.125 inch in diameter or thickness.

3.3 Finish:

Unless otherwise specified in the contract or purchase order (See 6.2), rod up to and including 3 inches in diameter, and bar up to and including 2 inches thick (with maximum width for rectangle of 4 inches) shall be supplied cold finished. Wire shall be supplied with an as-drawn finish.

4. QUALITY ASSURANCE PROVISIONS:

See AMS-QQ-A-225.

5. PREPARATION FOR DELIVERY:

See AMS-QQ-A-225.

6. NOTES:

6.1 Intended Use:

This alloy is intended for use where ease of machinability is required.

6.1.1 Parts made from 2011-T3 should not be used in highly stressed or structural section. The 2011-T8 temper exhibits improved resistance to stress-corrosion cracking over the T3 temper and compares favorably with alloys 2017-T4 and 2024-T4.