

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard



AMS-QQ-A-250/2

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Aluminum Alloy 3003, Plate and Sheet

UNS A93003

NOTICE

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The complete requirements for procuring 3003 aluminum alloy plate and sheet described herein shall consist of this document and the latest issue of AMS QQ-A-250.

1. SCOPE AND CLASSIFICATION:

1.1 Scope:

This specification covers the specific requirements for 3003 aluminum alloy plate and sheet.

1.2 Classification:

1.2.1 Tempers: The plate and sheet are of the following tempers as specified (See 6.2): O, H12, H14, H16, H18, H22, H24, H26, H28, H112, or F temper. Definitions of these tempers are specified in AMS QQ-A-250.

1.2.1.1 Temper Substitutions: Material in either one of a pair of tempers (H12 and H22, H14 and H24, H16 and H26, or H18 and H28) may be supplied at the option of the producer or supplier, unless the supplying of one temper of the pair is expressly forbidden in procurement documents (See 6.2).

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2. APPLICABLE DOCUMENTS:

See AMS QQ-A-250.

3. REQUIREMENTS:

3.1 Chemical Composition:

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

TABLE I. Chemical Composition 1/

Element	Percent	
	Minimum	Maximum
Silicon	--	0.6
Iron	--	0.7
Copper	0.05	0.20
Manganese	1.0	1.5
Zinc	--	0.10
Other Elements, each	--	0.05
Other Elements, total <u>2/</u>	--	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 amounts greater than the specified limits, further analysis shall be made to determine that these elements are not present in excess of specified limits.

2/ The sum of those "Other" metallic elements 0.010 percent or more each, expressed to the second decimal before determining the sum.

3.2 Mechanical Properties:

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

TABLE II. Mechanical Properties (See 6.4)

Temper	Thickness Inches	Ultimate Tensile Strength, ksi Minimum	Ultimate Tensile Strength, ksi Maximum	Yield Strength at 0.2 percent Offset Minimum ksi 1/	Elongation in 2 inches or 4 times D 2/, 3/ Minimum percent
O	0.006-0.007	14.0	19.0	5.0	14
	0.008-0.012	14.0	19.0	5.0	18
	0.013-0.031	14.0	19.0	5.0	20
	0.032-0.050	14.0	19.0	5.0	23
	0.051-0.249	14.0	19.0	5.0	25
	0.250-3.000	14.0	19.0	5.0	23
H12	0.017-0.019	17.0	23.0	12.0	3
	0.020-0.031	17.0	23.0	12.0	4
	0.032-0.050	17.0	23.0	12.0	5
	0.051-0.113	17.0	23.0	12.0	6
	0.114-0.161	17.0	23.0	12.0	7
	0.162-0.249	17.0	23.0	12.0	8
	0.250-0.499	17.0	23.0	12.0	9
	0.500-2.000	17.0	23.0	12.0	10
H14	0.009-0.012	20.0	26.0	17.0	1
	0.013-0.019	20.0	26.0	17.0	2
	0.020-0.031	20.0	26.0	17.0	3
	0.032-0.050	20.0	26.0	17.0	4
	0.051-0.113	20.0	26.0	17.0	5
	0.114-0.161	20.0	26.0	17.0	6
	0.162-0.249	20.0	26.0	17.0	7
	0.250-0.499	20.0	26.0	17.0	8
	0.500-1.000	20.0	26.0	17.0	10
H16	0.006-0.019	24.0	30.0	21.0	1
	0.020-0.031	24.0	30.0	21.0	2
	0.032-0.050	24.0	30.0	21.0	3
	0.051-0.162	24.0	30.0	21.0	4
H18	0.006-0.019	27.0	--	24.0	1
	0.020-0.031	27.0	--	24.0	2
	0.032-0.050	27.0	--	24.0	3
	0.051-0.128	27.0	--	24.0	4
H112	0.250-0.499	17.0	--	10.0	8
	0.500-2.000	15.0	--	6.0	12
	2.001-3.000	14.5	--	6.0	18

TABLE II. Mechanical Properties (Continued) (See 6.4)

Temper	Thickness Inches	Ultimate Tensile Strength, ksi Minimum	Ultimate Tensile Strength, ksi Maximum	Yield Strength at 0.2 percent Offset Minimum ksi <u>1/</u>	Elongation in 2 inches or 4 times D <u>2/</u> , <u>3/</u> Minimum percent
H22	0.017-0.019	17.0	--	--	3
	0.020-0.031	17.0	--	--	4
	0.032-0.050	17.0	--	--	5
	0.051-0.113	17.0	--	--	6
	0.114-0.161	17.0	--	--	7
	0.162-0.249	17.0	--	--	8
	0.250-0.499	17.0	--	--	9
	0.500-2.000	17.0	--	--	10
H24	0.009-0.012	20.0	--	--	1
	0.013-0.019	20.0	--	--	2
	0.020-0.031	20.0	--	--	3
	0.032-0.050	20.0	--	--	4
	0.051-0.113	20.0	--	--	5
	0.114-0.161	20.0	--	--	6
	0.162-0.249	20.0	--	--	7
	0.250-0.499	20.0	--	--	8
	0.500-1.000	20.0	--	--	10
H26	0.006-0.019	24.0	--	--	1
	0.020-0.031	24.0	--	--	2
	0.032-0.050	24.0	--	--	3
	0.051-0.162	24.0	--	--	4
H28	0.006-0.019	27.0	--	--	1
	0.020-0.031	27.0	--	--	2
	0.032-0.050	27.0	--	--	3
	0.051-0.128	27.0	--	--	4
F	All	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>

1/ 1.000 ksi equals 1,000 psi.2/ Not required for material 0.500 inch or less in width.3/ "D" is specimen diameter.4/ No requirements.