

Aluminum Alloy 2124, Plate

A92124

RATIONALE

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The complete requirements for procuring 2124 aluminum alloy plate described herein shall consist of this document and the latest issue of AMS-QQ-A-250.

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## 1. SCOPE AND CLASSIFICATION:

## 1.1 Scope:

This specification covers the specific requirements for 2124 aluminum alloy plate for intended use in the -T851 temper; the general requirements are covered in AMS-QQ-A-250.

## 1.2 Classification:

1.2.1 Tempers: The plate shall be furnished in the -T351 or -T851 tempers as specified (See 6.3). Definitions of these tempers are specified in AMS-QQ-A-250.

## 2. APPLICABLE DOCUMENTS:

See AMS-QQ-A-250.

## 3. REQUIREMENTS:

## 3.1 Chemical Composition:

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

TABLE I. Chemical Composition. <sup>1/</sup>

Element	Percent	
	Minimum	Maximum
Copper	3.8	4.9
Magnesium	1.2	1.8
Manganese	0.30	0.9
Iron	-	0.30
Zinc	-	0.25
Silicon	-	0.20
Titanium	-	0.15
Chromium	-	0.10
Zirconium plus Titanium	-	0.20
Other Elements, each	-	0.05
Other Elements, total	-	0.15
Aluminum	Remainder	

<sup>1/</sup> 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.

## 3.2 Heat Treatment:

Heat treatment shall be in accordance with requirements for alloy 2024 plate in MIL-H-6088.

## 3.3 Mechanical Properties:

## 3.3.1 Mechanical Properties of -T851 Material: The mechanical properties in the longitudinal, long-transverse, and short-transverse direction shall conform to the requirements of Table II.

TABLE II. Mechanical Properties (See 6.5)

Thickness Inches	Direction of Test	Tensile Strength minimum ksi	Yield Strength at 0.2 percent Offset, minimum ksi	Elongation <u>1</u> / in 2 in. or 4 times D, <u>2</u> / minimum Percent
1.000 thru 2.000	Longitudinal	66.0	57.0	6
	Long-transverse	66.0	57.0	5
	Short-transverse <u>3</u> /	64.0	55.0	1.5
2.001 thru 3.000	Longitudinal	65.0	57.0	6
	Long-transverse	65.0	57.0	4
	Short-transverse	63.0	55.0	1.5
3.001 thru 4.000	Longitudinal	65.0	56.0	5
	Long-transverse	65.0	56.0	4
	Short-transverse	62.0	54.0	1.5
4.001 thru 5.000	Longitudinal	64.0	55.0	5
	Long-transverse	64.0	55.0	4
	Short-transverse	61.0	53.0	1.5
5.001 thru 6.000	Longitudinal	63.0	54.0	5
	Long-transverse	63.0	54.0	4
	Short-transverse	58.0	51.0	1.5

1/ Not required for material 1/2 inch or less in width.

2/ D represents specimen diameter.

3/ Short-transverse specimens not required from material under 1-1/2 inches in thickness.

## 3.3.2 Mechanical Properties of -T351 Material: Material supplied in the -T351 temper shall, after precipitation treatment, conform to the requirements of 3.3.1.

## 3.4 Resistance to Stress-Corrosion Cracking:

When specified (See 6.3), plate in -T851 temper or -T351 temper after precipitation treatment shall be resistant to stress-corrosion cracking when tested in accordance with 4.1.

### 3.5 Internal Defects:

When specified (See 6.3), plate shall be ultrasonically inspected (See AMS-QQ-A-250). Acceptance limits shall be as specified in Table III.

TABLE III. Ultrasonic Discontinuity Acceptance Limits. 1/

Thickness Inches	Maximum Weight per Piece <u>2/</u> Pounds	Discontinuity Class <u>3/</u>
1.000 thru 3.000	2,000	A
3.001 thru 4.500	2,000	B
4.501 thru 6.000	<u>4/</u>	<u>4/</u>

1/ Discontinuities in excess of those listed in Table III may be allowed subject to approval of the procuring activity, if it is established that they will be removed by machining or that they are in non-critical areas.

2/ Class for weights in excess of those shown shall be as agreed upon by user and supplier.

3/ The discontinuity class limits are defined in MIL-I-8950.

4/ Shall be as agreed upon by user and supplier.

### 3.6 Marking:

In addition to the marking required in FED-STD-184, plate shall be identified by an inspection lot number marked in at least one location on each piece.

## 4. QUALITY ASSURANCE PROVISIONS:

See AMS-QQ-A-250 and the following:

### 4.1 Resistance to Stress-Corrosion Cracking:

Specimens from each plate or plates produced from a single ingot shall be subjected to the following test:

4.1.1 Thirty days exposure, using three 0.225 inch diameter tensile-type specimens. Three C-ring specimens may be used for plate under 1.500 inches in thickness.

4.1.2 Stressed in the short-transverse direction with respect to grain flow and held at a constant strain. The stress level shall be 50 percent of the minimum long-transverse yield strength specified in Table II.