SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS-QQ-A-250/14 REV. A

Issued 1997-08
Noncurrent 2007-04
Reaffirmed 2013-05

Superseding AMS-QQ-A-250/14

Aluminum Alloy 7178, Plate and Sheet
(Composition similar to UNS A97178)

RATIONALE

AMS-QQ-A-250/14A has been reaffirmed to comply with the SAE five-year review policy.

NONCURRENT NOTICE

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of April, 2007. It is recommended, therefore, that this specification not be specified for new designs.

"NONCURRENT" refers to those specifications which have previously been widely used and which may be required for production or processing of existing designs in the future. The Aerospace Materials Division, however, does not recommend these specifications for future use in new designs.

"NONCURRENT" specifications are available from SAE upon request.

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http://www.sae.org/technical/standards/AMSQQA250/14A

NOTICE

This document has been taken directly from Federal Specification QQ-A-250/14E and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards.

The original Federal Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, (b) the use of the existing government specification or standard format, and (c) the exclusion of any qualified product list (QPL) sections.

The complete requirements for procuring 7178 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 7178 aluminum alloy plate and sheet material; the general requirements are covered in AMS-QQ-A-250.

1.2 Classification:

1.2.1 Tempers: The plate and sheet are classified in one of the following tempers as specified (See 6.2): O, T6, T62, T651, or F temper. 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 1/

	Percent	
	Minimum	Maximum
Zinc	6.3	7.3
Magnesium	2.4	3.1
Copper	1.6	2.4
Chromium	0.18	0.35
Iron	-	0.50
Silicon	-	0.40
Manganese	-	0.30
Titanium	-	0.20
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 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 Mechanical Properties:

3.2.1 Mechanical Properties of Material as Supplied: The mechanical properties perpendicular to the direction of final rolling, except for material under 9 inches in width, shall conform to the requirements of Table II for the temper specified. For material under 9 inches in width, the mechanical properties parallel to the direction of final rolling shall conform to the requirements of Table II for the temper specified.

TABLE II. Mechanical Properties

Temper	Thickness Inches	Tensile Strength minimum ksi	Yield Strength at 0.2 percent Offset minimum ksi	Elongation in 2 in. or 4 times D 1/, 2/ minimum percent
O	0.015 thru 0.499	3/ 40.0	3/ 21.0	10
	0.500	3/ 40.0	-	10
T6 and	0.015 thru 0.044	83.0	72.0	7
T62 4/	0.045 thru 0.249	84.0	73.0	8
T651	0.250 thru 0.499	84.0	73.0	8
and	0.500 thru 1.000	84.0	73.0	6
T62 4/	1.001 thru 1.500	84.0	73.0	4
	1.501 thru 2.000	80.0	70.0	3
F	All	5/	5/	5/

1/ Not required for material 1/2 inch or less in width.
2/ D represents specimen diameter.
3/ Maximum.
4/ Material in the T62 temper is not available from material producers.
5/ No requirements.

3.2.2 Mechanical Properties After Heat Treatment: In addition to conforming to the requirements of 3.2.1, material in the annealed (O) and the as-fabricated (F) tempers shall, after proper solution heat-treatment and aging, also conform to the requirements of Table II for the T6 and T62 tempers. Material as received in the T6 and T651 tempers shall, after proper re-solution heat-treatment and aging, be capable of conforming to the requirements specified in Table II for the T6 and T62 tempers.

3.3 Internal Defects:

When specified (See 6.2), plate shall be ultrasonically inspected (See AMS-QQ-A-250). Acceptance limits shall be as specified in Table III.