SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4273B

Issued JAN 1997
Revised JAN 2006

Superseding AMS 4273A

Aluminum Alloy, Sheet and Plate
(2424-T3 Flat Sheet and Plate)
Solution Heat Treated and Cold Worked
(Composition similar to UNS A92424)

Rationale: AMS 4273B is a Five Year Review and update of this specification.

1. SCOPE

1.1 Form:

This specification covers an aluminum alloy in the form of sheet and plate.

1.2 Application:

This product has been used typically for formed structural parts with good tensile strength, corrosion resistance, toughness, and resistance to fatigue crack growth, but usage is not limited to such applications.

1.2.1 Certain design and processing procedures may cause this sheet to become susceptible to stress-corrosion cracking; ARP823 recommends practices to minimize such conditions.

2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order forms 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 cancelled and no superseding document has been specified, the last published issue of that document shall apply.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged or Flash Welded Rings
AMS 2772	Heat Treatment of Aluminum Alloy Raw Materials
ARP823	Minimizing Stress-Corrosion Cracking in Wrought Heat Treatable Aluminum Alloy Products
AS1990	Aluminum Alloy Tempers

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 or www.astm.org.

ASTM B 646	Fracture Toughness Testing of Aluminum Alloys
ASTM B 666/B 666M	Identification Marking of Aluminum and Magnesium Products
ASTM E 399	Plane-Strain Fracture Toughness of Metallic Materials
ASTM E 561	R-Curve Determination

2.3 ANSI Publications:

Available from ANSI, 25 West 43rd Street, New York, NY 10036 or www.ansi.org.

ANSI H 35.2	Dimensional Tolerances for Aluminum Mill Products
ANSI H 35.2M	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.

TABLE 1 - Composition

Element	min	max
Silicon	--	0.10
Iron	--	0.12
Copper	3.8	4.4
Manganese	0.30	0.6
Magnesium	1.2	1.6
Zinc	--	0.20
Titanium	--	0.10
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition:

Solution heat treated in accordance with AMS 2772 as applicable to 2024-T3 and cold worked (See AS 1990).

3.3 Properties:

Sheet and plate shall conform to the following requirements, determined in accordance with AMS 2355 on the mill produced size and as specified herein.

3.3.1 Tensile Properties: Shall be as specified in Table 2.

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

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
0.020 to 0.128	63.0	42.0	15
Over 0.128 to 0.249	64.0	42.0	15
Over 0.249 to 0.499	64.0	42.0	12

TABLE 2B - Minimum Tensile Properties, SI Units

Nominal Thickness Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
0.51 to 3.25	434	290	15
Over 3.25 to 6.32	441	290	15
Over 6.32 to 12.67	441	290	12

3.3.2 Bending: Product shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the bend factor shown in Table 3 times the nominal thickness of the sheet with axis of bend parallel to the direction of rolling.

TABLE 3 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Bend Factor
Over 0.020 to 0.051, incl	Over 0.51 to 1.30, incl	5
Over 0.051 to 0.128, incl	Over 1.30 to 3.25, incl	6
Over 0.128 to 0.249, incl	Over 3.25 to 6.32, incl	8
Over 0.249 to 0.499, incl	Over 6.32 to 12.67, incl	10

3.3.3 Critical-Stress-Intensity Factor (K_c): Shall be not lower than 130 ksi $\sqrt{\text{inch}}$ (143 MPa $\sqrt{\text{m}}$), determined in the T-L direction using a 16-inch (406-mm) wide center-cracked panel in accordance with ASTM B 646 and ASTM E 561.

3.4 Quality:

Product, 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 product.

3.5 Tolerances:

Shall conform to all applicable requirements of ANSI H35.2 or ANSI H35.2M.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of product 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 product conforms to specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Composition (3.1), tensile properties (3.3.1), critical-stress-intensity factor (3.3.3), and tolerances (3.5) are acceptance tests and, except for composition, shall be performed on each inspection lot.

4.2.2 Periodic Tests: Bending (3.3.2) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2355, except that sampling and testing for R-curve determination (3.3.3) shall be in accordance with ASTM E 561.

4.4 Reports:

The vendor of product shall furnish with each shipment a report stating that the product conforms to the composition and tolerances and showing the numerical results of tests on each inspection lot to determine conformance to the other acceptance test requirements and to periodic tests, when performed. This report shall include the purchase order number, inspection lot number, AMS 4273B, size, and quantity. This 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.

5. PREPARATION FOR DELIVERY:

5.1 Identification:

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