



AEROSPACE MATERIAL SPECIFICATION

AMS-A-81596™**REV. A**

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Superseding AMS-A-81596

Aluminum Foil for Sandwich Construction

RATIONALE

AMS-A-81596A revises Thickness (3.3), Marking (3.6), Heat Treatment (3.7), Sampling (4.3), Quality Conformance Tests (4.5), Retests (4.6.2), Packaging (5), and is a Five-Year Review and update of this specification.

AMS-A-81596A has been reaffirmed to comply with the SAE Five-Year Review policy.

NOTICE

The initial SAE publication of this document was taken directly from U.S. Military Standard MIL-A-81596A. This SAE Standard may retain the same part numbers established by the original military document.

Any requirements associated with Qualified Products Lists (QPLs) may continue to be mandatory for DoD contracts. Requirements relating to QPLs have not been adopted by the SAE for this standard and are not part of this SAE document.

1. SCOPE

1.1 Scope

This specification covers the requirements of uncoated aluminum alloy foil for core materials required for structural sandwich construction.

1.2 Classification

Aluminum foil material for sandwich construction shall be furnished in the following alloys and tempers, as specified (see 6.2.1):

Aluminum Alloy	Temper	Description
2024	T 3	Solution heat-treated and then cold worked.
	T 81	Solution heat-treated, cold worked, and then artificially aged.
3003	H 19	Strain hardened, extra hard temper.
5052	H 191	Strain hardened, extra hard temper variation.
5056	H 191	Strain hardened, extra hard temper variation.

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Documents

Standard Sharing Hub

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.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2355 Quality Assurance, Sampling and Testing, Aluminum Alloys and Magnesium Alloy, Wrought Products (Except Forging Stock), and Rolled, Forged, or Flash Welded Rings

AMS2772 Heat Treatment of Wrought Aluminum Alloy Raw Materials

AMS-C-7438 Core Material, Aluminum, for Sandwich Construction

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B660 Standard Practices for Packaging/Packing of Aluminum and Magnesium Products

ASTM-B666/B666M Standard Practice for Identification Marking of Aluminum and Magnesium Products

ASTM E252 Thickness of Thin Foil and Film by Weighing

ASTM E345 Tension Testing of Metallic Foil

2.3 U.S. Government Publications

Copies of these documents are available online at <http://quicksearch.dla.mil>.

L-T-80 Tape, Pressure-Sensitive Adhesive (Aluminum Backed)

QQ-A-1876 Aluminum Foil

3. REQUIREMENTS

3.1 Chemical Composition

Aluminum foil shall be produced from material conforming to the requirements specified in Table 1.

3.2 Mechanical Properties

The mechanical properties, perpendicular to the direction of final rolling (long transverse direction) for Alloy 2024 and parallel to the direction of final rolling (longitudinal direction) for Alloys 3003, 5052, and 5056, shall conform to the requirements of Table 2 for the alloy and temper specified. Mechanical properties of alloys and tempers not covered by this specification shall be as specified in the contract or order (see 6.2.1).

3.3 Thickness

Shall be as ordered.

3.4 Dimensional Tolerances

Unless otherwise specified, the aluminum foil shall be furnished in coils. The weight of the coils shall be as specified in the contract or purchase order (see 6.2.1). The width of the foil shall be as specified in the contract or purchase order (see 6.2.1). The width of the foil shall be within $\pm 1/32$ inch of that specified. Unless otherwise specified, the coil diameter shall not exceed 34 inches (see 6.2.1).

3.5 Splices

The maximum number of allowable splices per roll of aluminum foil shall be one for each 1300 lineal feet or fraction thereof for Alloy 2024, and one for each 3000 lineal feet or fraction thereof of foils in other alloys regardless of nominal foil thickness. Unless otherwise specified, the splices shall be made with pressure-sensitive tape conforming to L-T-80 or by ultrasonic welding. The type of splice shall be at the supplier's option in accordance with his current mill practices as long as there are no loose foil edges in the foil roll unwind direction. Splices shall be marked with a colored tape, or equivalent, that shall extend over each edge of the roll so that the matching tape may be easily seen at the edges of the roll.

3.6 Marking for Identification

Unless otherwise specified, the foil shall be marked in accordance with ASTM B666/B666M.

3.7 Heat Treatment

The heat treating required for Aluminum Alloy 2024 foil shall be performed in accordance with the applicable procedures in AMS2772.

3.8 Workmanship

The foil shall be uniform in quality and condition; clean, sound, smooth, commercially flat, and free from buckles, blisters, seams, laminations, wrinkles, excessive bow, mill holes, and other injurious defects, both internal and external, that will be detrimental to fabrication of structural core material. Oil on the foil surface in amounts which would prevent the application of adhesive and attainment of a bond shall not be acceptable. Discoloration due to thermal treatment shall not be cause for rejection.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Lot

Unless otherwise specified in the contract or purchase order, a lot shall consist of all foil of the same heat, alloy, temper, and nominal thickness processed together. For the coiled foil, prior to shearing to cut length or slitting into multiple coils, a lot shall have a maximum weight of 40000 pounds.

4.3 Sampling

Unless otherwise specified and where applicable, the supplier shall use a system of statistical quality control approved by the acquiring activity for sampling plans and procedures in the determination of the acceptability of the products.