

ADOPTION NOTICE

SAE-AMS5036, "SHEET AND STRIP, ALUMINUM COATED, LOW CARBON", was adopted on 03-OCT-94 for use by the Department of Defense (DoD). Proposed changes by DoD activities must be submitted to the DoD Adopting Activity: Commander, Atlantic Division, Naval Facilities Engineering Command, Criteria Office, 1510 Gilbert St, Norfolk, VA 23511-2699. Copies of this document may be purchased from the Society of Automotive Engineers 400 Commonwealth Drive Warrendale, Pennsylvania, United States, 15096-0001. <http://www.sae.org/>

Custodians:

Army - MR
Navy - YD
Air Force - 99

Adopting Activity:

Navy - YD

SAENORM.COM : Click to view the full PDF of SAE-AMS50369

FSC 9515

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

AEROSPACE MATERIAL SPECIFICATION

An American National Standard

SAE AMS 5036G

Issued 4-1-43
Revised 10-1-85

Superseding AMS 5036F

STEEL SHEET AND STRIP, ALUMINUM COATED Low Carbon

1. SCOPE:

1.1 Form: This specification covers a low-carbon steel in the form of sheet and strip coated on both faces with aluminum-silicon alloy by the hot-dip process.

1.2 Application: Primarily for low-stressed parts, such as brackets, clips, and sheathing, requiring corrosion resistance and oxidation resistance up to 1200°F (650°C).

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2232 - Tolerances, Carbon Steel Sheet, Strip, and Plate

MAM 2232 - Tolerances, Metric, Carbon Steel Sheet, Strip, and Plate

AMS 2259 - Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels

AMS 2350 - Standards and Test Methods

AMS 2370 - Quality Assurance Sampling of Carbon and Low-Alloy Steels, Wrought Products Except Forgings and Forging Stock

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

AMS documents are protected under United States and international copyright laws. Reproduction of these documents by any means is strictly prohibited without the written consent of the publisher.

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B117 - Salt Spray (Fog) Testing

ASTM E290 - Semi-Guided Bend Test for Ductility of Metallic Materials

ASTM E350 - Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-163 - Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

3.1.1 Basis Steel: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E350 or by spectrographic or other analytical methods approved by purchaser:

	min	max
Carbon	--	0.10
Manganese	0.25 -	0.50
Phosphorus	--	0.04
Sulfur	--	0.05

3.1.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.1.2 Coating: Shall consist of a uniform layer of an aluminum-silicon (5 - 11% silicon) alloy on each side of the steel sheet or strip.

3.2 Condition: Aluminum killed, cold rolled, and rerolled after coating.

3.3 Properties: The product shall conform to the following requirements:

3.3.1 Corrosion Resistance: The product shall show no evidence of corrosion of the basis steel when subjected for not less than 200 hr to a continuous salt spray corrosion test in accordance with ASTM B117. Corrosion of basis steel at cut edges shall be disregarded.

3.3.2 Bending Properties: Shall be as follows, determined in accordance with ASTM E290:

3.3.2.1 The product shall withstand, without flaking or peeling of the coating on the outside of the bend, bending at room temperature in any direction through an angle of 180 deg over a diameter equal to twice the nominal thickness of the product.

- 3.3.2.2 The product shall withstand, without cracking of the basis steel, bending at room temperature in any direction through an angle of 180 deg flat on itself.
- 3.3.3 Coating Weight: Shall be 0.30 - 0.50 oz per sq ft (95 - 160 g/m²), determined as in 3.3.3.1 on specimens as in 4.3.1.
- 3.3.3.1 Each specimen (4.3.1) shall be cleaned by washing thoroughly in petroleum ether or other suitable solvent, dried thoroughly, and weighed to the nearest 0.005 gram. Immerse each specimen in hot [approximately 150°F (65°C)] 20% sodium hydroxide solution until evolution of gases ceases. Remove specimens, scrub under running water, blot with a towel to remove the water, and immerse for 2 - 3 sec in cold concentrated hydrochloric acid. Remove specimens from the acid, scrub under running water, and reimmerse in the sodium hydroxide solution until action again ceases. Repeat this cycle until immersion in the sodium hydroxide shows no visible reaction. Remove the specimens, scrub under running water, dry, and reweigh. The loss in weight in grams is equal to the weight of coating in oz per sq ft (0.315 kg/m²).
- 3.3.3.1.1 In the above procedure it is very important that the water be removed from the surface of the specimens before immersion in the hydrochloric acid since diluted hydrochloric acid will attack the base metal to a greater extent than the concentrated acid.
- 3.4 Quality: The 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 AMS 2232 or MAM 2232, except for thickness as specified in 3.5.1.
- 3.5.1 Thickness: Shall be as specified in Table I.

TABLE I

Nominal Thickness Inch	Tolerance, Inch plus and minus
Up to 0.020, incl	0.003
Over 0.020 to 0.029, incl	0.004
Over 0.029 to 0.049, incl	0.005
Over 0.049 to 0.069, incl	0.006
Over 0.069 to 0.079, incl	0.007
Over 0.079 to 0.089, incl	0.008
Over 0.089 to 0.1875, excl	0.009

3.5.1 (Continued):

TABLE I (SI)

Nominal Thickness Millimetres	Tolerance, Millimetre plus and minus
Up to 0.50, incl	0.08
Over 0.50 to 0.70, incl	0.10
Over 0.70 to 1.20, incl	0.12
Over 1.20 to 1.70, incl	0.15
Over 1.70 to 2.00, incl	0.18
Over 2.00 to 2.20, incl	0.20
Over 2.20 to 4.70, excl	0.22

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.
- 4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each heat or lot as applicable.
- 4.3 Sampling: Shall be in accordance with AMS 2370.
- 4.3.1 Specimens for coating weight determination (3.3.3) shall be approximately 2-1/4 in. (55 mm) square or 5 sq in. (30 cm²); weight losses shall be corrected for the actual area of the specimens. Three specimens shall be cut to represent each sample sheet or strip; one of these specimens shall be cut to represent the center and the other two specimens from diagonally opposite corners of the sample. The corner specimens shall be at least 4 in. (100 mm) from the end and at least 2 in. (50 mm) from the side of the sheet or strip.
- 4.3.1.1 Product Over 12 In. (300 mm) in Nominal Width: Cut specimens from one flat sheet or strip from each lot. For coiled product, cut a sample approximately 18 in. (450 mm) long by the full width of the coil from one end of the coil and cut the specimens from this sample.
- 4.3.1.2 Product 12 In. (300 mm) and Under in Nominal Width: Cut samples not less than 18 in. (450 mm) long from one end of one to three coils or flat sheets or strips, as applicable, from each lot. Cut specimens from the sample or samples, observing the end distance and, insofar as width permits, the edge distance requirements of 4.3.1.

4.4 Reports:

- 4.4.1 The vendor of the product shall furnish with each shipment a report showing the results of tests for chemical composition of each heat of basis steel and stating that the product conforms to the other technical requirements of this specification. This report shall include the purchase order number, heat number, AMS 5036G, size, and quantity from each heat.
- 4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 5036G, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification and shall include in the report either a statement that the material conforms or copies of laboratory reports showing the results of tests to determine conformance.

4.5 Resampling and Retesting: Shall be in accordance with AMS 2370.

5. PREPARATION FOR DELIVERY:

- 5.1 Identification: The product shall be identified as in 5.1.1 unless purchaser permits a method from 5.1.2.
- 5.1.1 Each sheet and strip shall be marked on one face, in the respective location indicated below, with AMS 5036G, manufacturer's identification, and nominal thickness. The characters shall be of such size as to be legible, shall be applied using a suitable marking fluid, and shall be removable in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the product or its performance and shall be sufficiently stable to withstand normal handling. The specification number, manufacturer's identification, and nominal thickness shall be continuously line marked.
- 5.1.1.1 Flat Strip 6 In. (150 mm) and Under in Width: Shall be marked in one or more lengthwise rows of characters recurring at intervals not greater than 3 ft (900 mm).
- 5.1.1.2 Flat Sheet and Strip Over 6 In. (150 mm) in Width: Shall be marked in lengthwise rows of characters recurring at intervals not greater than 3 ft (900 mm), the rows being spaced not more than 6 in. (150 mm) apart and alternately staggered.
- 5.1.1.3 Coiled Sheet and Strip: Shall be marked near both the outside and inside ends of the coil; the markings shall be applied as in 5.1.1 or shall appear on a durable tag or label attached to the coil and marked with the information of 5.1.1. When the product is wound on cores, the tag or label may be attached to the core.