



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 5500B

Superseding AMS 5500A

Issued 5-1-68

Revised 7-16-79

STEEL SHEET, CORROSION RESISTANT, LAMINATED
Surface Bonded

1. SCOPE:

1.1 Form: This specification covers a corrosion-resistant steel in the form of laminated sheet.

1.2 Application: Primarily for shims in which thickness is to be adjusted by removal of laminations as required.

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

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2248 - Chemical Check Analysis Limits, Wrought Heat and Corrosion Resistant Steels and Alloys

AMS 2350 - Standards and Test Methods

AMS 2371 - Quality Assurance Sampling of Corrosion and Heat Resistant Alloys, Wrought Products Except Forgings

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

ASTM E353 - Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

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

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

3.1.1 Laminations: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E353, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

SAE Technical Board rules provide that: "All technical reports, including standards approved and recommended, are advisory only. Their use by anyone engaged in industry or trade or use by governmental agencies is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

	min	max
Carbon	--	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	17.00 -	19.00
Nickel	8.00 -	10.00
Molybdenum	--	0.50
Copper	--	0.50

3.1.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2248.

3.1.2 Adhesive: Shall be of a composition which will meet the fabrication and quality requirements of this specification.

3.2 Fabrication: The corrosion-resistant steel comprising the laminations shall be in the annealed or 1/4 hard temper. The laminated shim stock shall consist completely of laminations each ϕ 0.002 in. \pm 0.0002 (0.05 mm \pm 0.005) thick or 0.003 in. \pm 0.0003 (0.08 mm \pm 0.008) thick, or partly of such laminations combined with a single thicker lamination, as ordered, bonded together by an adhesive such that individual laminations may be peeled for adjustment of shim thickness. The thickness of each layer of adhesive shall not exceed 0.0003 in. (0.008 mm).

3.2.1 Sheet shall be of the following thicknesses and combinations of laminations and solid base, unless otherwise specified:

Nominal Thickness of Shim Stock Inch (mm)	All Laminated, 0.002 in. (0.05 mm) Laminations	All Laminated, 0.003 in. (0.08 mm) Laminations	Half Solid, Half Laminated	Half Solid, Half Laminated	Three Quarters Solid, One Quarter Laminated	Three Quarters Solid, One Quarter Laminated
			0.002 in. (0.05 mm) Laminations	0.003 in. (0.08 mm) Laminations	0.002 in. (0.05 mm) Laminations	0.003 in. (0.08 mm) Laminations
0.006 (0.15)	X					
0.008 (0.20)	X					
0.010 (0.25)	X					
0.016 (0.41)	X	X				
0.020 (0.51)	X	X				
0.032 (0.81)	X	X				
0.047 (1.19)	X	X				
0.062 (1.57)	X	X	X	X		
0.094 (2.39)	X	X	X	X		
0.125 (3.18)	X	X	X	X	X	X

3.3 Quality: Sheet, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external imperfections detrimental to usage of the sheet.

3.3.1 Laminations shall be bonded together in such a manner that any shape can be cut out of the shim stock without causing the laminations in the shape to separate. Normal handling shall not cause separation of laminations.

3.4 Tolerances: Shall be as specified in Table I.

TABLE I

Nominal Total Thickness Inch	Tolerance, Inch	
	plus	minus
Up to 0.008, incl	0.001	0.0005
Over 0.008 to 0.010, incl	0.0015	0.0005
Over 0.010 to 0.016, incl	0.0015	0.001
Over 0.016 to 0.021, incl	0.002	0.001
Over 0.021 to 0.033, incl	0.003	0.002
Over 0.033 to 0.048, incl	0.005	0.002
Over 0.048 to 0.063, incl	0.006	0.002
Over 0.063 to 0.080, incl	0.007	0.002
Over 0.080 to 0.094, incl	0.009	0.003
Over 0.094 to 0.109, incl	0.010	0.003
Over 0.109 to 0.125, incl	0.012	0.003

TABLE I (SI)

Nominal Total Thickness Millimetres	Tolerance, Millimetre	
	plus	minus
Up to 0.20, incl	0.03	0.013
Over 0.20 to 0.25, incl	0.038	0.013
Over 0.25 to 0.41, incl	0.038	0.03
Over 0.41 to 0.53, incl	0.05	0.03
Over 0.53 to 0.84, incl	0.08	0.05
Over 0.84 to 1.22, incl	0.13	0.05
Over 1.22 to 1.60, incl	0.15	0.05
Over 1.60 to 2.03, incl	0.18	0.05
Over 2.03 to 2.39, incl	0.23	0.08
Over 2.39 to 2.77, incl	0.25	0.08
Over 2.77 to 3.18, incl	0.30	0.08

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of sheet shall supply all samples 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 perform such confirmatory testing as he deems necessary to ensure that the sheet 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 lot.

4.3 Sampling: Shall be in accordance with AMS 2371.

4.4 Reports:

4.4.1 The vendor of sheet shall furnish with each shipment three copies of a report showing the results of tests for chemical composition of each lot and stating that the sheet conforms to the other technical requirements of this specification. This report shall include the purchase order number, heat number, material specification number and its revision letter, shim stock thickness, foil thickness, percentage of total thickness which is laminated, size, and quantity.