

STEEL SHEET, STRIP, AND PLATE  
0.75Si - 0.62Cr - 0.20Mo - 0.10Zr (0.10 - 0.17C)

1. SCOPE:

1.1 Form: This specification covers a low-alloy steel in the form of sheet, strip, and plate.

1.2 Application: Primarily for parts requiring strength up to 1000°F (540°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 2252 - Tolerances, Low-Alloy Steel Sheet, Strip, and Plate
- MAM 2252 - Tolerances, Metric, Low-Alloy 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

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

- ASTM A370 - Mechanical Testing of Steel Products
- ASTM E112 - Determining Average Grain Size
- ASTM E350 - Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

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2.3 U.S. 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: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E350, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

	min	max
Carbon	0.10	0.17
Manganese	0.50	0.80
Silicon	0.60	0.90
Phosphorus	--	0.025
Sulfur	--	0.035
Chromium	0.50	0.75
Molybdenum	0.15	0.75
Zirconium	0.05	0.10
Nickel	--	0.25
Copper	--	0.35

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

3.2 Condition: The product shall be supplied in the following condition:

3.2.1 Sheet and Strip: Hot rolled, or cold rolled and annealed, and descaled.

3.2.2 Plate: Hot rolled and descaled.

3.3 Properties: The product shall conform to the following requirements; tensile and bend testing shall be performed in accordance with ASTM A370:

3.3.1 Grain Size: Predominantly 5 or finer with occasional grains as large as 3 permissible, determined in accordance with ASTM E112.

3.3.2 Tensile Properties: Shall be as specified in Table I.

TABLE I

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset psi, min	Elongation in 2 in. or 4D %, min
Up to 0.50, incl	70,000	50,000	22
Over 0.50 to 1.00, incl	65,000	43,000	22
Over 1.00 to 2.00, incl	63,000	40,000	22
Over 2.00 to 4.00, incl	60,000	38,000	22

TABLE I (SI)

Nominal Thickness Millimetres	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, min	Elongation in 50 mm or 4D %, min
Up to 12.5, incl	485	345	22
Over 12.5 to 25.0, incl	450	295	22
Over 25.0 to 50.0, incl	435	275	22
Over 50.0 to 100.0, incl	415	260	22

3.3.2.1 Tensile property requirements for plate over 4.00 in. (100.0 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

3.3.3 Bending: Product 0.749 in. (18.75 mm) and under in nominal thickness shall withstand, without cracking, bending through the angle shown below around a diameter equal to the bend factor times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

<u>Nominal Thickness</u>		Type of Bend	Angle deg, min	Bend Factor
Inch	Millimetres			
Up to 0.249, incl	Up to 6.25, incl	Free Bend	180	1
		V-Block	135	2
Over 0.249 to 0.749, incl	Over 6.25 to 18.75, incl	Free Bend	90	1
		V-Block	135	3

3.3.3.1 Bending requirements for plate over 0.749 in. (18.75 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

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: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2252 or MAM 2252.

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## 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.
- 4.4 Reports:
- 4.4.1 The vendor of the product shall furnish with each shipment a report showing the results of tests for chemical composition and grain size of each heat and for tensile and bending properties of each lot. This report shall include the purchase order number, heat number, AMS 6354C, 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 6354C, 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, strip, and plate shall be marked on one face, in the respective location indicated below, with AMS 6354C, heat number, 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; the heat number may be included in the line marking or may be marked at one location on each piece.