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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 5508E

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Superseding AMS 5508D

Submitted for recognition as an American National Standard

STEEL, CORROSION AND HEAT RESISTANT, SHEET, STRIP, AND PLATE
13Cr - 2.0Ni - 3.0W
Annealed

UNS S41800

1. SCOPE:

1.1 Form:

This specification covers a corrosion and heat resistant steel in the form of sheet, strip, and plate.

1.2 Application:

These products have been used typically for parts, such as shrouds, ducts, and cases, requiring oxidation resistance up to 1000 °F (538 °C), but usage is not limited to such applications. Creep strength and resistance to tempering of this steel are better than those of the common 13Cr type.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2242 Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate
MAM 2242 Tolerances, Metric, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate
AMS 2248 Chemical Check Analysis Limits, Wrought Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
AMS 2371 Quality Assurance Sampling and Testing, Corrosion and Heat Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS 2807 Identification, Carbon and Low-Alloy Steels, Corrosion and Heat Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM A 370 Mechanical Testing of Steel Products
ASTM E 353 Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

2.3 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

(R)

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 353, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Carbon	0.15	0.20
Manganese	--	0.50
Silicon	--	0.50
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	12.00	14.00
Nickel	1.80	2.20
Tungsten	2.50	3.50
Molybdenum	--	0.50
Aluminum	--	0.15
Copper	--	0.50
Tin	--	0.05
Nitrogen	--	0.08

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

3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 (R) Sheet and Strip: Hot rolled or cold rolled, annealed, and, unless annealing is performed in an atmosphere yielding a bright finish, descaled having a surface finish conforming to 3.2.1.1 or 3.2.1.2 as applicable (See 8.2).

3.2.1.1 Sheet: No. 2D finish.

3.2.1.2 Strip: No. 1 strip finish.

3.2.2 Plate: Hot rolled or cold rolled, annealed, and descaled.

3.3 Properties:

The product shall conform to the following requirements; tensile, hardness, and bend testing shall be performed in accordance with ASTM A 370:

3.3.1 Tensile Properties: Shall be as shown in Table 2:

TABLE 2 - Tensile Properties

Property	Value
Tensile Strength, maximum	150 ksi (1034 MPa)
Elongation in 2 Inches (50.8 mm) or 4D, minimum	10%

3.3.2 Bending: Product under 0.1875 inch (4.762 mm) in nominal thickness shall withstand, without cracking, free bending through an angle of 105 degrees around a diameter equal to four times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

3.3.2.1 Bending requirements for plate 0.1875 inch (4.762 mm) and over in nominal thickness shall be as agreed upon by purchaser and vendor.

3.3.3 Response to Heat Treatment: Product 0.375 inch (9.52 mm) and under in nominal thickness and 0.375 inch ± 0.010 (9.52 mm ± 0.25) thick specimens cut from thicker product shall have hardness not lower than 42 HRC, or equivalent, after being heat treated by heating to 1800 °F ± 10 (982 °C ± 6), holding at heat for 15 to 30 minutes, and cooling in air (See 8.3).

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 2242 or MAM 2242.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:
(R)

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. 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 for all technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing:
(R)

Shall be in accordance with AMS 2371.

4.4 Reports:

The vendor of the product shall furnish with each shipment a report showing the results of tests for chemical composition of each heat and for tensile and bending properties and response to heat treatment of each lot. This report shall include the purchase order number, heat and lot number, AMS 5508E, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2371.

5. PREPARATION FOR DELIVERY:

5.1 Identification:
(R)

Shall be in accordance with AMS 2807.

5.2 Packaging:

5.2.1 (R) The product shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery.

5.2.2 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-163, Commercial Level, unless Level A is specified in the request for procurement.