

Steel, Corrosion and Heat-Resistant, Sheet, Strip, and Plate

17Cr - 13Ni - 2.5Mo (316L)

Solution Heat Treated

(Composition similar to UNS S31603)

RATIONALE

AMS5507G revises Tensile Properties (Table 2) to add minimum properties for tensile strength and yield strength, adds provisions for intergranular corrosion testing (3.4), and is a Five Year Review and update of this specification.

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 requiring both corrosion and heat resistance up to 1600 °F (871 °C) and for welding, but usage is not limited to such applications. At elevated temperatures, the strength of this steel is slightly higher than, and the oxidation resistance is similar to, that of 18-8 type steels.

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 724-776-4970 (outside USA), www.sae.org.

AMS2242 Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate

AMS2248 Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys

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on this Technical Report, please visit
<http://www.sae.org/technical/standards/AMS5507G>**

- AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
- AMS2807 Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing
- AS4194 Sheet and Strip Surface Finish Nomenclature

2.2 ASTM Publications

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

- ASTM A 240 Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- ASTM A 262 Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
- ASTM A 480/A 480M Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- ASTM E 8/E 8M Tension Testing of Metallic Materials
- ASTM E 353 Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

3. TECHNICAL REQUIREMENTS

3.1 Composition

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	--	0.030
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	16.00	18.00
Nickel	10.00	14.00
Molybdenum	2.00	3.00
Copper	--	0.75

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Sheet and Strip

Cold rolled, solution heat treated, and, unless solution heat treatment is performed in an atmosphere yielding a bright finish, descaled having a surface appearance in accordance with ASTM A 480/A 480M and AS4194 comparable to 3.2.1.1 or 3.2.1.2 as applicable.

3.2.1.1 Sheet

No. 2D finish.

3.2.1.2 Strip

No. 1 strip finish.

3.2.2 Plate

Hot or cold rolled, solution heat treated, and descaled.

3.3 Properties

The product shall conform to the following requirements; tensile testing shall be performed in accordance with ASTM E 8/E 8M.

3.3.1 Tensile Properties

Shall be as shown in Table 2 for product over 0.005 inch (0.13 mm) in nominal thickness.

TABLE 2 - TENSILE PROPERTIES

Property	Value
Tensile Strength	70 - 100 ksi (482 - 689 MPa)
Minimum Yield Strength at 0.2% Offset	25 ksi (172.4 MPa)
Elongation in 2 inches (50.8 mm) or 4D, minimum	
Nominal Thickness	
Up to 0.025 inch (0.64 mm), excel	40%
0.025 inch (0.64 mm) and over	45%

NOTE: Minimum tensile strength and yield strength values have been taken directly from ASTM A 240 (See 8.4).

3.4 Susceptibility to Intergranular Attack

Specimens from the product shall pass, after sensitization, the intergranular corrosion test performed in accordance with ASTM A 262, Practice E.

3.5 Quality

The product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfection detrimental to usage of the product.

3.6 Tolerances

Shall conform to all applicable requirements of AMS2242.

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 the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing

Shall be in accordance with AMS2371.

4.4 Reports

The vendor of the product shall furnish with each shipment a report showing the following results of tests and relevant information:

4.4.1 For each heat:

Composition

4.4.2 For each lot:

Tensile properties.

4.4.3 The report shall include statement that the product conforms to the other technical requirements.

4.4.4 Purchase order number
Heat and lot numbers
AMS5507G
Size
Quantity.

4.5 Resampling and Retesting

Shall be in accordance with AMS2371.

5. PREPARATION FOR DELIVERY

5.1 Identification

Shall be in accordance with AMS2807.

5.2 Packaging

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.