Designation: A 946 – 95 (Reapproved 2004)

Standard Specification for Chromium, Chromium-Nickel and Silicon Alloy Steel Plate, Sheet, and Strip for Corrosion and Heat Resisting Service[1]

This standard is issued under the fixed designation A 946; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers alloy steels having a chromium content equal to or less than 11.0 % in plate, sheet, strip form for corrosion, and heat-resisting applications.

1.2 Some steels covered by this specification, especially the high silicon containing steels, because of their particular alloy content and specialized properties, may require special care in their fabrication and welding. Specific procedures are of fundamental importance, and it is presupposed that all parameters will be in accordance with approved methods capable of producing the desired properties in the finished fabrication.

1.3 The values stated in inch-pound units or SI units are to be regarded separately as standard. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.4 This specification and the applicable material specifications are expressed in both inch-pound and SI units. However, unless the order specifies the applicable "M" specification designation (SI units), the material shall be furnished in inch-pound units.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 480/A 480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip

E 527 Practice for Numbering Metals and Alloys (UNS)

2.2 *SAE Standard:*[3]

J 1086 Recommended Practice for Numbering Metals and Alloys (UNS)

3. Chemical Composition

3.1 The steel shall conform to the requirements as to chemical composition specified in Table 1, and shall conform to applicable requirements specified in Specification A 480/A 480M.

4. Mechanical Properties

4.1 The material shall conform to the mechanical properties specified in Table 2.

5. General Requirements

5.1 The following requirements for orders for material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 480/A 480M.

5.1.1 Definitions,
5.1.2 General requirements for delivery,
5.1.3 Ordering information,
5.1.4 Process,
5.1.5 Special tests,
5.1.6 Heat treatment,
5.1.7 Dimensions and permissible variations,
5.1.8 Workmanship, finish, and appearance,
5.1.9 Number of tests/test methods,
5.1.10 Specimen preparation,
5.1.11 Retreatment,
5.1.12 Inspection,
5.1.13 Rejection and rehearing,
5.1.14 Material test report,
5.1.15 Certification, and
5.1.16 Packaging, marking, and loading.

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is under the direct responsibility of Subcommittee A01.17 on Flat-Rolled and Wrought Stainless Steel.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

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TABLE 1 Chemical Composition, %[A]

Grade	. . .
UNS Designation[B]	S70003
C	0.02
Mn	2.0
P	0.025
S	0.010
Si	6.5–8.0
Ni	22.0–25.0
Cr	8.0–11.0
Mo	0.50

[A] Maximum, unless range or minimum is indicated.
[B] Designation established in accordance with Practice E 527 and SAE.

TABLE 2 Mechanical Test Requirements

Grade	UNS Designation	Tensile Strength min, ksi (MPa)	0.2 % Y.S. min, ksi (MPa)	Elongation in 2 in. or 50 mm, min, %	Hardness, max[A]	
					Brinell	Rockwell B
. . .	S70003	78 (540)	35 (240)	50	217	95

[A] Either Brinell or Rockwell B is permissible.

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