Designation: A 167 – 99

Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip[1]

This standard is issued under the fixed designation A 167; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers stainless and heat-resisting chromium-nickel steel plate, sheet, and strip.

1.2 The values stated in inch-pound units are to be regarded as the standard.

NOTE 1—Grades that were previously covered in both Specifications A 167 and A 240/A 240M have been removed from this specification and may now be supplied and purchased in compliance with Specification A 240/A 240M. The chemical and mechanical property requirements of these grades were identical in Specifications A 167 and A 240/A 240M at the time of removal from Specification A 167.

2. Referenced Documents

2.1 *ASTM Standards:*

A 240/A240M Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels[2]

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products[2]

A 480/A480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip[2]

E 527 Practice for Numbering Metals and Alloys (UNS)[3]

2.2 *SAE Standard:*

J 1086 Numbering Metals and Alloys (UNS)[4]

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 Heat treatment,
5.1.6 Special tests,
5.1.7 Dimensions and permissible variations,
5.1.8 Workmanship, finish and appearance,
5.1.9 Number of tests,
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.

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

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[2] *Annual Book of ASTM Standards*, Vol 01.03.

[3] *Annual Book of ASTM Standards*, Vol 01.01.

[4] Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

TABLE 1 Chemical Requirements[A]

UNS Designation[B]	Type	Composition, %								
		Carbon	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Other Elements
S30215	302B	0.15	2.00	0.045	0.030	2.00–3.00	17.0–19.0	8.00–10.0	. . .	N 0.10
S30800	308	0.08	2.00	0.045	0.030	0.75	19.0–21.0	10.0–12.0	. . .	. . .
S30900	309	0.20	2.00	0.045	0.030	0.75	22.0–24.0	12.0–15.0	. . .	. . .
S31000	310	0.25	2.00	0.045	0.030	1.50	24.0–26.0	19.0–22.0	. . .	. . .

[A] Maximum unless range or minimum is indicated.
[B] New designation established in accordance with Practice E 527 and SAE J 1086.

TABLE 2 Mechanical Property Requirements

UNS Designation[A]	Type	Tensile Strength, min		Yield Strength, min[B]		Elongation in 2 in. or 50 mm, min, %	Hardness, max[C]	
		ksi	MPa	ksi	MPa		Brinell	Rockwell B
S30215	302B	75	515	30	205	40.0	217	95
S30800	308	75	515	30	205	40.0	183	88
S30900	309	75	515	30	205	40.0	217	95
S31000	310	75	515	30	205	40.0	217	95

[A] New designation established in accordance with Practice E 527 and SAE J 1086.
[B] Yield strength shall be determined by the offset method at 0.2 % in accordance with Test Methods and Definitions A 370. Unless otherwise specified, an alternative method of determining yield strength may be based on a total extension under load of 0.5 %.
[C] Either Brinell or Rockwell B hardness is permissible.