



# Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip<sup>1</sup>

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:<sup>2</sup>

A 240/A 240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

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

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 in the Unified Numbering System (UNS)

### 2.2 SAE Standard:<sup>3</sup>

J 1086 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 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 reheating,
- 5.1.14 Material test report,
- 5.1.15 Certification, and
- 5.1.16 Packaging, marking, and loading.

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

Current edition approved May 1, 2009. Published May 2009. Originally approved in 1935. Last previous edition approved in 2004 as A 167 – 99 (2004).

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

<sup>3</sup> Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.

TABLE 1 Chemical Requirements<sup>A</sup>

| UNS Designation <sup>B</sup> | Type | Composition, % |           |            |        |           |           |           |            | Other Elements |
|------------------------------|------|----------------|-----------|------------|--------|-----------|-----------|-----------|------------|----------------|
|                              |      | Carbon         | Manganese | Phosphorus | Sulfur | Silicon   | Chromium  | Nickel    | Molybdenum |                |
| 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 | ...        | ...            |

<sup>A</sup> Maximum unless range or minimum is indicated.<sup>B</sup> New designation established in accordance with Practice E 527 and SAE J 1086.

TABLE 2 Mechanical Property Requirements

| UNS Designation <sup>A</sup> | Type | Tensile Strength, min |     | Yield Strength, min <sup>B</sup> |     | Elongation in 2 in. or 50 mm, min, % | Hardness, max <sup>C</sup> |            |
|------------------------------|------|-----------------------|-----|----------------------------------|-----|--------------------------------------|----------------------------|------------|
|                              |      | 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         |

<sup>A</sup> New designation established in accordance with Practice E 527 and SAE J 1086.<sup>B</sup> 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 %.<sup>C</sup> Either Brinell or Rockwell B hardness is permissible.

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