

SPECIFICATION FOR LOW AND INTERMEDIATE TENSILE STRENGTH CARBON STEEL PLATES



SA-283/SA-283M



(23)

(Identical with ASTM Specification A283/A283M-13.)

Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

1. Scope

1.1 This specification covers two grades (C and D) of carbon steel plates of structural quality for general application.

1.2 When the steel is to be welded, a welding procedure suitable for the grade of steel and intended use or service is to be utilized. See Appendix X3 of Specification A6/A6M for information on weldability.

1.3 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exactly equivalents; therefore, each system is to be used independently of the other, without combining values in any way.

1.4 For plate produced from coil and furnished without heat treatment or with stress relieving only, the additional requirements, including additional testing requirements and the reporting of additional test results, of Specification A6/A6M apply.

1.5 This specification contains notes or footnotes, or both, that provide explanatory material. Such notes and footnotes, excluding those in tables and figures, do not contain any mandatory requirements.

2. Referenced Documents

- 2.1 *ASTM Standards:*
A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

3. General Requirements for Delivery

3.1 Plates furnished under this specification shall conform to the requirements of the current edition of Specification A6/A6M, for the specific date ordered, unless a conflict exists, in which case this specification shall prevail.

3.2 Coils are excluded from qualification to this specification until they are processed into finished plates. Plates produced from coil means plates that have been cut to individual lengths from a coil. The processor directly controls, or is responsible for, the operations involved in the processing of a coil into finished plates. Such operations include decoiling, leveling, cutting to length, testing, inspection, conditioning, heat treatment (if applicable), packaging, marking, loading for shipment, and certification.

NOTE 1—For plates produced from coil and furnished without heat treatment or with stress relieving only, two test results are to be reported for each qualifying coil. Additional requirements regarding plate produced from coil are described in Specification A6/A6M.

4. Process

4.1 The steel shall be made by one or more of the following processes: open-hearth, basic-oxygen, or electric-furnace.

4.2 The steel shall be killed.

5. Chemical Requirements

5.1 The heat analysis shall conform to the requirements prescribed in Table 1.

5.2 The steel shall conform on product analysis to the requirements prescribed in Table 1, subject to the product analysis tolerances in Specification A6/A6M.

6. Mechanical Properties

6.1 *Tensile Properties:*

6.1.1 Material as represented by the test specimens shall conform to the requirements as to tensile properties prescribed in Table 2.

7. Keywords

- 7.1 carbon steel; plates; structural quality

TABLE 1 Chemical Requirements

Elements	Heat Analysis, %	
	Grade C	Grade D
Carbon, max	0.24	0.27
Manganese, max	0.90	0.90
Phosphorus, max	0.030	0.030
Sulfur, max	0.030	0.030
Silicon		
Plates 1½ in. [40 mm] and under, max	0.40	0.40
Plates over 1½ in. [40 mm]	0.15–0.40	0.15–0.40
Copper, min % when copper is specified	0.20	0.20

TABLE 2 Tensile Requirements^A

	Grade C	Grade D
Tensile strength, ksi [MPa]	55–75 [380–515]	60–80 [415–550]
Yield point, min, ksi [MPa]	30 [205]	33 [230]
Elongation in 8 in. [200 mm], min, % ^B	22	20
Elongation in 2 in. [50 mm], min, % ^B	25	23

^A See Specimen Orientation under the Tension Tests section of Specification A6/A6M.

^B For plates wider than 24 in. [600 mm], the elongation requirement is reduced two percentage points. See elongation requirement adjustments in the Tension Tests section of Specification A6/A6M.

SUPPLEMENTARY REQUIREMENTS

Supplementary requirements shall not apply unless specified in the order or contract. Standardized supplementary requirements for use at the option of the purchaser are listed in Specification A6/A6M. Those that are considered suitable for use with this specification are listed by title:

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| S2. Product Analysis. | S6. Drop Weight Test (for Material 0.625 in. [16 mm] and over in Thickness). |
| S3. Simulated Post-Weld Heat Treatment of Mechanical Test Coupons. | S8. Ultrasonic Examination. |
| S5. Charpy V-Notch Impact Test. | S15. Reduction of Area. |

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