Designation: A 808/A 808M – 00a

Standard Specification for High-Strength, Low-Alloy Carbon, Manganese, Columbium, Vanadium Steel of Structural Quality with Improved Notch Toughness[1]

This standard is issued under the fixed designation A 808/A 808M; 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 hot-rolled, high-strength low-alloy steel plate with improved notch toughness in the as-rolled condition.

1.2 The maximum thickness available is 2½ in. [65 mm].

1.3 When the steel is to be welded, it is presupposed that a welding procedure suitable for the grade of steel and intended use or service will be utilized. See Appendix X3 of Specification A 6/A 6M for information on weldability.

1.4 The values stated in either inch-pound units or SI units are to be regarded as standard. Within the text, the SI units are shown in brackets. 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 this specification.

2. Referenced Documents

2.1 *ASTM Standards:*

A 6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling[2]

A 673/A673M Specification for Sampling Procedure for Impact Testing of Structural Steel[2]

3. General Requirements for Delivery

3.1 Material furnished under this specification shall conform to the requirements of the current edition of Specification A 6/A 6M, for the ordered material, unless a conflict exists in which case this specification shall prevail.

4. Materials and Manufacture

4.1 The steel shall be made to fine grain practice.

5. Chemical Composition

5.1 The heat analysis shall conform to the requirements shown 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 A 6/A 6M.

TABLE 1 Chemical Requirements

Elements	Composition, %
Carbon	0.12 max
Manganese	1.65 max
Phosphorous	0.035 max
Sulfur[A]	0.04 max
Silicon	0.15 to 0.50
Columbium[B]	0.02 to 0.10
Vanadium[B]	0.10 max
Columbium plus Vanadium[B]	0.15 max

[A] May also be produced restricted sulfur 0.010 maximum.

[B] Either columbium, or vanadium, or columbium plus vanadium may be used to the limits shown in this table.

6. Mechanical Properties

6.1 *Tensile Properties*:

6.1.1 The material as represented by the test specimens shall conform to the tensile properties given in Table 2.

TABLE 2 Tensile Requirements[A]

Thickness, in. [mm]	Minimum Yield Point, ksi [MPa]	Tensile Strength, min, ksi [MPa]	Elongation, % min[B]	
			2 in. [50 mm]	8 in. [200 mm]
Up to 1½ [40], incl	50 [345]	65 [450][C]	22	18
Over 1½ to 2 [40 to 50], incl	46 [315]	65 [450]	22	18
Over 2 to 2½ [50 to 65], incl	42 [290]	60 [415]	22	18

[A] See Orientation under the Tension Tests section of Specification A 6/A 6M.

[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 A 6/A 6M.

[C] Prior to A 808/A 808M – 86, the minimum tensile strength was 70 ksi [485 MPa].

6.2 *Charpy V-Notch Impact Properties*:

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.02 on Structural Steel for Bridges, Buildings, Rolling Stock, and Ships.

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[2] *Annual Book of ASTM Standards,* Vol 01.04.

6.2.1 The Charpy V-Notch impact tests shall be conducted in accordance with Specification A 673/A 673M.

6.2.2 The frequency of testing (see Specification A 673/A 673M), the impact test temperature, and the absorbed energy requirement shall be as agreed upon between purchaser and manufacturer. The highest guaranteed absorbed energy and the lowest temperature normally available are shown in Table 3.

TABLE 3 Charpy V-Notch Impact Test Values

Type	Temperature, °F [°C]	Average Absorbed Energy, ft·lbf [J]
Restricted sulfur	−20 [−30]	55 [75]
	−50 [−45]	45 [61]
Regular sulfur	−20 [−30]	40 [54]
	−50 [−45]	30 [41]

7. Keywords

7.1 carbon; columbium; high-strength; low-alloy; manganese; notch toughness; plate; steel; structural steel; vanadium

SUPPLEMENTARY REQUIREMENTS

Supplementary requirements shall not apply unless specified in the purchase order or contract. Standardized supplelmentary requirements for use at the option of the purchaser are listed in Specification A 6/A 6M.