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Standard Specification for Quenched-and-Tempered Carbon and High-Strength Low-Alloy Structural Steel Plates[1]

This standard is issued under the fixed designation A 678/A 678M; 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 quenched-and-tempered carbon steel and high-strength low-alloy steel plates of structural quality for welded, riveted, or bolted construction.

~~1.2When~~1.2 If 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 used.

~~1.3Material~~1.3 Plates under this specification ~~is~~are available in four grades as follows:

Grade	Yield Strength, min, ksi [MPa]	Tensile Strength, ksi [MPa]	Maximum Thickness, in. [mm]
A	50 [345]	70–90 [485–620]	1½ [40]
B	60 [415]	80–100 [550–690]	2½ [65]
C	[A]	[A]	2 [50]
D	75 [515]	90–110 [620–760]	3 [75]

[A]Varies with thickness. See Table 1.

1.4 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 exact equivalents. ~~T~~; therefore, each system ~~must~~ is to 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:*[2]

A 6/A 6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

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

~~E112Test Methods for Determining the Average Grain Size~~ Test Methods and Definitions for Mechanical Testing of Steel Products

3. General Requirements for Delivery—

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

4. Materials and Manufacture

~~3.1The~~4.1 The requirements for fine austenitic grain size in Specification A 6/A 6Mshall be met.

~~4.Heat Treatment~~

~~4.1The material shall be treated by the manufacturer by heating to a temperature that produces an austenitic structure, but not exceeding 1700°F [925°C], holding a sufficient time to attain uniform heat throughout the material, quenching in a suitable medium, and tempering at not less than 1100°F [593°C]. Heat-treating temperatures shall be reported on the mill certificates.~~

5. Heat Treatment

5.1 The plates shall be heat treated by heating to a temperature that produces an austenitic structure, but not exceeding 1700°F

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[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] 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* ~~, Vol 01.04.~~volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard.**