



Designation: A 852/A 852M – 03

# Standard Specification for Quenched and Tempered Low-Alloy Structural Steel Plate with 70 ksi [485 MPa] Minimum Yield Strength to 4 in. [100 mm] Thick<sup>1</sup>

This standard is issued under the fixed designation A 852/A 852M; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

## 1. Scope\*

1.1 This specification covers quenched and tempered high-strength low-alloy structural steel plates for welded, riveted, or bolted construction. It is intended primarily for use in welded bridges and buildings where savings in weight, added durability, and good notch toughness are important. The atmospheric corrosion resistance of this steel in most environments is substantially better than that of carbon structural steels with or without copper addition (see **Note 1**). When properly exposed to the atmosphere, this steel can be used bare (unpainted) for many applications. Welding technique is of fundamental importance, and it is presupposed that the welding procedure will be suitable for the steel and the intended service. This specification is limited to material up to 4 in. [100 mm], inclusive, in thickness. See Appendix X3 of Specification A 6/A 6M for information on weldability.

**NOTE 1**—For methods of estimating the atmospheric corrosion resistance of low-alloy steels, see Guide **G 101**.

1.2 Plates produced under this specification are impact tested at a temperature not higher than 50°F [10°C].

1.3 The values stated in 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 item 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/A 6M** Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling<sup>2</sup>

**A 370** Test Methods and Definitions for Mechanical Testing of Steel Products<sup>3</sup>

<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 A01.02 on Structural Steel for Bridges, Buildings, Rolling Stock and Ships.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 01.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 01.03.

**A 673/A 673M** Specification for Sampling Procedure for Impact Testing of Structural Steel<sup>2</sup>

**G 101** Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels<sup>4</sup>

## 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, and the fine austenitic grain size requirements of Specification A 6/A 6M shall be met.

## 5. Heat Treatment

5.1 The material shall be heat treated by the manufacturer by heating to a temperature that produces an austenitic structure, but not less than 1650°F [900°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 test certificates.

## 6. Chemical Composition

6.1 The heat analysis shall conform to the requirement prescribed in **Table 1**.

6.2 When product analysis is required, 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.

6.3 The atmospheric corrosion-resistance index calculated on the basis of the heat analysis of the steel, as described in Guide **G 101**—Predictive Method Based on the Data of Larabee and Coburn, shall be 6.0 or higher.

**NOTE 2**—The user is cautioned that the Guide **G 101** (Predictive Method Based on the Data of Larabee and Coburn) for calculation of an atmospheric corrosion-resistance index has only been verified for the

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 03.02.

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