



Designation: A 871/A 871M – 00a

Standard Specification for High-Strength Low-Alloy Structural Steel Plate With Atmospheric Corrosion Resistance¹

This standard is issued under the fixed designation A 871/A 871M; 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 high-strength low-alloy steel plate intended for use in tubular structures and poles or in other suitable applications. Two grades, 60 and 65, may be provided as-rolled, normalized or quenched and tempered as required to meet the specified mechanical requirements.

1.2 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.

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

1.3 When the steel is to be welded, it is presupposed that welding procedures 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 Supplementary requirements in accordance with Specification A 6/A 6M are available, but shall apply only when specified by the purchaser at time of ordering.

1.5 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 the 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 Piling²

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products³

A 673/A 673M Specification for Sampling Procedure for Impact Testing of Structural Steel²

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.

³ Annual Book of ASTM Standards, Vol 01.03.

G 101 Guide for Estimating Atmospheric Corrosion Resistance of Low-Alloy Steels⁴

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. Heat Treatment

5.1 Grade 65 in thicknesses of $\frac{3}{16}$ to $\frac{3}{4}$ in. [5 to 20 mm] and Grade 60 in thicknesses of $\frac{3}{16}$ to $1\frac{3}{8}$ in. [5 to 35 mm] are normally furnished in the as-rolled condition. The manufacturer has the option to heat treat this material to meet the mechanical requirements of Section 7. Quenched and tempered material shall be heat treated by heating to 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 [595°C]. Heat treating temperatures shall be reported on the test certificates.

5.2 The maximum thickness of plates is limited only by the capacity of the composition to meet the specified mechanical requirements. The individual manufacturer shall be contacted to determine the actual maximum thickness for each grade and heat treatment method.

6. Chemical Requirements

6.1 The heat analysis shall conform to the chemical requirements of Table 1.

6.2 The steel shall conform on product analysis to the chemical requirements of 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 for the steel, as described in Guide G 101, shall be 6.0 or higher.

NOTE 2—The user is cautioned that the Guide G 101 predictive equation for calculation of an atmospheric corrosion-resistance index has only been verified for the composition limits stated in that guide.

6.4 When required, the manufacturer shall supply evidence

⁴ Annual Book of ASTM Standards, Vol 03.02.