Designation: A 945/A 945M – 00

Standard Specification for High-Strength Low-Alloy Structural Steel Plate with Low Carbon and Restricted Sulfur for Improved Weldability, Formability, and Toughness[1]

This standard is issued under the fixed designation A 945/A 945M; 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 structural steel plate intended for use in welded construction of naval ships where a savings in weight is important. Steels that conform to this specification offer improved weldability, formability, and toughness resulting from the specified alloying elements with limitations on carbon, sulfur, and residual element contents. Two grades, 50 and 65, may be provided as-rolled, control-rolled, thermo-mechanical control processed (including accelerated cooling), normalized, or quenched and tempered as required to meet the specified mechanical requirements.

1.2 The maximum thickness or weight [mass] of plates shall be as follows:

Grade	Plate thickness, max, in. [mm]	Plate weight [mass], max, lb/ft^2[kg/m^2]
50	2 [50]	81.7 [393]
65	1¼ [32]	51.0 [251]

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.

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 shall 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 370 Test Methods and Definitions for Mechanical Testing of Steel Products[3]

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

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment[4]

E 208 Test Method for Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels[5]

3. General Requirements for Delivery

3.1 Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 6/A 6M.

3.2 When specified by the purchaser, materials ordered under this specification shall be prepared for shipment in accordance with the requirements of the current edition of Specification A 700.

4. Materials and Manufacture

4.1 The steel shall be made to fine grain practice.

4.2 The plates after finish-rolling shall be in one of the following conditions: as-rolled, control-rolled, or thermo-mechanical control processed (including accelerated cooling).

5. Heat Treatment

5.1 Grade 50 plates and Grade 65 plates are normally furnished without heat treatment. The manufacturer has the option to normalize or quench and temper this material to meet the mechanical requirements of Section 7 provided the heat treatment is reported on the test report.

6. Chemical Composition

6.1 The heat analysis shall conform to the chemical composition requirements listed in Table 1.

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is under 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.

[4] *Annual Book of ASTM Standards*, Vol 01.05.

[5] *Annual Book of ASTM Standards*, Vol 03.01.

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