



Designation: A537/A537M – 13 A537/A537M – 13 (Reapproved 2019)

Standard Specification for Pressure Vessel Plates, Heat-Treated, Carbon-Manganese-Silicon Steel¹

This standard is issued under the fixed designation A537/A537M; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*Scope

1.1 This specification² covers heat-treated carbon-manganese-silicon steel plates intended for fusion welded pressure vessels and structures.

1.2 Plates furnished under this specification are available in the following three classes:

| Class | Heat Treatment | Thickness, — | Yield Strength, min, ksi [MPa] | Tensile Strength, min, ksi [MPa] |
|-------|-----------------------|---|--------------------------------|----------------------------------|
| 1 | Normalized | 2½ in. and under [65 mm and under] | 50 [345] | 70 [485] |
| 2 | Quenched and tempered | Over 2½ to 4 in. [Over 65 to 100 mm] | 45 [310] | 65 [450] |
| 3 | Quenched and tempered | 2½ in. and under [65 mm and under] | 60 [415] | 80 [550] |
| - | - | Over 2½ to 4 in. [Over 65 to 100 mm] | 55 [380] | 75 [515] |
| - | - | Over 4 to 6 in. [Over 100 to 150 mm] | 46 [315] | 70 [485] |
| 1 | Normalized | 2½ in. and under [65 mm and under] | 50 [345] | 70 [485] |

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 A01.11 on Steel Plates for Boilers and Pressure Vessels.

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² For ASME Boiler and Pressure Vessel Code applications, see related Specification SA-537/SA-537M in Section II of that Code.

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

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| 2 | Quenched and tempered | 2½ in. and under [65 mm and under] | 60 [415] | 80 [550] |
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| 3 | Quenched and tempered | 2½ in. and under [65 mm and under] | 55 [380] | 80 [550] |
| | | Over 2½ to 4 in. [Over 65 to 100 mm] | 50 [345] | 75 [515] |
| - | - | Over 4 to 6 in. [Over 100 to 150 mm] | 40 [275] | 70 [485] |

1.3 The maximum thickness of plates furnished under this specification is 4 in. [100 mm] for Class 1 and 6 in. [150 mm] for Class 2 and Class 3.

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; therefore, each system is to be used independently of the other without combining values in any way.

1.5 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:³

[A20/A20M](#) Specification for General Requirements for Steel Plates for Pressure Vessels

[A435/A435M](#) Specification for Straight-Beam Ultrasonic Examination of Steel Plates

[A577/A577M](#) Specification for Ultrasonic Angle-Beam Examination of Steel Plates

[A578/A578M](#) Specification for Straight-Beam Ultrasonic Examination of Rolled Steel Plates for Special Applications

3. General Requirements and Ordering Information

3.1 Plates furnished supplied to this material specification shall conform to Specification [A20/A20M](#). These requirements outline the testing and retesting methods and procedures; permissible variations in dimensions; and mass, quality, and repair of defects, marking, loading, and ordering information.

3.2 In addition to the basic requirements of this specification, certain supplementary requirements are available when additional control, testing, or examination is required to meet end use requirements. The purchaser is referred to the listed supplementary requirements in this specification and to the detailed requirements in Specification [A20/A20M](#).

3.3 If the requirements of this specification are in conflict with the requirements of Specification [A20/A20M](#), the requirements of this specification shall prevail.

4. Manufacture

4.1 *Steelmaking Practice*—The steel shall be killed and conform to the fine austenitic grain size requirement of Specification [A20/A20M](#).

³ 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* volume information, refer to the standard's Document Summary page on the ASTM website.