



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

This standard is issued under the fixed designation A 537/A 537M; 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 Department of Defense.

1. Scope

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

1.2 Material under this specification is 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]
		Over 2½ to 4 in. [Over 65 to 100 mm]	45 [310]	65 [450]
		Over 4 to 6 in. [Over 100 to 150 mm]	46 [315]	70 [485]
2	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]
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 This specification is under the jurisdiction of ASTM Committee A-1 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.

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 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 20/A20M Specification for General Requirements for Steel Plates for Pressure Vessels³

A 435/A435M Specification for Straight-Beam Ultrasonic Examination of Steel Plates³

A 577/A577M Specification for Ultrasonic Angle-Beam Examination of Steel Plates³

A 578/A578M Specification for Straight-Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications³

3. General Requirements and Ordering Information

3.1 Material supplied to this material specification shall conform to Specification A 20/A 20M. These requirements outline the testing and retesting methods and procedures, permissible variations in dimensions, and mass, quality and repair of defects, marking, loading, etc.

3.2 Specification A 20/A 20M also establishes the rules for the ordering information which should be complied with when purchasing material to this specification.

3.3 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. These include:

- 3.3.1 Vacuum treatment,
- 3.3.2 Additional or special tension testing,
- 3.3.3 Impact testing, and
- 3.3.4 Nondestructive examination.

³ Annual Book of ASTM Standards, Vol 01.04.