



Standard Specification for Pressure-Vessel Plates, Quenched-and-Tempered, Manganese-Chromium-Molybdenum-Silicon Zirconium Alloy Steel¹

This standard is issued under the fixed designation A 782/A 782M; 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 quenched and tempered alloy steel plates intended for use in fusion welded pressure vessels.

1.2 Plates under this specification are available in three classes having different strength levels as follows:

Class	Yield Strength, min, ksi [MPa]	Tensile Strength, min, ksi [MPa]
1	80 [550]	97 [670]
2	90 [620]	107 [740]
3	100 [690]	115 [795]

1.3 The thickness of plates under this specification is limited to a maximum of 2 in. [50 mm].

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/A 20M Specification for General Requirements for Steel Plates for Pressure Vessels²

A 435/A 435M Specification for Straight-Beam Ultrasonic Examination of Steel Plates²

A 577/A 577M Specification for Ultrasonic Angle-Beam Examination of Steel Plates²

A 578/A 578M Specification for Straight-Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications²

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 Annual Book of ASTM Standards, Vol 01.04.

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 that 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. The purchaser is referred to the listed supplementary requirements in this specification and to the detailed requirements in Specification A 20/A 20M.

3.4 If the requirements of this specification are in conflict with the requirements of Specification A 20/A 20M, the requirements of this specification shall prevail.

4. Manufacture

4.1 *Steelmaking Practice*—The steel shall be killed and shall conform to the fine austenitic grain size requirement of Specification A 20/A 20M.

5. Heat Treatment

5.1 All plates shall be heat treated by the material manufacturer by heating to not less than 1650°F [900°C], quenching in water or oil and tempering at not less than 1150°F [620°C] for not less than ½ h.

6. Chemical Requirements

6.1 The steel shall conform to the chemical requirements shown in Table 1.

7. Mechanical Requirements

7.1 Tension Tests:

7.1.1 *Requirements*—The material as represented by the tension-test specimens shall conform to the requirements shown in Table 2.