



Designation: A 553/A 553M – 95 (Reapproved 2000)

Standard Specification for Pressure Vessel Plates, Alloy Steel, Quenched and Tempered 8 and 9 Percent Nickel¹

This standard is issued under the fixed designation A 553/A 553M; 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 specification² covers 8 and 9 % nickel alloy steel plates for use in the water quenched and tempered condition intended for the fabrication of welded pressure vessels.

1.2 Material under this specification is available in two types having different chemical composition as follows:

Type	Nominal Nickel Content, %
I	9
II	8

1.3 Plates produced under this specification are subject to impact testing at -320°F [-195°C] for Type I, and -275°F [-170°C] for Type II or at such other temperatures as are agreed upon.

1.4 The maximum thickness of plates is limited only by the capacity of the material to meet the specified mechanical property requirements; however, current mill practice normally limits this material to 2 in. [50 mm] max.

1.5 This material is susceptible to magnetization. Use of magnets in handling after heat treatment should be avoided if residual magnetism would be detrimental to subsequent fabrication or service.

1.6 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 Vessels³

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

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

A 578/A 578M 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.

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

3.5 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.

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-553/SA-553M in Section II of that Code.

³ *Annual Book of ASTM Standards*, Vol 01.04.