



# Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service<sup>1</sup>

This standard is issued under the fixed designation A 333/A 333M; 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 specification<sup>2</sup> covers nominal (average) wall seamless and welded carbon and alloy steel pipe intended for use at low temperatures. Several grades of ferritic steel are included as listed in Table 1. Some product sizes may not be available under this specification because heavier wall thicknesses have an adverse affect on low-temperature impact properties.

1.2 Supplementary Requirement S1 of an optional nature is provided. This shall apply only when specified by the purchaser.

1.3 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. The inch-pound units shall apply unless the “M” designation of this specification is specified in the order.

NOTE 1—The dimensionless designator NPS (nominal pipe size) has been substituted in this standard for such traditional terms as “nominal diameter,” “size,” and “nominal size.”

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>3</sup>

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products

A 999/A 999M Specification for General Requirements for Alloy and Stainless Steel Pipe

A 671 Specification for Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.10 on Stainless and Alloy Steel Tubular Products.

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<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications see related Specification SA-333 in Section II of that Code.

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

E 23 Test Methods for Notched Bar Impact Testing of Metallic Materials

## 3. Ordering Information

3.1 Orders for material under this specification should include the following, as required, to describe the material adequately:

3.1.1 Quantity (feet, centimetres, or number of lengths),

3.1.2 Name of material (seamless or welded pipe),

3.1.3 Grade (Table 1),

3.1.4 Size (NPS or outside diameter and schedule number of average wall thickness),

3.1.5 Lengths (specific or random) (Section 9), (see the Permissible Variations in Length section of Specification A 999/A 999M),

3.1.6 End finish (see the Ends section of Specification A 999/A 999M),

3.1.7 Optional requirements, (see the Heat Analysis requirement in the Chemical Composition section of A 999/A 999M, the Repair by Welding section, and the section on Nondestructive Test Requirements),

3.1.8 Test report required, (see the Certification section of Specification A 999/A 999M),

3.1.9 Specification designation, and

3.1.10 Special requirements or exceptions to this specification.

## 4. Materials and Manufacture

4.1 *Manufacture*—The pipe shall be made by the seamless or welding process with the addition of no filler metal in the welding operation. Grade 4 shall be made by the seamless process.

NOTE 2—For electric-fusion-welded pipe, with filler metal added, see Specification A 671.

### 4.2 Heat Treatment:

4.2.1 All seamless and welded pipe, other than Grades 8 and 11, shall be treated to control their microstructure in accordance with one of the following methods:

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