



# Standard Specification for Steel Castings, Alloy, Specially Heat-Treated, for Pressure-Containing Parts, Suitable for High-Temperature Service<sup>1</sup>

This standard is issued under the fixed designation A 389/A389M; 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 alloy steel castings, which have been subjected to special heat treatment, for valves, flanges, fittings, and other pressure-containing parts (Note 1) intended primarily for high-temperature service.

1.2 The high-temperature properties of the materials covered in this specification are dependent upon special heat treatment that is required. Although the high-temperature properties are not specified, they are implied by control of chemistry, heat treatment, and room-temperature properties.

1.3 Two grades of ferritic alloy steel are covered (Note 2). Selection will depend on the design and service conditions, mechanical properties, and high-temperature characteristics.

NOTE 1—Carbon steel castings for pressure-containing parts are covered by Specification A 216/A 216M. Alloy steel castings are covered by Specification A 217/A 217M.

NOTE 2—The grades covered by this specification represent materials that are generally suitable for assembly with other castings or wrought steel parts by fusion welding. It is not intended to imply that these grades possess equal degrees of weldability; therefore, it is the responsibility of the purchaser to establish for himself a suitable welding technique. Since these grades possess varying degrees of suitability for resistance to oxidation and for high-temperature service, it is also the responsibility of the purchaser to determine which grade shall be furnished, due consideration being given to the requirements of the applicable construction codes.

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 216/A216M Specification for Steel Castings, Carbon,

<sup>1</sup> 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 A01.18 on Castings.

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Suitable for Fusion Welding, for High-Temperature Service<sup>2</sup>

A 217/A217M Specification for Steel Castings, Martensitic Stainless and Alloy, for Pressure-Containing Parts, Suitable for High-Temperature Service<sup>2</sup>

A 488/A488M Practice for Steel Castings, Welding, Qualifications of Procedures and Personnel<sup>2</sup>

A 703/A703M Specification for Steel Castings, General Requirements, for Pressure-Containing Parts<sup>2</sup>

2.2 *Manufacturers' Standardization Society of the Valve and Fittings Industry Standard:*

SP-55 Quality Standard for Steel Castings for Valves, Flanges, and Fittings and other Components (Visual Method)<sup>3</sup>

## 3. General Conditions for Delivery

3.1 Material furnished to this specification shall conform to the requirements of Specification A 703/A 703M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of A 703/A 703M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and A 703/A 703M, this specification shall prevail.

## 4. Ordering Information

4.1 The inquiry and order should include or indicate the following:

4.1.1 A description of the casting by pattern number or drawing (dimensional tolerances shall be included on the casting drawing),

4.1.2 Grade of steel,

4.1.3 Options in the specification, and

4.1.4 The supplementary requirements desired including the standards of acceptance.

## 5. Heat Treatment

5.1 All castings shall receive a heat treatment proper to their design and chemical composition. Heat treatment shall be performed before machining except in instances when reheat

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 01.02.

<sup>3</sup> Available from the Manufacturers' Standardization Society of the Valve and Fittings Industry, 127 Park St., N.E. Vienna, VA 22180.