



# Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service<sup>1</sup>

This standard is issued under the fixed designation A 216/A216M; 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 ( $\epsilon$ ) 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 carbon steel castings for valves, flanges, fittings, or other pressure-containing parts for high-temperature service and of quality suitable for assembly with other castings or wrought-steel parts by fusion welding.

1.2 Three grades, WCA, WCB, and WCC, are covered in this specification. Selection will depend upon design and service conditions, mechanical properties, and the high temperature characteristics.

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.

## 2. Referenced Documents

### 2.1 ASTM Standards:

- A 488/A488M Practice for Steel Castings, Welding, Qualifications of Procedures and Personnel<sup>3</sup>
  - A 703/A703M Specification for Steel Castings, General Requirements, for Pressure-Containing Parts<sup>3</sup>
  - E 165 Test Method for Liquid Penetrant Examination<sup>4</sup>
  - E 709 Guide for Magnetic Particle Examination<sup>4</sup>
- ### 2.2 Manufacturers' Standardization Society of the Valve and Fittings Industry Standard:
- SP 55 Steel Castings for Valve, Flanges, and Fittings, and Other Components (Visual Method)<sup>5</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 Specification A 703/A 703M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification 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.
- 5.2 Castings shall be furnished in the annealed, or normalized, or normalized and tempered condition unless Supplementary Requirement S15 is specified.
- 5.3 Heat treatment shall be performed after castings have been allowed to cool below the transformation range.

## 6. Temperature Control

6.1 Furnace temperatures for heat treating shall be effectively controlled by pyrometer.

## 7. Chemical Composition

7.1 The steel shall conform to the requirements as to chemical composition prescribed in Table 1.

<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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<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications, see related Specification SA-216/SA-216M in Section II of that code.

<sup>3</sup> Annual Book of ASTM Standards, Vol 01.02.

<sup>4</sup> Annual Book of ASTM Standards, Vol 03.03.

<sup>5</sup> Available from Manufacturers' Standardization Society of the Valve and Fittings Industry, 127 Park St., N.E. Vienna, VA 22180.