



Standard Specification for Steel Castings, High Strength, for Structural Purposes¹

This standard is issued under the fixed designation A 148/A 148M; 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 covers carbon steel, alloy steel, and martensitic stainless steel castings that are to be subjected to higher mechanical stresses than those covered in Specification A 27/A 27M.

1.2 Several grades of steel castings are covered, having the chemical composition and mechanical properties prescribed in Table 1 and Table 2.

1.3 The values stated in 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 27/A 27M Specification for Steel Castings, Carbon, for General Application²

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products³

A 781/A 781M Specification for Castings, Steel and Alloy, Common Requirements for General Industrial Use²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁴

3. General Conditions for Delivery

3.1 Material furnished to this specification shall conform to the requirements of Specification A 781/A 781M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification A 781/A 781M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification A 781/

TABLE 1 Chemical Requirements

Grade	Composition, %	
	Sulfur, max	Phosphorus, max
80-40 [550-275]	0.06	0.05
80-50 [550-345]	0.06	0.05
90-60 [620-415]	0.06	0.05
105-85 [725-585]	0.06	0.05
115-95 [795-655]	0.06	0.05
130-115 [895-795]	0.06	0.05
135-125 [930-860]	0.06	0.05
150-135 [1035-930]	0.06	0.05
160-145 [1105-1000]	0.06	0.05
165-150 [1140-1035]	0.020	0.020
165-150L [1140-1035L]	0.020	0.020
210-180 [1450-1240]	0.020	0.020
210-180L [1450-1240L]	0.020	0.020
260-210 [1795-1450]	0.020	0.020
260-210L [1795-1450L]	0.020	0.020

A 781M, 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 be heat treated either by full annealing, normalizing, normalizing and tempering, or quenching and tempering. Unless otherwise specified in the inquiry, contract, or order, the castings may be heat treated by any of these heat treatments or combination of these heat treatments at the option of the manufacturer.

5.2 Heat treatment shall be performed after the castings have been allowed to cool below the transformation range.

6. Temperature Control

6.1 Furnace temperatures for heat-treating shall be regulated

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.18 on Castings.

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² Annual Book of ASTM Standards, Vol 01.02.

³ Annual Book of ASTM Standards, Vol 01.03.

⁴ Annual Book of ASTM Standards, Vol 14.02.