



Designation: A1002 – 99 (Reapproved 2009)

Standard Specification for Castings, Nickel-Aluminum Ordered Alloy¹

This standard is issued under the fixed designation A1002; 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 nickel-aluminum ordered alloy castings intended for heat-resisting and elevated-temperature applications such as heat-resistant alloy structural members, containers, supports, hangers, spacers, and so forth, in environments up to 2300°F (1260°C).

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.2.1 The SI gage length for tension test specimens is in brackets and is considered standard.

2. Referenced Documents

2.1 *ASTM Standards*:²

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A781/A781M Specification for Castings, Steel and Alloy, Common Requirements, for General Industrial Use

3. General Conditions for Delivery

3.1 Material furnished to this specification shall conform to the requirements of Specification A781/A781M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification A781/A781M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification A781/A781M, this specification shall prevail.

4. Ordering Information

4.1 The purchaser should specify the alloy grade desired and whether tension or impact tests are required, and shall include standards of acceptance where necessary.

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 For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

5. Materials and Manufacture

5.1 *Process*—The alloy for the castings shall be by any method unless otherwise agreed upon between the manufacturer and the purchaser. Casting may be poured in sand, shell, investment, or centrifugal molds.

5.2 *Heat Treatment*—Castings may be shipped in the as-cast condition. If heat treatment is required the treatment shall be established by mutual consent between the manufacturer and the purchaser and shall be so specified in the inquiry, purchase order, or contract.

6. Chemical Composition

6.1 The castings shall conform to the requirements as to chemical composition prescribed in Table 1.

7. Mechanical Properties

7.1 Mechanical properties are not required unless specified in the purchase order.

7.2 *Tensile properties*, if required, of the alloy used for the castings shall conform to the requirements prescribed in the purchase order.

7.3 *Impact properties*, if required, of the alloy used for the castings shall conform to the requirements prescribed in the purchase order.

8. Test Specimens

8.1 Test specimens, if required, shall be prepared in accordance with Test Methods and Definitions A370. Test bars shall be poured in special blocks from the same heat as the castings represented. Test bars, if required, shall be furnished in sufficient number to furnish specimens for the tests required in Section 9.

8.2 The test coupons shall be cast from the same melt from which the castings they represent are poured, and shall represent the full melting practice. Chemical composition of the test coupons shall conform to the requirements prescribed in Table 1.

8.3 Tension test specimens shall be machined to the form and dimensions of the standard 2-in. [50-mm] gage length specimen shown in Fig. 4 of Test Methods and Definitions A370.