



Designation: B 512 – 04

Standard Specification for Nickel-Chromium-Silicon Alloy (UNS N08330) Billets and Bars¹

This standard is issued under the fixed designation B 512; 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 wrought heat-resisting alloy UNS N08330 in the form of billets and bars only for reforging.

1.2 The values stated in inch-pound units are to be regarded as the standard. The metric equivalent of the inch-pound units may be approximate.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

B 880 Specification for General Requirements for Chemical Check Analysis Limits for Nickel, Nickel Alloys and Cobalt Alloys

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

E 1473 Test Methods for Chemical Analysis of Nickel, Cobalt, and High Temperature Alloys

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *bar, n*—material of round solid section with uniform cross section along its whole length, furnished in straight lengths.

3.1.2 *billet, n*—material of solid section with uniform cross section along its whole length, furnished in straight lengths. The typical section is round-cornered square with dimensions

typically in the range 1½ by 1½ in. (38 by 38 mm) to 10 by 10 in. (254 by 254 mm).

4. Ordering Information

4.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Examples of such requirements include, but are not limited to, the following:

4.1.1 Alloy name or UNS Number.

4.1.2 ASTM designation and year of issue.

4.1.3 Section (round, round-cornered square, etc.).

4.1.4 Dimensions (diameter or thickness, width and length).

4.1.5 Quantity (weight or number of pieces).

4.1.6 *Certification*— State if certification is required (Section 12).

4.1.7 *Samples for Product (Check) Analysis*—State whether samples for product (check) analysis should be furnished.

4.1.8 *Purchaser Inspection*—If a purchaser wishes to witness tests or inspections of material at place of manufacture, the purchase order must so state indicating which test or inspections are to be witnessed.

5. Chemical Composition

5.1 The material shall conform to the requirements as to chemical composition specified in Table 1.

5.2 If a product (check) analysis is performed by the purchaser, the material shall conform to the chemistry of Table 1, subject to the tolerances provided in Specification B 880.

TABLE 1 Chemical Requirements

Element	Composition Limits, %
Carbon	0.08 max
Manganese	2.00 max
Phosphorus	0.03 max
Sulfur	0.03 max
Silicon	0.75–1.50
Chromium	17.0–20.0
Nickel	34.0–37.0
Copper	1.00 max
Lead	0.005 max
Tin	0.025 max
Iron	remainder ^A

^A Element shall be determined arithmetically by difference.

¹ This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.07 on Refined Nickel and Cobalt and Their Alloys.

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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.