



Standard Specification for Nickel-Iron-Chromium-Silicon Alloy Bars and Shapes¹

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1. Scope

1.1 This specification² covers wrought alloys UNS N08330 and UNS N08332 in the form of hot-finished and cold-finished bar and shapes intended for heat-resisting applications and general corrosive service.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

B 536 Specification for Nickel-Iron-Chromium-Silicon Alloys (UNS N08330 and N08332) Plate, Sheet, and Strip³

B 880 Specification for General Requirements for Chemical Check Analysis Limits for Nickel, Nickel Alloys and Cobalt Alloys³

E 8 Test Methods for Tension Testing of Metallic Materials⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁵

E 112 Test Methods for Determining the Average Grain Size⁴

E 1473 Test Methods for Chemical Analysis of Nickel, Cobalt, and High-Temperature Alloys⁶

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *bar*—material round, rectangular, hexagonal, octagonal, or square solid section, furnished in straight lengths.

3.1.2 *shapes*—material of solid section in such forms as angles, channels, tees, I-beams, and four-fluted bars.

4. Ordering Information

4.1 It is the responsibility of the purchaser to specify all requirements that are necessary for the safe and satisfactory

performance of material ordered under this specification. Examples of such requirements include, but are not limited to the following:

4.1.1 Alloy (Table 1),

4.1.2 Quantity (weight or number of pieces),

4.1.3 ASTM designation and year of issue,

4.1.4 Section (round, square, I-beam, etc.),

4.1.5 Dimension, including length,

4.1.6 *Certification*—State if certification is required.

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

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

5. Materials and Manufacture

5.1 All material shall be furnished in the heat-treated condition, except that cold-drawn hexagons may be given a cold-draw sizing pass subsequent to the final heat treatment.

NOTE 1—Hot-finished rectangular bar in widths 10 in. (254 mm) and under may be furnished as hot-finished plate with sheared or cut edges in accordance with Specification B 536.

6. Chemical Composition

6.1 The material shall conform to the requirements as to chemical composition specified in Table 2.

6.2 If a product (check) analysis is performed by the purchaser, the material shall conform to the product (check) analysis variations per B 880.

7. Mechanical and Other Properties

7.1 The mechanical properties of the material at room temperature shall conform to those shown in Table 1.

7.2 *Grain Size*—Annealed alloy UNS N08332 shall conform to an average grain size of ASTM No. 5 or coarser.

7.3 *Annealing Temperature*—Alloy UNS N08330 shall be annealed at 1900°F (1040°C) minimum. Alloy UNS N08332 shall be annealed at 2100°F (1150°C) minimum.

8. Dimensions and Permissible Variations

8.1 All bars and shapes shall conform to the permissible variations in dimensions specified in Tables 3-14, inclusive.

¹ This specification is under the jurisdiction of ASTM Committee B-2 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 ASME Boiler and Pressure Vessel Code applications, see related Specification SB-511 in Section II of that Code.

³ *Annual Book of ASTM Standards*, Vol 02.04.

⁴ *Annual Book of ASTM Standards*, Vol 03.01.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.

⁶ *Annual Book of ASTM Standards*, Vol 03.06.