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Designation: ~~B536 – 07~~ B536 – 07 (Reapproved 2013)

Standard Specification for Nickel-Iron-Chromium-Silicon Alloys (UNS N08330 and N08332) Plate, Sheet, and Strip[1]

This standard is issued under the fixed designation B536; 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-iron-chromium silicon alloys (UNS N08330 and UNS N08332)* plate, sheet, and strip 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.~~mathematical conversions to SI units that are provided for information only and are not considered standard.

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 (MSDS) 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]

B899 Terminology Relating to Non-ferrous Metals and Alloys

B906 Specification for General Requirements for Flat-Rolled Nickel and Nickel Alloys Plate, Sheet, and Strip

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3. Terminology

3.1 Terms shall be defined in accordance with Terminology B899.

4. General Requirements

4.1 Material furnished under this specification shall conform to the requirements of Specification B906 unless otherwise provided herein. In the case of conflict, the requirements of this specification shall take precedence.

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5. Material and Manufacture

5.1 *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.

6. Chemical Composition

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

7. Mechanical and Other Properties

7.1 The tensile properties of the material at room temperature shall conform to those shown in Table 2.

7.2 *Grain Size*—Annealed alloy UNS N08332 shall conform to an average grain size of ASTM No. 5 or coarser. There are no grain size requirements for UNS N08330.

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[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.

Current edition approved ~~May 1, 2007~~Feb. 1, 2013. Published ~~June 2007~~February 2013. Originally approved in 1970. Last previous edition approved in ~~2002~~2007 as ~~B536 – 02.~~B536 – 07. DOI: ~~10.1520/B0536-07.~~10.1520/B0536-07R13.

* New designation established in accordance with ASTM E527 and SAE J1086, Practice for Numbering Metals and Alloys (UNS).

[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.

***A Summary of Changes section appears at the end of this standard**

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TABLE 1 Chemical Requirements

Element	Composition Limits, %
C	...[A]
Mn	2.00 max
P	0.03 max
S	0.03 max
Si	0.75–1.50
Cr	17.0–20.0
Ni	34.0–37.0
Cu	1.00 max
Pb	0.005 max
Sn	0.025 max
Fe	remainder[B]

[A] Alloy UNS N08330: 0.08 max
Alloy UNS N08332: 0.05–0.10
[B] Element shall be determined arithmetically by difference.

TABLE 2 Mechanical Properties

Alloy	Condition	Tensile Strength, min, psi (MPa)	Yield Strength, 0.2 % offset, min, psi (MPa)	Elongation in 2 in. or 50 mm, or 4D, min, %	Hardness[A]
UNS N08330	annealed	70 000 (483)	30 000 (207)	30	70 to 90 HRB
UNS N08332	annealed	67 000 (462)	27 000 (186)	30	65 to 88 HRB

[A] Hardness values are informative only and not to be constructed as the basis for acceptance.

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8. Permissible Variations in Dimensions and Weight

8.1 The tolerances and permissible variations provided in Annex A1, Permissible Variations in Dimensions, Etc.–Inch-Pound (SI) Units, of Specification B906 shall apply.

9. Keywords

9.1 N08330; N08332; plate; sheet; strip

ASTM B536-07(2013)
https://standards.iteh.ai/catalog/standards/sist/10f360c1-7719-4845-8390-b2a2e25b2729/astm-b536-072013

APPENDIX

(Nonmandatory Information)

X1. FINISHES

X1.1 *Scope*—This appendix lists the finishes in which plate, sheet, and strip are normally supplied. These are subject to change and the manufacturer should be consulted for the latest information available.

X1.2 *Sheet*—The various types of finish procurable on sheet products are:

X1.2.1 *No. 1 Finish*—Hot-rolled, annealed, and descaled.

X1.2.2 *No. 2D Finish*—Dull, cold-rolled finish.

X1.2.3 *No. 2B Finish*—Bright, cold-rolled finish.

X1.2.3.1 *Bright-Annealed Finish*—A bright cold-rolled finish retained by final annealing in a controlled atmosphere furnace.

NOTE X1.1—Explanation of Finish:
No. 1—Produced on hand sheet mills by hot rolling to specified thicknesses followed by annealing and descaling. Generally used in industrial applications, such as for heat or corrosion resistance, where smoothness and uniformity of finish is not of particular importance.
No. 2D—Produced on either hand sheet mills or continuous mills by cold rolling to the specified thickness, annealing, and descaling. The dull finish may result from the descaling or pickling operation or may be developed by a final light cold-rolled pass on dull rolls. The dull finish is favorable for