



Designation: ~~B463-99~~ Designation: **B 463 – 04 (Reapproved 2009)**

Standard Specification for UNS N08020, UNS N08026, and UNS N08024 Alloy Plate, Sheet, and Strip¹

This standard is issued under the fixed designation B 463; 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 specification² covers UNS N08020, UNS N08026,* and UNS N08024 alloy plate, sheet, and strip.

~~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.~~

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.

1.3 *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:*³

A 262 ~~Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels~~

B880 ~~Specification for General Requirements for Chemical Check Analysis Limits for Nickel, Nickel Alloys and Cobalt Alloys~~

~~Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels~~

E8 ~~Test Methods for Tension Testing of Metallic Materials~~

E10 ~~Test Method for Brinell Hardness of Metallic Materials~~⁵

E18 ~~Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials~~⁵

E29 ~~Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications~~

E140 ~~Hardness Conversion Tables for Metals~~⁵

E1473 ~~Test Methods for Chemical Analysis of Nickel, Cobalt, and High-Temperature Alloys~~ B 906 ~~Specification for General~~

~~Requirements for Flat-Rolled Nickel and Nickel Alloys Plate, Sheet, and Strip~~

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 The terms plate, sheet, and strip as used in this specification are defined as follows:

3.1.2 ~~cold-rolled plate~~ cold rolled plate, *n*—material $\frac{3}{16}$ to $\frac{3}{8}$ in. (4.76 to 9.52 mm), inclusive in thickness and over 10 in. (254.0 mm) in width.

3.1.3 ~~hot-rolled plate~~ hot rolled plate, *n*—material $\frac{3}{16}$ in. (4.76 mm) and over in thickness and over 10 in. (254.0 mm) in width.

3.1.4 ~~plate~~ plate, *n*—material $\frac{3}{16}$ in. (4.75 mm) and over in thickness and over 10 in. (254.0 mm) in width.

3.1.5 ~~sheet~~ sheet, *n*—material under $\frac{3}{16}$ in. (4.75 mm) in thickness and 24 in. (609.6 mm) and over in width. Material under $\frac{3}{16}$ in. (4.75 mm) in thickness and in all widths with No. 4 finish.

¹ This specification is under the jurisdiction of ASTM Committee B-2-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 10, 1999. Published June 1999. Originally published as B463-67. Last previous edition B463-98a.

Current edition approved Oct. 1, 2009. Published October 2009. Originally approved in 1967. Last previous edition approved in 2004 as B 463 – 04.

² For ASME Boiler and Pressure Vessel Code applications, see related Specification SB – 463 in Section II of that Code.

* New designation established in accordance with ASTM E 527 and SAE J1086, Recommended Practice for Numbering Metals and Alloys (UNS).

³ 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*, Vol 01-03, volume information, refer to the standard's Document Summary page on the ASTM website.

3.1.6 *strip*, *n*—material under $\frac{3}{16}$ in. (4.75 mm) in thickness and under 24 in. (609.6 mm) in width.

4. Ordering Information

4. 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 Quantity (weight or number of pieces);
- 4.1.2 Name of material or UNS number;
- 4.1.3 Form (plate, sheet or strip);
- 4.1.4 Dimensions;
- 4.1.5 Type edge required (for strip only) (8.4.1);
- 4.1.6 Finish (Section 9). For sheet with No. 4 Finish, specify whether one or both sides are to be polished;
- 4.1.7 Certification (Section 16). State if certification or a report of test results is required;
- 4.1.8 ASTM designation, and
- 4.1.9 Supplementary requirements.

NOTE 1—A typical ordering description is as follows: 200 sheets (UNS number) 0.060 by 48 by 120 in. (1.5 mm by 1.2 m by 3 m) No. 2D Finish in accordance with Specification B463—General Requirements

4.1 Material furnished under this specification shall conform to the requirements of Specification B 906 unless otherwise provided herein. In the case of conflict, the requirements of this specification shall take precedence.

5. Material and Manufacture

5.1 *Heat Treatment*— UNS N08020 Alloy shall be furnished in the stabilize-annealed condition. UNS N08026 Alloy shall be furnished in the solution-annealed condition. UNS N08024 Alloy shall be furnished in the annealed condition.

NOTE 2—The 1—The recommended annealing temperatures are 1800 to 1850°F (982 to 1010°C) for UNS N08020, 2050 to 2200°F (1121 to 1204°C) for UNS N08026, and 1925 to 1975°F (1052 to 1079°C) for UNS N08024.

6. Chemical Composition

6.1 The material shall conform to the composition limits specified in Table 1.

6.2 If a product analysis is performed by the purchaser, the material shall conform to the composition limits specified in Table 1 subject to the product analysis tolerances per B880.

7. Mechanical Properties

7.1 *Mechanical Properties*—The material shall conform to the mechanical property requirements specified in Table 2.

8. Dimensions and Permissible Variations

8.1 *Sheet*—The material referred to as sheet shall conform to the variations in dimensions specified in Tables 3-11, inclusive.

8.2 *Cold-Rolled Strip*—The material referred to as cold-rolled strip shall conform to the permissible variations in dimensions specified in Tables 12-16, inclusive.

8.3 *Plate*—The material referred to as plate shall conform to the permissible variations in dimensions specified in Tables 17-23, inclusive.

8.4 *Edges for Cold-Rolled Strip*—The various types of edges procurable shall be as follows:

8.4.1 *No. 1 Edge*—Rolled-edge, either round or square as specified.

8.4.2 *No. 3 Edge*—An edge produced by slitting.

8.4.3 *No. 5 Edge*—Approximately square edge produced by rolling or filing, or both, after slitting.

TABLE 1 Chemical Requirements

Element	Composition, %		
	UNS N08026	UNS N08020	UNS N08024
Carbon, max	0.03	0.07	0.03
Manganese, max	1.00	2.00	1.00
Phosphorus, max	0.03	0.045	0.035
Sulfur, max	0.03	0.035	0.035
Silicon, max	0.50	1.00	0.50
Nickel	33.00–37.20	32.00–38.00	35.00–40.00
Chromium	22.00–26.00	19.00–21.00	22.50–25.00
Molybdenum	5.00–6.70	2.00–3.00	3.50–5.00
Copper	2.00–4.00	3.00–4.00	0.50–1.50
Columbium (Nb) + tantalum	...	8 × carbon–1.00	0.15–0.35
Nitrogen	0.10–0.16
Iron	remainder ^A	remainder ^A	remainder

^A By difference.