Designation: B 463 – 04

Standard Specification for UNS N08020, UNS N08026, and UNS N08024 Alloy Plate, Sheet, and Strip[1]

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 specification[2] 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.

1.3 *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:* [3]

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

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*, *n*—material 3⁄16 to 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*, *n*—material 3⁄16 in. (4.76 mm) and over in thickness and over 10 in. (254.0 mm) in width.

3.1.4 *plate*, *n*—material 3⁄16 in. (4.75 mm) and over in thickness and over 10 in. (254.0 mm) in width.

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

3.1.6 *strip*, *n*—material under 3⁄16 in. (4.75 mm) in thickness and under 24 in. (609.6 mm) in width.

4. 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 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.

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 The tolerances and permissible variations provided in Annex A1 of Specification B 906 shall apply.

9. Keywords

9.1 N08020; N08024; N08026; plate; sheet; strip

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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.

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[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* volume information, refer to the standard's Document Summary page on the ASTM website.

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.

TABLE 2 Mechanical Property Requirements

Tensile Strength, min		Yield Strength,[A] min		Elongation[B] in 2 in. (50.8 mm), min,%
ksi	MPa	ksi	MPa	
80	551	35	241	30.0
Hardness Number, max[C]				
Brinell		Rockwell B		
217		95		

[A]Yield strength shall be determined by the offset method at 0.2 % limiting permanent set in accordance with Test Methods E 8. An alternative method of determining yield strength may be based on a total extension under load of 0.5 %.

[B]Elongation for thickness, less than 0.015 in. (0.38 mm) shall be 20 % minimum, in 1 in. (25.4 mm).

[C]Either Brinell or Rockwell B hardness is permissible.

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall be applied only when specified by the purchaser in the inquiry, contract, or order.

S1. Corrosion Tests

S1.1 One intergranular corrosion test per lot shall be performed by the manufacturer on a sensitized specimen and tested in accordance with Practices A 262. When this supplementary requirement is specified, the specific practice (Practice B or Practice E) shall also be specified. If Practice B is specified, the specimen must pass with a rate of less than 0.002 inches per month. A lot for intergranular corrosion testing shall be the same as for mechanical testing.

S1.1.1 In addition to the anneal recommended in Note 1, the specimen shall be sensitized for 1 h at 1250°F (677°C) before being subjected to corrosion testing.

S1.1.2 If any corrosion test specimen fails the test, the material represented by such specimens may be reheat-treated and resubmitted for test.