



Standard Specification for Low-Carbon Nickel-Chromium-Molybdenum-Gadolinium Alloy Plate, Sheet, and Strip¹

This standard is issued under the fixed designation B 932; 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 specification² covers plate, sheet, and strip of low-carbon nickel-chromium-molybdenum-gadolinium alloy (UNS N06464) as shown in Table 1, for use for neutron adsorption, structural, and corrosive application in nuclear waste disposal service.

1.2 The following products are covered under this specification:

1.2.1 *Sheet and Strip*—Hot or cold rolled, solution annealed, and descaled unless solution anneal is performed in an atmosphere yielding a bright finish.

1.2.2 *Plate*—Hot or cold rolled, solution annealed, and descaled.

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, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

1.4 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:³

- B 906 Specification for General Requirements for Flat-Rolled Nickel and Nickel Alloys Plate, Sheet, and Strip
- E 112 Test Methods for Determining Average Grain Size
- E 140 Standard Hardness Conversion Tables for Metals

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 Feb. 1, 2004. Published March 2004.

² For ASME Boiler and Pressure Vessel Code applications, see related Specification SB-575 in Section II of that Code. New designations established in accordance with ASTM E 527 and SAE J1086, 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 Limits, %	
	Alloy N06464	
Molybdenum	13.1 to 16.0	
Chromium	14.5 to 17.1	
Iron	1.0 max	
Cobalt, max	2.0	
Carbon, max	0.010	
Silicon, max	0.08	
Manganese, max	0.5	
Phosphorus, max	0.005	
Sulfur, max	0.005	
Nickel	Remainder ^A	
Oxygen	0.005	
Nitrogen, max	0.010	
Gadolinium	1.9 to 2.1	

^A Shall be determined arithmetically by difference.

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *cold-rolled plate*, *n*—material $\frac{3}{16}$ to $\frac{3}{8}$ in. (4.76 to 9.52 mm), inclusive, in thickness.

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

3.1.3 *plate*, *n*—material $\frac{3}{16}$ in. (4.76 mm) and over in thickness.

3.1.4 *sheet and strip*, *n*—material under $\frac{3}{16}$ in. (4.76 mm) in thickness.

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*—See Table 1,

4.1.2 *Dimensions*—Thickness (in decimals of an inch), width, and length (inch or fractions of an inch),

4.1.3 *Optional Requirements*—Plate; state how plate is to be cut (Specification B 906, Table A2.3),

4.1.4 *Certification*—State if certification or a report of test results is required (Specification B 906, Section 21),

4.1.5 *Purchase Inspection*—State which tests or inspections are to be witnessed (Specification B 906, Section 18), and

4.1.6 *Samples for Product (Check) Analysis*—State whether samples should be furnished (Specification B 906, 7.2.2).