



Designation: B574 – 23

Standard Specification for Low-Carbon Nickel-Chromium-Molybdenum, Low-Carbon Nickel-Molybdenum-Chromium, Low-Carbon Nickel- Molybdenum-Chromium-Tantalum, Low-Carbon Nickel- Chromium-Molybdenum-Copper, and Low-Carbon Nickel- Chromium-Molybdenum-Tungsten Alloy Rod and Bar¹

This standard is issued under the fixed designation B574; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification² covers rod and bar of low-carbon nickel-chromium-molybdenum alloys (UNS N10276, N06022, N06035, N06044, N06455, N06058, and N06059), low-carbon nickel-molybdenum-chromium (UNS N10362), low-carbon nickel-molybdenum-chromium-tantalum (UNS N06210), low-carbon nickel-chromium-molybdenum-copper alloy (UNS N06200), and low-carbon nickel-chromium-molybdenum-tungsten (UNS N06686) as shown in **Table 1**, for use in general corrosive service.

1.2 The following products are covered under this specification:

1.2.1 Rods and Bars $\frac{5}{16}$ in. to $\frac{3}{4}$ in. (7.94 mm to 19.05 mm), exclusive, in dimension³, solution annealed and pickled, or mechanically descaled.

1.2.2 Rods and Bars $\frac{3}{4}$ in. to $3\frac{1}{2}$ in. (19.05 mm to 88.9 mm), inclusive, in dimension³, solution annealed, ground or turned.

1.2.3 Rods and Bars $\frac{1}{4}$ in. to $3\frac{1}{2}$ in. (6.35 mm to 88.9 mm), inclusive, in dimension³, solution annealed, cold worked, ground or turned (N06022, N06059, N06686, and N10276, see **Table 2** and **Table 3**).

1.3 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 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 Nov. 1, 2023. Published November 2023. Originally approved in 1972. Last previous edition approved in 2018 as B574 – 18. DOI: 10.1520/B0574-23.

² For ASME Boiler and Pressure Vessel Code applications see related Specification SB-574 in Section II of that Code.

³ Dimension applies to diameter of rods, to distance between parallel surfaces of squares and hexagonals, and separately to width and thickness of rectangles.

1.4 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 Safety Data Sheet (SDS) for this product/material as provided by the manufacturer, to establish appropriate safety, health, and environmental practices, and determine the applicability of regulatory limitations prior to use.

1.5 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:⁴

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

B899 Terminology Relating to Non-ferrous Metals and Alloys

E8/E8M Test Methods for Tension Testing of Metallic Materials

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

E55 Practice for Sampling Wrought Nonferrous Metals and Alloys for Determination of Chemical Composition

E1473 Test Methods for Chemical Analysis of Nickel, Cobalt, and High-Temperature Alloys

3. Terminology

3.1 Definitions:

⁴ 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



TABLE 1 Chemical Requirements^{A,B}
Composition Limits, %

Element	Alloy N06035	Alloy N06044	Alloy N10276	Alloy N06022	Alloy N06455	Alloy N06059	Alloy N06058	Alloy N06200	Alloy N10362	Alloy N06210	Alloy N06686
Molybdenum	7.60–9.00	0.80–1.20	15.0–17.0	12.5–14.5	14.0–17.0	15.0–16.5	18.5–21.0	15.0–17.0	21.5–23.0	18.0–20.0	15.0–17.0
Chromium	32.25–34.25	43.5–45.3	14.5–16.5	20.0–22.5	14.0–18.0	22.0–24.0	20.0–23.0	22.0–24.0	13.8–15.6	18.0–20.0	19.0–23.0
Iron	2.00	0.3	4.0–7.0	2.0–6.0	3.0	1.5	1.5	3.0	1.25	1.0	5.0
Tungsten	0.60	...	3.0–4.5	2.5–3.5	...	...	0.3	...	...	...	3.0–4.4
Cobalt	1.00	...	2.5	2.5	2.0	0.3	0.3	2.0	...	1.0	...
Carbon	0.050	0.02	0.010	0.015	0.015	0.010	0.010	0.010	0.010	0.015	0.010
Silicon	0.60	0.20	0.08	0.08	0.08	0.10	0.10	0.08	0.08	0.08	0.08
Manganese	0.50	0.07–0.30	1.0	0.50	1.0	0.5	0.5	0.5	0.60	0.5	0.75
Vanadium	0.20	...	0.35	0.35	...	...	...	...	...	0.35	...
Phosphorus	0.030	0.020	0.04	0.02	0.04	0.015	0.015	0.025	0.025	0.02	0.04
Sulfur	0.015	0.020	0.03	0.02	0.03	0.010	0.010	0.010	0.010	0.02	0.02
Titanium	...	0.10–0.30	...	...	0.7	...	...	...	...	...	0.02–0.25
Nickel ^C	remainder	remainder	remainder	remainder	remainder	remainder	remainder	remainder	remainder	remainder	remainder
Aluminum	0.40	0.30	...	...	...	0.1–0.4	0.40	0.50	0.50	...	...
Copper	0.30 max	...	...	...	...	0.50	0.50	1.3–1.9	...	...	...
Tantalum	...	...	...	...	...	...	...	...	...	1.5–2.2	...
Nitrogen	...	...	...	...	...	...	0.02–0.15	...	...	...	...

^A All values are maximums unless specified as a minimum or a range is provided.

^B Where ellipses ([. . .]) appear in this table there is no requirement and the element need neither be analyzed for or reported.

^C Nickel shall be determined arithmetically by difference.