



## Standard Specification for Factory-Made Wrought Nickel and Nickel Alloy Fittings<sup>1</sup>

This standard is issued under the fixed designation B 366; 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 wrought welding fittings for pressure piping, factory-made from nickel and nickel alloys. Threaded fittings as covered in ASME B16.11 are also covered by this specification. The term welding applies to butt-welding or socket-welding parts such as 45 and 90° elbows, 180° bends, caps, tees, reducers, lap-joint stub ends, and other types, as covered by ASME B16.9, ASME B16.11, ASME B16.28, MSS SP-43, MSS SP-95, and MSS SP-97.

1.1.1 Class WP fittings are those manufactured to the requirements of ASME B16.9, B16.11, or B16.28.

1.1.2 Class CR fittings are those manufactured to the requirements of MSS SP-43.

1.2 This specification does not apply to cast welding fittings.

1.3 Optional supplementary requirements are provided for fittings where a greater degree of examination is desired. These supplementary requirements call for additional tests. When desired, one or more of these may be specified in the order.

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:

B 127 Specification for Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip<sup>2</sup>

B 160 Specification for Nickel Rod and Bar<sup>2</sup>

B 161 Specification for Nickel Seamless Pipe and Tube<sup>2</sup>

B 162 Specification for Nickel Plate, Sheet, and Strip<sup>2</sup>

B 164 Specification for Nickel-Copper Alloy Rod, Bar, and Wire<sup>2</sup>

B 165 Specification for Nickel-Copper Alloy (UNS N04400) Seamless Pipe and Tube<sup>2</sup>

B 166 Specification for Nickel-Chromium-Iron Alloys (UNS N06600, N06601, N06603, N06690, N06025, and N06045) and Nickel-Chromium-Cobalt-Molybdenum Alloy (UNS N06617) Rod, Bar, and Wire<sup>2</sup>

B 167 Specification for Nickel-Chromium-Iron Alloy (UNS

N06600, N06601, and N06690) Seamless Pipe and Tube<sup>2</sup>

B 168 Specification for Nickel-Chromium-Iron Alloys (UNS N06600, N06601, N06603, N06690, N06025, and N06045) and Nickel-Chromium-Cobalt-Molybdenum Alloy (UNS N06617) Plate, Sheet, and Strip<sup>2</sup>

B 333 Specification for Nickel-Molybdenum Alloy Plate, Sheet, and Strip<sup>2</sup>

B 335 Specification for Nickel-Molybdenum Alloy Rod<sup>2</sup>

B 407 Specification for Nickel-Iron-Chromium Alloy Seamless Pipe and Tube<sup>2</sup>

B 408 Specification for Nickel-Iron-Chromium Alloy Rod and Bar<sup>2</sup>

B 409 Specification for Nickel-Iron-Chromium Alloy Plate, Sheet, and Strip<sup>2</sup>

B 423 Specification for Nickel-Iron-Chromium-Molybdenum-Copper Alloy (UNS N08825 and N08221) Seamless Pipe and Tube<sup>2</sup>

B 424 Specification for Ni-Fe-Cr-Mo-Cu Alloy (UNS N08825 and UNS N08221) Plate, Sheet, and Strip<sup>2</sup>

B 425 Specification for Ni-Fe-Cr-Mo-Cu Alloy (UNS N08825 and UNS N08221) Rod and Bar<sup>2</sup>

B 434 Specification for Nickel-Molybdenum-Chromium-Iron Alloy (UNS N10003, UNS N10242) Plate, Sheet, and Strip<sup>2</sup>

B 435 Specification for UNS N06002, UNS N06230, N12160, and UNS R30556 Plate, Sheet, and Strip<sup>2</sup>

B 443 Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNS N06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNS N06219) Plate, Sheet, and Strip<sup>2</sup>

B 444 Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNS N06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNS N06219) Pipe and Tube<sup>2</sup>

B 446 Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNS N06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNS N06219) Rod and Bar<sup>2</sup>

B 462 Specification for Forged or Rolled UNS N08020, UNS N08024, UNS N08026, UNS N08367 and UNS R20033 Alloy Pipe Flanges, Forged Fittings, and Valves and Parts for Corrosive High-Temperature Service<sup>2</sup>

B 463 Specification for UNS N08020, UNS N08026, and UNS N08024 Alloy Plate, Sheet, and Strip<sup>2</sup>

B 464 Specification for Welded UNS N08020, N08024, and N08026 Alloy Pipe<sup>2</sup>

<sup>1</sup> 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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<sup>2</sup> Annual Book of ASTM Standards, Vol 02.04.

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B 468 Specification for Welded UNS N08020, N08024, and N08026 Alloy Tubes<sup>2</sup>

B 472 Specification for UNS N08020, UNS N08026, UNS N08024, UNS N08926, UNS N08367, and UNS R20033 Nickel Alloy Billets and Bars for Reforging<sup>2</sup>

B 473 Specification for UNS N08020, UNS N08026, and UNS N08024 Nickel Alloy Bar and Wire<sup>2</sup>

B 511 Specification for Nickel-Iron-Chromium-Silicon Alloy Bars and Shapes<sup>2</sup>

B 512 Specification for Nickel-Chromium-Silicon Alloy (UNS N08330) Billets and Bars<sup>2</sup>

B 514 Specification for Welded Nickel-Iron-Chromium Alloy Pipe<sup>2</sup>

B 515 Specification for Welded UNS N08800, UNS N08810, and UNS N08811 Alloy Tubes<sup>2</sup>

B 516 Specification for Welded Nickel-Chromium-Iron Alloy (UNS N06600), UNS N06025, and UNS N06045 Tubes<sup>2</sup>

B 517 Specification for Welded Nickel-Chromium-Iron Alloy (UNS N06600), UNS N06025, and UNS N06045 Pipe<sup>2</sup>

B 535 Specification for Nickel-Iron-Chromium-Silicon Alloys (UNS N08330 and UNS N08332) Seamless Pipe<sup>2</sup>

B 536 Specification for Nickel-Iron-Chromium-Silicon Alloys (UNS N08330 and N08332) Plate, Sheet, and Strip<sup>2</sup>

B 564 Specification for Nickel Alloy Forgings<sup>2</sup>

B 572 Specification for UNS N06002, UNS N06230, N12160, and UNS R30556 Rod<sup>2</sup>

B 573 Specification for Nickel-Molybdenum-Chromium-Iron Alloy (UNS N10003, UNS N10242) Rod<sup>2</sup>

B 574 Specification for Low-Carbon Nickel-Molybdenum-Chromium, Low-Carbon Nickel-Chromium-Molybdenum, and Low-Carbon Nickel-Chromium-Molybdenum-Tungsten Alloy Rod<sup>2</sup>

B 575 Specification for Low-Carbon Nickel-Molybdenum-Chromium, Low-Carbon Nickel-Chromium-Molybdenum, and Low-Carbon Nickel-Chromium-Molybdenum-Tungsten Alloy Plate, Sheet, and Strip<sup>2</sup>

B 581 Specification for Nickel-Chromium-Iron-Molybdenum-Copper Alloy Rod<sup>2</sup>

B 582 Specification for Nickel-Chromium-Iron-Molybdenum-Copper Alloy Plate, Sheet, and Strip<sup>2</sup>

B 619 Specification for Welded Nickel and Nickel-Cobalt Alloy Pipe<sup>2</sup>

B 622 Specification for Seamless Nickel and Nickel-Cobalt Alloy Pipe and Tube<sup>2</sup>

B 625 Specification for UNS N08904, UNS N08925, UNS N08031, UNS N08932, UNS N08926, and UNS R20033 Plate, Sheet, and Strip<sup>2</sup>

B 626 Specification for Welded Nickel and Nickel-Cobalt Alloy Tube<sup>2</sup>

B 649 Specification for Ni-Fe-Cr-Mo-Cu Low-Carbon Alloy (UNS N08904), Ni-Fe-Cr-Mo-Cu-N Low-Carbon Alloys (UNS N08925, UNS N08031, and UNS N08926), and Cr-Ni-Fe-N Low Carbon Alloy (UNS R20033) Bar and Wire<sup>2</sup>

B 673 Specification for UNS N08904, N08925, and N08926 Welded Pipe<sup>2</sup>

B 674 Specification for UNS N08904, N08925, and

N08926 Welded Tube<sup>2</sup>

B 675 Specification for UNS N08366 and UNS N08367 Welded Pipe<sup>2</sup>

B 676 Specification for UNS N08366 and UNS N08367 Welded Tube<sup>2</sup>

B 677 Specification for UNS N08904, N08925, and N08926 Seamless Pipe and Tube<sup>2</sup>

B 688 Specification for Chromium-Nickel-Molybdenum-Iron (UNS N08366 and UNS N08367) Plate, Sheet, and Strip<sup>2</sup>

B 690 Specification for Iron-Nickel-Chromium-Molybdenum Alloys (UNS N08366 and UNS N08367) Seamless Pipe and Tube<sup>2</sup>

B 691 Specification for Iron-Nickel-Chromium-Molybdenum Alloys (UNS N08366 and UNS N08367) Rod, Bar, and Wire<sup>2</sup>

B 704 Specification for Welded UNS N06625, N06219, and UNS N08825 Alloy Tubes<sup>2</sup>

B 705 Specification for Nickel-Alloy (UNS N06625, N06219, and N08825) Welded Pipe<sup>2</sup>

B 710 Specification for Nickel-Iron-Chromium-Silicon Alloy Welded Pipe<sup>2</sup>

E 165 Test Method for Liquid Penetrant Examination<sup>3</sup>

E 1916 Guide for Identification and/or Segregation of Mixed Lots of Metals<sup>4</sup>

2.2 *ASME Standards:*

B16.9 Wrought Steel Butt Welding Fittings<sup>5</sup>

B16.11 Forged Steel Fittings, Socket-Welding and Threaded<sup>5</sup>

B16.28 Wrought Steel Butt Welding Short Radius Elbows and Returns<sup>5</sup>

H34.1 Nickel Seamless Pipe and Tubing<sup>5</sup>

H34.2 Nickel-Copper Alloy Seamless Pipe and Tubing<sup>5</sup>

H34.3 Nickel-Chromium-Iron Alloy Seamless Pipe and Tubing<sup>5</sup>

2.3 *Manufacturers Standardization Society of the Valve and Fittings Industry Standards:*

MSS SP-25 Standard Marking Systems for Valves, Fittings, Flanges, and Unions<sup>6</sup>

MSS SP-43 Standard Practice for Light Weight Stainless Steel Butt Welding Fittings<sup>6</sup>

MSS SP-95 Sewage (D) Nipples and Bull Plugs<sup>6</sup>

MSS SP-97 Forged Carbon Steel Branch Outlet Fittings—Socket Welding, Threaded and Butt Welding Ends<sup>6</sup>

Boiler and Pressure Vessel Code, Section VIII, Division 1, Pressure Vessels and Section IX, Welding Qualifications<sup>5</sup>

2.5 *AWS Standards:*

A5.11 Specification for Nickel and Nickel Alloy Covered Welding Electrodes<sup>7</sup>

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 03.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 03.06.

<sup>5</sup> Available from American Society of Mechanical Engineers, 345 E. 47th St., New York, NY 10017.

<sup>6</sup> Available from Manufacturers' Standardization Society of the Valve and Fittings Industry, 1815 N. Fort Myer Drive, Arlington, VA 22209.

<sup>7</sup> Available from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33135.