



Standard Practice for Selection and Application of Piping System Materials¹

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1. Scope

1.1 This practice is intended as a guide to shipbuilders, shipowners, and design agents for use in the preparation of piping system material schedules for commercial ship design and construction.

1.2 The materials and limitations listed in Tables 1-28 meet the minimum requirements of the U.S. Coast Guard and the American Bureau of Shipping and should be considered to be the minimum acceptable materials in regard to material, design, and testing. This document is not intended to limit the selection of material strictly to those listed. Other equal or superior materials may be used provided that they are acceptable to the regulatory bodies and classification societies.

2. Referenced Documents

2.1 ASTM Standards:

- A 53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless²
- A 105/A105M Specification for Carbon Steel Forgings for Piping Applications²
- A 106 Specification for Seamless Carbon Steel Pipe for High-Temperature Service²
- A 134 Specification for Pipe, Steel, Electric-Fusion (Arc)-Welded (Sizes NPS 16 and Over)²
- A 139/A 139M Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over)²
- A 178/A 178M Specification for Electric-ResistanceWelded Carbon Steel and Carbon-Manganese Steel Boiler and Superheater Tubes²
- A 179/A 179M Specification for Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes²
- A 181/A 181M Specification for Carbon Steel Forgings, for General-Purpose Piping²
- A 182/A 182M Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service²
- A 192/A 192M Specification for Seamless Carbon Steel Boiler Tubes for High-Pressure Service²

- A 193/A 193M Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service²
- A 194/A 194M Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service²
- A 213/A 213M Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes²
- A 214/A 214M Specification for Electric-ResistanceWelded Carbon Steel Heat-Exchanger and Condenser Tubes²
- A 216/A 216M Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service³
- A 234/A 234M Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service²
- A 242/A 242M Specification for High-Strength Low-Alloy Structural Steel⁴
- A 249/A 249M Specification for Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes²
- A 283/A 283M Specification for Low and Intermediate Tensile Strength Carbon Steel Plates⁴
- A 307 Specification for Carbon Steel Bolts and Studs, 60 000 Psi Tensile Strength⁵
- A 320/A 320M Specification for Alloy Steel Bolting Materials for Low-Temperature Service²
- A 335/A 335M Specification for Seamless Ferritic Alloy-Steel Pipe for High-Temperature Service²
- A 351/A 351M Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts³
- A 387/A 387M Specification for Pressure Vessel Plates, Alloy Steel, Chromium-Molybdenum⁴
- A 395 Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures³
- A 515/A 515M Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service⁴
- A 536 Specification for Ductile Iron Castings³
- A 563 Specification for Carbon and Alloy Steel Nuts⁵

¹ This practice is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

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² Annual Book of ASTM Standards, Vol 01.01.

³ Annual Book of ASTM Standards, Vol 01.02.

⁴ Annual Book of ASTM Standards, Vol 01.04.

⁵ Annual Book of ASTM Standards, Vol 15.08.