



Standard Specification for High-Strength Low-Alloy Welded and Seamless Steel Pipe¹

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^{ε1} NOTE—The units statement in 1.6 was revised editorially in April 2009.

1. Scope

1.1 This specification covers seamless and welded high-strength low-alloy steel pipe NPS ½ to NPS 26, inclusive. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of this specification. This material is intended for pressure piping service, and other general purposes, where savings in weight or added durability are important.

NOTE 1—The dimensionless designator NPS (nominal pipe size) has been substituted in this standard for such traditional terms as “nominal diameter,” “size,” and “nominal size.”

NOTE 2—A comprehensive listing of standardized pipe dimensions is contained in ANSI Standard B36.10.

1.2 *Class*—These high-strength low-alloy steels have enhanced resistance to general atmospheric corrosion by weathering as commonly encountered in rural, urban, marine, and industrial environments. They are supplied in two classes: Class 2, having corrosion resistance equivalent to that of carbon steel with copper (0.20 minimum Cu); and Class 4, having corrosion resistance substantially better than that of Class 2 (Note 3). Class 4 steels when properly exposed to the atmosphere can be used bare (unpainted) for many applications.

NOTE 3—For methods of estimating the atmospheric corrosion resistance of low alloy steels see Guide G 101 or actual data.

1.3 *Type*—Pipe may be furnished in the following types of manufacturing processes:

Type F—Furnace-butt welded, continuous welded,

Type E—Electric-resistance welded, and

Type S—Seamless.

1.3.1 Pipe ordered under this specification is suitable for welding.

1.3.2 Type E pipe may be furnished either nonexpanded or cold-expanded at the option of the manufacturer.

1.3.3 Types F, E, and S pipe are commonly furnished in nonheat-treated condition. Type S pipe may be furnished in normalized (or other) heat-treated condition, when so specified.

1.3.4 Types F, E, and S pipe in single random lengths may be furnished with hot-dipped galvanized coating of zinc, subject to inquiry to the producer.

1.3.5 Couplings, when furnished, shall be of the same class, heat-treated condition, and grade of material as the pipe ordered.

1.4 *Grade*—This specification designates eight grades of steel composition as listed in Table 1 and corresponding tensile requirements for the grades as listed in Table 2.

1.4.1 For Class 2 pipe, Grade I, II, or III shall be specified, and copper-bearing steel is required as specified in Table 1.

1.4.2 For Class 4 pipe, Grade IV, V, VI, VII, or VIII shall be specified. Alternatively, for Class 4, Type S, and Type E pipe, a steel composition corresponding to a grade listed in Table 1 of Specification A 588/A 588M may be specified, subject to negotiation.

1.5 When Class 4 pipe is joined by welding or is used in welded construction, the user is cautioned that the selection of welding procedure and resultant composition of fused metal should be suitable for Class 4 material and the intended service.

1.6 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.

2. Referenced Documents

2.1 ASTM Standards:²

A 53/A 53M Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A 90/A 90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.09 on Carbon Steel Tubular Products.

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² 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.