



Standard Specification for Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures¹

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1. Scope

1.1 This specification² covers steel pipe: electric-fusion-welded with filler metal added, fabricated from pressure-vessel quality plate of any of several analyses and strength levels and suitable for high-pressure service at moderate temperatures. Heat treatment may or may not be required to attain the desired properties or to comply with applicable code requirements. Supplementary requirements are provided for use when additional testing or examination is desired.

1.2 The specification nominally covers pipe 16 in. (405 mm) in outside diameter or larger with wall thicknesses up to 3 in. (75 mm), inclusive. Pipe having other dimensions may be furnished provided it complies with all other requirements of this specification.

1.3 Several grades and classes of pipe are provided.

1.3.1 *Grade* designates the type of plate used.

1.3.2 *Class* designates the type of heat treatment performed during manufacture of the pipe, whether the weld is radiographically examined, and whether the pipe has been pressure tested as listed in 1.3.3.

1.3.3 Class designations are as follows (Note 1):

Class	Heat Treatment on Pipe	Radiography, see Section	Pressure Test, see Section
10	none	none	none
11	none	9	none
12	none	9	8.3
13	none	none	8.3
20	stress relieved, see 5.3.1	none	none
21	stress relieved, see 5.3.1	9	none
22	stress relieved, see 5.3.1	9	8.3
23	stress relieved, see 5.3.1	none	8.3
30	normalized, see 5.3.2	none	none
31	normalized, see 5.3.2	9	none
32	normalized, see 5.3.2	9	8.3
33	normalized, see 5.3.2	none	8.3
40	normalized and tempered, see 5.3.3	none	none
41	normalized and tempered, see 5.3.3	9	none
42	normalized and tempered, see 5.3.3	9	8.3
43	normalized and tempered, see 5.3.3	none	8.3

50	quenched and tempered, see 5.3.4	none	none
51	quenched and tempered, see 5.3.4	9	none
52	quenched and tempered, see 5.3.4	9	8.3
53	quenched and tempered, see 5.3.4	none	8.3

NOTE 1—Selection of materials should be made with attention to temperature of service. For such guidance, Specification A 20/A 20M may be consulted.

1.4 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards*:

A 20/A 20M Specification for General Requirements for Steel Plates for Pressure Vessels³

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products⁴

A 435/A 435M Specification for Straight-Beam Ultrasonic Examination of Steel Plates³

A 530/A 530M Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe⁵

A 577/A 577M Specification for Ultrasonic Angle-Beam Examination of Steel Plates³

A 578/A 578M Specification for Straight-Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications³

E 110 Test Method for Indentation Hardness of Metallic Materials by Portable Hardness Testers⁶

E 165 Test Method for Liquid Penetrant Examination⁷

E 350 Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron⁸

E 709 Guide for Magnetic Particle Examination⁷

2.1.2 *Plate Steel Specifications* (Table 1):

A 202/A 202M Pressure Vessel Plates, Alloy Steel, Chromium-Manganese-Silicon³

A 204/A 204M Pressure Vessel Plates, Alloy Steel, Molybdenum³

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 ASME Boiler and Pressure Vessel Code applications see related Specification SA-672 in Section II of that Code.

³ *Annual Book of ASTM Standards*, Vol 01.04.

⁴ *Annual Book of ASTM Standards*, Vol 01.03.

⁵ *Annual Book of ASTM Standards*, Vol 01.01.

⁶ *Annual Book of ASTM Standards*, Vol 03.01.

⁷ *Annual Book of ASTM Standards*, Vol 03.03.

⁸ *Annual Book of ASTM Standards*, Vol 03.05.