

# ASTM A53

## Standard Spec. for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

### 1. Scope

1.1 This specification covers seamless and welded black and hot-dipped galvanized steel pipe in NPS 1/8 to NPS 26 [DN 6 to DN 650] (Note 1), inclusive, with nominal wall thickness (Note 2) as given in Table X2.2 and Table X2.3. It shall be permissible to furnish pipe having other dimensions provided that such pipe complies with all other requirements of this specification. Supplementary requirements of an optional nature are provided and shall apply only when specified by the purchaser.

Note 1. The dimensionless designators NPS (nominal pipe size) [DN (diameter nominal)] have been substituted in this specification for such traditional terms as "nominal diameter," "size," and "nominal size."

Note 2. The term nominal wall thickness has been assigned for the purpose of convenient designation, existing in name only, and is used to distinguish it from the actual wall thickness, which may vary over or under the nominal wall thickness.

### 2. Referenced Documents

*A90/A90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings*

*A370 Test Methods and Definitions for Mechanical Testing of Steel Products*

*A530/A530M Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe*

*A700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment*

*A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products*

*A865 Specification for Threaded Couplings, Steel, Black or Zinc-Coated (Galvanized) Welded or Seamless, for Use in Steel Pipe Joints*

*B6 Specification for Zinc*

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

*E213 Practice for Ultrasonic Testing of Metal Pipe and Tubing*

*E273 Practice for Ultrasonic Examination of the Weld Zone of Welded Pipe and Tubing*

*E309 Practice for Eddy-Current Examination of Steel Tubular Products Using Magnetic Saturation*

*E570 Practice for Flux Leakage Examination of Ferromagnetic Steel Tubular Products*

*E1806 Practice for Sampling Steel and Iron for Determination of Chemical Composition*

## Chemical Requirements ASTM A53

	C	Mn	P	S	Cu (1)	Ni (1)	Cr (1)	Mo (1)	V (1)
Type S (seamless pipe)									
Grade A	0.25	0.95	0.05	0.045	0.40	0.40	0.40	0.15	0.08
Grade B	0.30	1.20	0.05	0.045	0.40	0.40	0.40	0.15	0.08
Type E (electric-resistance-welded)									
Grade A	0.25	0.95	0.05	0.045	0.40	0.40	0.40	0.15	0.08
Grade B	0.30	1.20	0.05	0.045	0.40	0.40	0.40	0.15	0.08
Type F (furnace-welded pipe)									
Grade A	0.30	1.20	0.05	0.045	0.40	0.40	0.40	0.15	0.08

(1) The total composition for these five elements shall not exceed 1.00%.

# ASTM A106

## Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

### 1. Scope

1.1 This specification covers seamless carbon steel pipe for high-temperature service (Note 1) in NPS 1/8 to NPS 48 [DN 6 to DN 1200] (Note 2) inclusive, with nominal (average) wall thickness as given in ASME B36.10. It shall be permissible to furnish pipe having other dimensions provided such pipe complies with all other requirements of this specification. Pipe ordered under this specification shall be suitable for bending, flanging, and similar forming operations, and for welding. When the steel is to be welded, it is presupposed that a welding procedure suitable to the grade of steel and intended use or service will be utilized.

*Note 1:* It is suggested, consideration be given to possible graphitization.

*Note 2:* The dimensionless designator NPS (nominal pipe size) [DN (diameter nominal)] has been substituted in this standard for such traditional terms as "nominal diameter", "size", and "nominal size".

1.2 Supplementary requirements of an optional nature are provided for seamless pipe intended for use in applications where a superior grade of pipe is required. These supplementary requirements call for additional tests to be made and when desired shall be so stated in the order.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents. Therefore, each system is to be used independently of the other.

1.4 The following precautionary caveat pertains only to the test method portion, Sections 11, 12, and 13 of this specification: 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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

### 2. Referenced Documents

*A530/A530M Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe*

*E213 Practice for Ultrasonic Examination of Metal Pipe and Tubing*

*E309 Practice for Eddy-Current Examination of Steel Tubular Products Using Magnetic Saturation*

*E381 Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings*

*E570 Practice for Flux Leakage Examination of Ferromagnetic Steel Tubular Products*

*MIL-STD-129 Marking for Shipment and Storage*

*MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage*

*ASME B36.10 Welded and Seamless Wrought Steel Pipe*

*Fed. Std. No. 123 Marking for Shipments (Civil Agencies)*

### Chemical Requirements ASTM A106

	Grade A	Grade B	Grade C
Carbon,max	0.25 (1)	0.30 (2)	0.35 (2)
Manganese	0.27-0.93	0.29-1.06	0.29-1.06
Phosphorus,max	0.035	0.035	0.035
Sulfur,max	0.035	0.035	0.035
Silicon,min	0.10	0.10	0.10
Chrome,max (3)	0.40	0.40	0.40
Copper,max (3)	0.40	0.40	0.40
Molybdenum,max (3)	0.15	0.15	0.15
Nickel,max (3)	0.40	0.40	0.40
Vanadium,max (3)	0.08	0.08	0.08

(1) For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above

the specified maximum will be permitted up to a maximum of 1.35%.

(2) Unless otherwise specified by the purchaser, for each reduction of 0.01% below the specified carbon maximum,

an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.65%.

(3) These five elements combined shall not exceed 1%.

# ASTM A530

## Standard Spec for general requirements for specialized Carbon and Alloy Steel Pipe

### 1. Scope

1.1 This specification covers a group of requirements which, with the exceptions of Section 5.3, Section 13, Section 20, and Section 21, are mandatory requirements to the ASTM pipe product specifications noted below unless the product specification specifies different requirements, in which case the requirement of the product specification shall prevail.

1.2 Sections 5.3 or 20 are mandatory if the product specification has a requirement for product analysis or flattening tests.

1.3 Section 21 is mandatory if the product specification has a hydrostatic test requirement without defining the test parameters.

1.4 Section 13 is for information only.

1.5 In case of conflict between a requirement of the product specification and a requirement of this general requirement specification, only the requirement of the product specification need be satisfied.

Title of Specification	ASTM Designation
Seamless Carbon Steel Pipe for High-Temperature Service	A 106
Metal-Arc-Welded Steel Pipe for Use With High-Pressure Transmission Systems	A 381
Centrifugally Cast Ferritic Alloy Steel Pipe for High-Temperature Service	A 426
Centrifugally Cast Austenitic Steel Pipe for High-Temperature Service	A 451
Seamless Carbon Steel Pipe for Atmospheric and Lower Temperatures	A 524
Centrifugally Cast Iron-Chromium-Nickel High-Alloy Tubing for Pressure Application at High Temperatures	A 608
Centrifugally Cast Carbon Steel Pipe for High-Temperature Service	A 660
Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures	A 671
Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures	A 672
Carbon and Alloy Steel Pipe, Electric-Fusion-Welded for High-Pressure Service at High Temperatures	A 691
Centrifugally Cast Ferritic/Austenitic Stainless Steel Pipe for Corrosive Environments	A 872

1.6 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. The inch-pound units shall apply unless the "M" designation (SI) of the product specification is specified in the order.

*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".

## 2. Referenced Documents

*A370 Test Methods and Definitions for Mechanical Testing of Steel Products*

*A450/A450M Specification for General Requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes*

*A700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment*

*A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products*

*A941 Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys*

*D3951 Practice for Commercial Packaging*

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

*MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage*

*MIL-STD-271 Nondestructive Testing Requirements for Metals*

*MIL-STD-792 Identification Marking Requirements for Special Purpose Components*

*B36.10 Welded and Seamless Wrought Steel Pipe*

*B36.19 Stainless Steel Pipe*

*Fed. Std. No. 183 Continuous Identification Marking of Iron and Steel Products*

*SSPC-SP6 Surface Preparation Specification No. 6 Commercial Blast Cleaning*

Source: [ASTM](#)

