



Designation: A1016/A1016M – 23

Standard Specification for General Requirements for Ferritic Alloy Steel, Austenitic Alloy Steel, and Stainless Steel Tubes¹

This standard is issued under the fixed designation A1016/A1016M; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This specification covers a group of requirements that, unless otherwise specified in an individual specification, shall apply to the ASTM product specifications noted below.

Title of Specification	ASTM Designation ^A
Seamless Carbon-Molybdenum Alloy-Steel Boiler and Superheater Tubes	A209/A209M
Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes	A213/A213M
Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes	A249/A249M
Electric-Resistance-Welded Ferritic Alloy-Steel Boiler and Superheater Tubes	A250/A250M
Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service	A268/A268M
Seamless and Welded Austenitic Stainless Steel Tubing for General Service	A269/A269M
Seamless and Welded Austenitic and Ferritic/Austenitic Stainless Steel Sanitary Tubing	A270/A270M
Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service	A334/A334M
Welded Austenitic Stainless Steel Feedwater Heater Tubes	A688/A688M
Austenitic Stainless Steel Tubing for Breeder Reactor Core Components	A771/A771M
Seamless and Welded Ferritic/Austenitic Stainless Steel Tubing for General Service	A789/A789M
Seamless and Welded Ferritic Stainless Steel Feedwater Heater Tubes	A803/A803M
Seamless Austenitic and Martensitic Stainless Steel Duct Tubes for Liquid Metal-Cooled Reactor Core Components	A826/A826M
High-Frequency Induction Welded, Unannealed, Austenitic Steel Condenser Tubes	A851
Welded Austenitic Alloy Steel Boiler, Superheater, Condenser, and Heat Exchanger Tubes with Textured Surface(s)	A1098/A1098M

^A These designations refer to the latest issue of the respective specifications.

1.2 In the case of conflict between a requirement of a product specification and a requirement of this general requirements specification, the product specification shall prevail. In the case of conflict between a requirement of the product specification or a requirement of this general requirements

specification and a more stringent requirement of the purchase order, the purchase order shall prevail.

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

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- A209/A209M Specification for Seamless Carbon-Molybdenum Alloy-Steel Boiler and Superheater Tubes
- A213/A213M Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes
- A249/A249M Specification for Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes
- A250/A250M Specification for Electric-Resistance-Welded Ferritic Alloy-Steel Boiler and Superheater Tubes (Withdrawn 2017)³
- A268/A268M Specification for Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service
- A269/A269M Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

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 A01.10 on Stainless and Alloy 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.

³ The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard



A270/A270M Specification for Seamless and Welded Austenitic and Ferritic/Austenitic Stainless Steel Sanitary Tubing

A334/A334M Specification for Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

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

A688/A688M Specification for Seamless and Welded Austenitic Stainless Steel Feedwater Heater Tubes

A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment

A751 Test Methods and Practices for Chemical Analysis of Steel Products

A771/A771M Specification for Seamless Austenitic and Martensitic Stainless Steel Tubing for Liquid Metal-Cooled Reactor Core Components (Withdrawn 2004)³

A789/A789M Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Tubing for General Service

A803/A803M Specification for Seamless and Welded Ferritic Stainless Steel Feedwater Heater Tubes

A826/A826M Specification for Seamless Austenitic and Martensitic Stainless Steel Duct Tubes for Liquid Metal-Cooled Reactor Core Components (Withdrawn 2004)³

A851 Specification for High-Frequency Induction Welded, Unannealed, Austenitic Steel Condenser Tubes (Withdrawn 2002)³

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

A1047/A1047M Test Method for Pneumatic Leak Testing of Tubing

A1058 Test Methods for Mechanical Testing of Steel Products—Metric

A1098/A1098M Specification for Welded Austenitic, Ferritic, Martensitic and Duplex Stainless Steel Boiler, Superheater, Condenser, and Heat Exchanger Tubes with Textured Surface(s)

D3951 Practice for Commercial Packaging

E92 Test Methods for Vickers Hardness and Knoop Hardness of Metallic Materials

E213 Practice for Ultrasonic Testing of Metal Pipe and Tubing

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

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

E426 Practice for Electromagnetic (Eddy Current) Examination of Seamless and Welded Tubular Products, Titanium, Austenitic Stainless Steel and Similar Alloys

E570 Practice for Flux Leakage Examination of Ferromagnetic Steel Tubular Products

2.2 *ASME Boiler and Pressure Vessel Code: Section IX*⁴

2.3 *Federal Standard:*

FED-STD-183 Continuous Identification Marking of Iron and Steel Products⁵

2.4 *Military Standards:*

MIL-STD-271 Nondestructive Testing Requirements for Metals⁵

MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage⁵

MIL-STD-792 Identification Marking Requirements for Special Purpose Equipment⁵

2.5 *Steel Structures Painting Council:*

SSPC-SP6 Surface Preparation Specification No. 6 Commercial Blast Cleaning⁶

2.6 *Other Documents:*

SNT-TC-1A Recommended Practice for Nondestructive Personnel Qualification and Certification⁷

AIAG Bar Code Symbology Standard⁸

3. Terminology

3.1 *Definitions:*

3.1.1 The definitions in Test Methods and Definitions **A370** or Test Methods **A1058**, Test Methods, Practices, and Terminology **A751**, and Terminology **A941** are applicable to this specification and to those listed in **1.1**.

3.1.2 *heat, n*—in secondary melting, all of the ingots remelted from a single primary heat.

3.1.3 *imperfection, n*—any discontinuity or irregularity found in a tube.

4. Manufacture

4.1 The steel shall be made by any process.

4.2 The primary melting is permitted to incorporate separate degassing or refining and is permitted to be followed by secondary melting, such as electros slag remelting or vacuum-arc remelting.

4.3 When steel of different grades is sequentially strand cast, the resultant transition material shall be removed using an established procedure that positively separates the grades.

5. Ordering Information

5.1 It is the responsibility of the purchaser to specify all requirements that are necessary for product ordered under the product specification. Such requirements to be considered include, but are not limited to, the following:

5.1.1 Quantity (feet, metres, or number of pieces),

⁴ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, Attn: NPODS.

⁶ Available from Society for Protective Coatings (SSPC), 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656, <http://www.sspc.org>.

⁷ Available from American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlingate Ln., Columbus, OH 43228-0518, <http://www.asnt.org>.

⁸ Available from Automotive Industry Action Group (AIAG), 26200 Lahser Rd., Suite 200, Southfield, MI 48033, <http://www.aiag.org>.