



ASTM A179

is the standard applicable to Seamless cold drawn low carbon steel heat ex-changer and condenser tubes.

ASTM A179 covers minimum-wall thickness, seamless cold-drawn low-carbon steel tubes for tubular heat-exchange, condensers, and similar heat transfer apparatus. Tubes shall be made by the seamless process and shall be cold drawn. Heat and product analysis shall be performed wherein steel materials shall conform to required chemical compositions of carbon, manganese, phosphorus, and sulfur. The steel materials shall also undergo hardness test, flattening test, flaring test, flange test, and hydrostatic test.

ASTM A179 tube Chemical Compositions(%)

C	Si	Mn	P	S	Cr	Mo	Cu	Ni	V
0.06-0.18	/	0.27-0.63	≤0.035	≤0.035	/	/	/	/	/

ASTM A179 tube Mechanical Properties

Yield Strength (Mpa)	Tensile Strength (Mpa)	Elongation (%)
≥180	≥325	≥35

ASTM A179 is a brief summary of the referenced standard. It is informational only and not an official part of the standard; the full text of the standard itself must be referred to for its use and application. [ASTM](#) does not give any warranty express or implied or make any representation that the contents of this abstract are accurate, complete or up to date.

Scope

1. ASTM A179 covers minimum-wall-thickness, seamless cold-drawn low-carbon steel tubes for tubular heat exchangers, condensers, and similar heat transfer apparatus.
2. ASTM A179 covers tubes 1/8 to 3 in. [3.2 to 76.2 mm], inclusive, in outside diameter. Note 1 Tubing smaller in outside diameter and having a thinner wall than indicated in this specification is available. Mechanical property requirements do not apply to tubing smaller than 1/8 in. [3.2 mm] in outside diameter or with a wall thickness under 0.015 in. [0.4 mm].
3. 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 of this specification is specified in the order.

Note:

- Mill test certificates will be issued according to [EN10204.3](#)
- All tubes shall be supplied as per applicable ASTM Specification.
- The tubes Shall be Seamless and the testing shall be as per A 450 / A450M.

Application: apply to the heat exchangers, condensers and heat transfer equipment and similar pipe.

U-Bend tubes

Our U-Bend Manufacturing Center allows us to increase efficiency and reduce lead times, while maintaining the world-class quality for which we are known.

Sunny steel’s tubing and pipe are produced to dimensional tolerances and finish requirements of ASTM and ASME A179, A 249/SA 249, A 688/SA 688, and A 803/SA 803 specifications.

Check to see more information about U-bend pipes:



[Packing](#)



[ASME SA556](#)



[Usage](#)



Standard Specification for Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes¹

This standard is issued under the fixed designation A179/A179M; 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 reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification² covers minimum-wall-thickness, seamless cold-drawn low-carbon steel tubes for tubular heat exchangers, condensers, and similar heat transfer apparatus.

1.2 This specification covers tubes $\frac{1}{8}$ to 3 in. [3.2 to 76.2 mm], inclusive, in outside diameter.

NOTE 1—Tubing smaller in outside diameter and having a thinner wall than indicated in this specification is available. Mechanical property requirements do not apply to tubing smaller than $\frac{1}{8}$ in. [3.2 mm] in outside diameter or with a wall thickness under 0.015 in. [0.4 mm].

1.3 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 of this specification is specified in the order.

2. Referenced Documents

- 2.1 *ASTM Standards*:³
[A450/A450M Specification for General Requirements for Carbon and Low Alloy Steel Tubes](#)

3. Ordering Information

3.1 Orders for material under this specification should include the following, as required, to describe the desired material adequately:

- 3.1.1 Quantity (feet, metres, or number of lengths),
3.1.2 Name of material (seamless tubes),

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-179 in Section II of that Code.

³ 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.

- 3.1.3 Manufacture (cold-drawn),
3.1.4 Size (outside diameter and minimum wall thickness),
3.1.5 Length (specific or random),
3.1.6 Optional requirements (product analysis, Section 9, flange test, 11.3),
3.1.7 Test report required (Certification Section of Specification A450/A450M),
3.1.8 Specification number, and
3.1.9 Special requirements.

4. General Requirements

4.1 Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A450/A450M, unless otherwise provided herein.

5. Manufacture

5.1 Tubes shall be made by the seamless process and shall be cold drawn.

6. Heat Treatment

6.1 Tubes shall be heat treated after the final cold draw pass at a temperature of 1200°F [650°C] or higher.

7. Surface Condition

7.1 Finished tubes shall be free of scale. A slight amount of oxidation will not be considered as scale.

8. Chemical Composition

8.1 The steel shall conform to the following requirements as to chemical composition:

Carbon, %	0.06–0.18
Manganese, %	0.27–0.63
Phosphorus, max, %	0.035
Sulfur, max, %	0.035

8.2 Supplying an alloy grade that specifically requires the addition of any element other than those listed in 8.1 is not permitted.

9. Product Analysis

9.1 When requested on the purchase order, a product analysis shall be made by the supplier from 1 tube per 250 pieces or when tubes are identified by heat, one tube per heat shall be

analyzed. The chemical composition thus determined shall conform to the requirements specified.

9.2 If the original test for product analysis fails, retests of two additional billets or tubes shall be made. Both retests, for the elements in question, shall meet the requirements of the specification; otherwise all remaining material in the heat or lot (**Note 2**) shall be rejected or, at the option of the producer, each billet or tube may be individually tested for acceptance. Billets or tubes which do not meet the requirements of the specification shall be rejected.

NOTE 2—A lot consists of 250 tubes.

10. Hardness Requirements

10.1 The tubes shall have a hardness number not exceeding 72 HRB.

11. Mechanical Tests Required

11.1 *Flattening Test*—One flattening test shall be made on specimens from each of two tubes from each lot (**Note 2**) or fraction thereof.

11.2 *Flaring Test*—One flaring test shall be made on specimens from each of two tubes from each lot (**Note 2**) or fraction thereof.

11.3 *Flange Test*—When specified as a substitute for the flaring test, for tubes having a wall thickness (actual mean wall) less than 10 % of the outside diameter, one test shall be

made on specimens from each of two tubes from each lot (**Note 2**) or fraction thereof. For tubes other than specified above, the flange test shall not be required.

11.4 *Hardness Test*—Rockwell hardness tests shall be made on specimens from two tubes from each lot. The term *lot* applies to all tubes, prior to cutting, of the same nominal diameter and wall thickness which are produced from the same heat of steel. When final heat treatment is in a batch-type furnace, a lot shall include only those tubes of the same size and the same heat which are heat treated in the same furnace charge. When the final heat treatment is in a continuous furnace, a lot shall include all tubes of the same size and heat, heat treated in the same furnace at the same temperature, time at heat, and furnace speed.

11.5 *Hydrostatic Test*—Each tube shall be subjected to the hydrostatic test, or, instead of this test, a nondestructive electric test may be used when specified by the purchaser.

12. Product Marking

12.1 In addition to the marking prescribed in Specification **A450/A450M**, the marking shall include the name and order number of the purchaser.

13. Keywords

13.1 cold drawn tube; condenser tubes; heat exchanger tubes; low carbon steel; seamless tube

EXPLANATORY NOTES

NOTE 1—For purposes of design, the following tensile properties may be assumed:

Tensile strength, min, ksi [MPa]	47 [325]
Yield strength, min, ksi [MPa]	26 [180]
Elongation in 2 in. or 50 mm, min, %	35

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