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**ASME SPECIFICATIONS**

<b>ASME #</b>	<b>Explanation</b>
<b>SA-36*</b>	Covers carbon steel shapes, plates, and bars of structural quality for use in riveted, bolted, or welded construction of bridges and buildings, and for general structural purposes. When the steel is used in welded construction, welding procedure shall be suitable for the steel and the intended service.
<b>SA-53*</b>	Covers seamless and welded black and hot-dipped galvanized steel pipe in nominal sizes 1/8 in. to 26 in., incl, with nominal (average) wall thickness. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of this specification. <ul style="list-style-type: none"> <li>1.2 Pipe may be furnished in the following types and grades;               <ul style="list-style-type: none"> <li>1.2.1 Type F-Furnace-butt welded, continuous welded.</li> <li>1.2.2 Type E- Electric-resistance welded Grades A and B.</li> <li>1.2.3 Type S- Seamless, Grades A and B.</li> </ul> </li> <li>1.3 Pipe ordered under this specification is suitable for welding, and suitable for forming operations involving coiling, bending and flanging. Subject to the following qualifications;               <ul style="list-style-type: none"> <li>1.3.1 Type F is not intended for flanging.</li> <li>1.3.2 When Type S and E are required for close coiling or cold bending, Grade A should be specified. This provision is not intended to prohibit the cold bending of Grade B pipe.</li> <li>1.3.3 When pipe is required for close coiling, this should be specified on the order.</li> <li>1.3.4 Type E may be furnished either non- expanded or cold expanded at the option of the manufacturer. When pipe is cold expanded, the amount of expansion shall not exceed 1.5% of the O.D. pipe size.</li> </ul> </li> </ul>
<b>SA-105</b>	Covers forged carbon steel piping components for ambient and higher temperature service in pressure systems. Included are flanges, fittings, valves and similar parts to specified dimensions or to dimensional standards such as those ANSI and API specifications.
<b>SA-155**</b>	Covers electric-fusion-welded steel pipe suitable for high-pressure service and for use at high, intermediate, or lower temperatures, depending upon grade of material specified in outside diameters 16 in. and larger with all thickness up to 3,000 in. incl.
<b>SA-178*</b>	Covers electric-resistance-welded tubes made of carbon steel and intended for use as boiler tubes, boiler flues, superheater flues, and safe ends. The Tubing sizes and thicknesses usually furnished to this specification are 1/2 in. to 5 in. O.D. and 0.320 in. inclusive in minimum wall thickness.
<b>SA-179*</b>	Covers seamless cold-drawn low-carbon steel tubes for tubular heat exchangers, condensers, and similar heat transfer apparatus. Covers tubes 1/8 to 3 in., incl. In outside diameter.
<b>SA-181*</b>	Covers forged or rolled steel pipe flanges, forged fittings and valves and parts for general service. Two grades or material are covered, designated as grades I and II, respectively, and are classified in accordance with their chemical and physical properties.

\* Identical with ASTM Specifications

\*\* Identical with ASTM Specifications with revisions or additions.



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<b>SA-182*</b>	Covers forged or rolled alloy-steel pipe flanges, forged fittings and valves and parts intended for high-temperature service. The term "forgings" used in this specification shall be understood to cover one of all of the products mentioned above, either forged or rolled.
<b>SA-192*</b>	Covers seamless carbon steel boiler and super-heater tubes for high-pressure service. The tubing sizes and thicknesses usually furnished to this specification are ½ in. to 7 in. O.D. and 0.085 in. to 1.000 in., inclusive in minimum wall thickness.
<b>SA-226*</b>	Covers electric-resistance-welded carbon steel boiler and super-heater tubes for high pressure service. The tubing sizes and thicknesses usually furnished to this specification are ½ in. to 5 in. O.D. and 0.085 in. to 0.360 in., inclusive in minimum wall thickness.
<b>SA-234*</b>	Covers wrought carbon steel and alloy steel fittings of seamless and welded construction for use in pressure piping and in pressure vessel fabrication for service at moderate and elevated temperatures. The term "fitting" applies to butt-welding, socket-end, and threaded end parts such as 45-deg and 90 deg elbows. 180-deg return bends, caps, tees, reducers, lap-joint stub ends, and other types as covered by the latest revision of ANSI B16.9, MSS SP48, and ANSI B16.11.
<b>SA-249*</b>	Covers welded tubes made from the austenitic steels with various grades intended for such use as boiler, super-heater, heat exchanger, or condenser tubes. Grades TP 304H, TP 316H, TP 321 H, TP 347H, and TP 348H are modifications of grades TP 304, TP 316, TP 321., TP 347, and TP 348. and are intended for high-temperature service such as for super-heaters and re-heaters. The tubing sizes and thickness usually furnished to this specification are 1/8 in. in inside diameter to 5 in. in outside diameter and 0.015 in. to 0.320 in., incl. in minimum wall thickness.
<b>SA-250*</b>	Covers several grades, designated T 1, T 1a. T 1b. of electric-resistance-welded, carbon-molybdenum alloy-steel boiler and super heater tubes. The tubing sizes and thicknesses usually furnished to this specification are T/2 in. to 5 in. O.D. and 0.035 in. to 0.320 in., inclusive in minimum wall thickness.
<b>SA-335*</b>	Covers nominal (average) wall seamless alloy-steel pipe intended for high temperature service. Pipe ordered to this specification shall be suitable for bending, flanging (van. stoning), and similar forming operations, and for fusion welding. Selection will depend upon design, service conditions, mechanical properties, and high-temperature characteristics.
<b>SA-358**</b>	Covers electric-fusion-welded austenitic chromium-nickel alloy steel pipe suitable for Corrosive or high-temperature service, or both. (Although no restrictions are placed on the sizes of pipe which may be furnished under this specification, commercial practice is commonly limited to sizes not less than 8- in. (203-mm) nominal diameter.) Covers seven grades of alloy steel. The selection of the proper alloy and requirements for heat treatment shall be at the discretion of the purchaser, dependent on the service conditions to be encountered. Two classes of pipe are covered as follows: Class 1—All welded joints to be completely examined by radiography. Class 2—No radiographic examination required.
<b>SA-376**</b>	Covers seamless austenitic steel pipe intended for high-temperature central-station service. Among the ten grades covered are five H grades which are specifically intended for high-temperature service.

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**ASME SPECIFICATIONS**

<b>ASME #</b>	<b>Explanation</b>
<b>SA-376**</b>	Covers wrought fittings for pressure piping made from austenitic stainless steel. The term "fittings" applies to butt-welding, socket welding, or threaded parts such as 45-deg and 90-deg elbows, 180-deg return bends, caps, tees, reducers, lap-joint stub ends, and other types as covered by the latest revision of ANSI B16.9 ANSI B16.11 and MSS Standard Practice SP-43.
<b>SA-106**</b>	Covers seamless carbon steel pipe for high temperature service in nominal sizes 1/8 in. to 26 in. inclusive. With nominal (average) wall thickness as given in ANSI B36.10. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of these specifications. Pipe ordered under this specification shall be suitable for bending, flanging and similar forming operations.
<b>A-120</b>	This specification covers black and hot-dipped galvanized welded and seamless steel pipe in nominal sizes 1/8in. to 16 in. inclusive with nominal (average) wall thickness. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of this specification . Pipe ordered under this specification is intended for ordinary uses in steam, water, gas, and air lines, but is not intended for close coiling or bending, or high temperature service. No to this specification, except hydrostatic test which shall be made at the mills, as this specification is intended to cover pipe purchased mainly from jobber's stocks.
<b>SA-134**</b>	Covers electric-fusion (arc)-welded straight seam or spiral seam steel plate pipe 16 in. and over in diameter (inside or outside as specified by purchaser), with wall thicknesses up to 3/4 in., inclusive. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of these specifications. The pipe is intended for conveying liquid, gas or vapor.
<b>SA-135*</b>	Covers two grades of electric-resistance welded steel pipe in nominal sizes 2 in. to 30 in. inclusive with nominal (average) wall thickness up to 0.500 in. (12.70 mm), inclusive and in nominal sizes 3/4 to 5 in. inclusive with nominal (average) wall thickness 0.083 in. (2.11 mm) to 0.134 in. (3.40mm) depending on size. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of this specification. The pipe is intended for conveying liquid, gas or vapor: and only Grade A is adapted for flanging and bending.
<b>SA-199*</b>	Covers several grades of chromium molybdenum and chromium-molybdenum silicon seamless cold-drawn intermediate alloy steel tubes for heat exchangers, condensers, and similar heat transfer apparatus. The tubing Sizes usually furnished to this specification are 1/8 in. to 3 in. O.D.
<b>SA-209*</b>	Covers several grades of seamless carbon molybdenum alloy-steel boiler and super-heater tubes. Covers tubes 1/2 to 5 in., incl., in minimum wall thickness.
<b>SA-210*</b>	Covers seamless medium-carbon steel boiler tubes and boiler flues, including safe ends, arch and stay tubes, and super-heater tubes. The tubing sizes and thicknesses usually furnished to this specification are 1/2 in. to 5 in. O.D. and 0.035 in. to 0.500 in.. inclusive in minimum wall thickness.
<b>SA-213*</b>	Covers seamless ferritic and austenitic steel boiler and super-heater tubes and austenitic steel heat exchanger tubes, designated Grades T 5, TP 304, etc. These steels are listed in Tables I and II, respectively. Grades IP 304 H, TP 316 H. TP 321 H. TP 347 H, and IP 348 H are modifications of Grades TP 304, TP 316, TP 321. TP 347, and TP 348. and are intended for high temperature service such as for super-heaters and re-heaters. The tubing sizes and thicknesses usually furnished to this specification are 1/8 in. in inside diameter to 5 in. in outside diameter and 0.015 in. to 0.500 in., inclusive, in minimum wall thickness.

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**ASME SPECIFICATIONS**

<b>ASME #</b>	<b>Explanation</b>
<b>SA-214*</b>	Covers electric-resistance-welded carbon steel tubes to be used for heat exchangers, condensers, and similar heat-transfer apparatus. The tubing sizes usually furnished to this specification are to 3 in. O.D. inclusive.
<b>SA-268*</b>	Covers nine grades of stainless steel tubing for general corrosion-resisting and high-temperature service. These grades are commonly known as the "straight chromium" types and are characterized by being ferro-magnetic. Two of these grades, TP 410 and TP 329 (Table 1). are amenable to hardening by heat treatment, and the high-chromium ferritic alloys are sensitive to notch-brittleness on slow cooling to ordinary temperatures. These features should be recognized in the use of these materials. Grade 409 may be ordered with no final heat treatment provided the purchase order so specifies and the material meets all of the other requirements of the specifications.
<b>SA-312**</b>	Covers seamless and welded austenitic steel pipe intended for high-temperature and general corrosive service. Sixteen grades are covered. Grades TP 304H, TP 316H, TP 321H, TP 347H and TP 387H are modification of Grades TP 304, TP 316, TP 321, TP347 and TP 387, and are intended for high temperature service.
<b>SA-333**</b>	Covers nominal (average) wall seamless and welded carbon and alloy steel pipe intended for use at low temperatures, Several grades of ferritic steel are included. Some product sizes may not be available under this specification because heavier wall thicknesses have an adverse affect on low-temperature impact properties.
<b>SA-334*</b>	Covers several grades of seamless and welded carbon and alloy-steel tubes intended for use at low temperatures. Some product sizes may not be available under this specification because heavier wall thicknesses have an adverse effect on low temperature impact properties.
<b>SA-409**</b>	Covers straight seam or spiral seam electric-fusion-welded, light wall, austenitic chromium-nickel alloy steel pipe for corrosive or high-temperature service. The sizes covered are 14 to 30 in. (355 to 762 mm) incl. in nominal diameter with extra light (schedule 5S) and light (schedule 10S) wall thicknesses.
<b>SA-423*</b>	Covers seamless and electric resistance welded low alloy steel tubes for pressure containing parts such as economizers or other applications where corrosion resistance is important. The tubing sizes and thicknesses usually furnished to this specification are ½ in. to 5 in. O.D. and 0.035 in. to 0.500 in. inclusive in minimum wall thickness.
<b>A-714-75 (YOLOY)</b>	Covers seamless and welded high-strength (YOLOY) low-alloy steel pipe in nominal sizes ½ to 26 in., 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.

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**ASME SPECIFICATIONS**

**ASME # Explanation**

**AMERICAN PETROLEUM INSTITUTE**

**API #**

**SPECIFICATIONS (PIPE)**

**API 5-L** Covers welded and seamless steel pipe for use in conveying gas, water, and oil. Used mainly in the oil and natural gas industries. Seamless and electric-weld covers two grades: Grade A (30,000 psi Min Yield) and Grade B (35,000 psi Min Yield). Butt-welded manufacture is covered by two classes: Class I (25,000 psi Min Yield) and Class II (28,000 psi Min Yield). Size range 1/8 inch to 36 inch nominal diameters.

**API 5LX** Covers more rigorously tested line pipe, having greater tensile and bursting strengths. Size range 4 1/2 O.D. to 42 inch O.D.. in grades X 42 (42,000 psi Min Yield) to X 65 (65,000 psi Min Yield). Not intended for high temperature service.

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