

## Difference Between ASTM A312 (ASME SA312) and ASTM A358 / ASME SA358

ASTM A312 (ASME SA312)	ASTM A358 / ASME SA358
<p>Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes</p>	<p>Standard Specification for Electric - Fusion - Welded Austenitic Chromium - Nickel Stainless Steel Pipe for High - Temperature Service and General Applications</p>
<p>This guide covers standard specification for seamless, straight - seam welded, and cold worked welded austenitic stainless steel pipe intended for high - temperature and general corrosive service. Several grades of steel shall conform to the required chemical composition for carbon, manganese, phosphorus, sulfur, silicon, chromium, nickel, molybdenum, titanium, columbium, tantalum, nitrogen, vanadium, copper, cerium, boron, aluminum, and others. All pipes shall be furnished in the heat - treatment and coiling/straightening requirements. Tensile properties of the material shall conform to the prescribed tensile strength and yield strength. The steel pipe shall undergo mechanical tests such as tension, reverse, forward - bend and hardness tests of each length. Flattening, crush, bending, determination and weld decay tests shall be performed. Each pipe shall also be subjected to the nondestructive electric test or the hydrostatic test.</p>	<p>This specification covers electric - fusion - welded austenitic chromium - nickel stainless steel pipe suitable for corrosive high - temperature service, or both, in all sizes and normal oval tube. For general applications. The pipes shall be sorted into five different classes. Class 1 pipes shall be double radiographed. Pipes of Class 2 shall be double welded and shall be completely welded by processes employing filler metal in all passes and shall be double welded by processes employing filler metal in all passes with no radiography. Pipes of Class 3 shall be double welded by processes employing filler metal in all passes and shall be radiographed. Pipes of Class 4 shall be double welded by processes employing filler metal in all passes and shall be completely welded by processes employing filler metal in all passes with no radiography. Pipes of Class 5 shall be double welded by processes employing filler metal in all passes on the inside pipe surface may be without the addition of filler metal. Pipes of Class 5 shall be double welded by processes employing filler metal in all passes on the inside pipe surface may be without the addition of filler metal and shall be spot radiographed. Weld defects shall be repaired by mechanical means, and the repair shall be spot radiographed. All pipes shall be required on the original welds. The finished pipes shall be subjected to transverse tension test, transverse guided - bend weld test, and hydrostatic test.</p>
<p>Scope 1.1 ASTM A312 covers seamless, straight - seam welded, and heavily cold worked welded austenitic stainless steel pipe intended for high temperature and general corrosive service.</p>	<p>1.1 ASTM A358 specification covers electric - fusion - welded austenitic chromium - nickel stainless steel pipe suitable for corrosive or high - temperature service, or both, or for general applications.</p>
<p>NOTE 1: When the impact test criterion for a low - temperature service would be 15 ft - lbf [20 J] energy absorption or 15 mils [0.38 mm] lateral expansion, some of the austenitic stainless steel grades covered by this specification are accepted by certain pressure vessel or piping codes without the necessity of making the actual tests. For example, Grades TP304, TP304L, and TP347 are accepted by the ASME Pressure Vessel Piping Code, ANSI B31.3, for service at temperatures as low as - 425 ° F [- 250 ° C] without qualification for impact tests. Other ASI stainless steel grades with an austenitic structure may be used for service at temperatures as low as - 25 ° F [- 30 ° C] without impact testing. Impact testing may, under certain circumstances, be required. For example, materials with chromium or nickel content outside the ASI ranges, and for material with carbon content exceeding 0.10%, are required to be impact tested under the provisions of ASME Boiler and Pressure Vessel Code, Section VIII Division 1 when service temperatures are lower than - 50 ° F [- 45 ° C].</p>	<p>NOTE 1: The dimensionless designator NPS (nominal pipe size) has been substituted in this standard for the traditional terms "nominal diameter," "size," and "nominal size."</p>
<p>1.2 Grades TP304H, TP309H, TP309HCB, TP310H, TP310Hcb, TP316H, TP321H, TP347H, and TP348H are modifications of Grades TP304, TP309, TP310, TP316, TP321, TP347, and TP348 and are intended for impact - temperature service where creep and stress - rupture properties are important.</p>	<p>1.2 ASTM A358 specification covers the grades of alloy and stainless steel listed in Table 1. The selection of the proper grade and requirements for heat treatment shall be the discretion of the purchaser, dependent on the service conditions to be encountered.</p> <p>(A) New designation established in accordance with Practice E527 and SAE J1086.</p> <p>(B) Choice of American Welding Society specification depends on the welding process used.</p> <p>(C) Minimum carbon content of the filler metal shall be 0.040 mass %.</p> <p>(D) In previous editions, S30600 was incorrectly shown as S01815.</p> <p>(E) Common name, not a trademark, widely used, not associated with any one producer.</p> <p>(F) These filler metals have a high nickel content and, therefore, lower creep strength than the parent metal at temperatures exceeding about 1470 ° F [800 ° C], and its resistance to sulphurous media is inferior in certain cases.</p>
<p>This specification covers seamless and straight - seam welded stainless pipe intended for high temperature and general corrosion service. The pipe shall be furnished in the heat - treatment and coiling/straightening generally limited to the diameters and schedule wall thicknesses shown in ANSI B36.10 and ANSI B36.19. (Specially items can be ordered) ASTM pipe with immediately deliverable from a complete inventory standard sizes up to 24" .</p>	<p>1.3 Five classes of pipe are covered as follows:</p>
<p>The principal manufacturing procedures specified under A312 are:</p>	<p>1.3.1 Class 1—Pipe shall be double welded by processes employing filler metal in all passes and shall be completely radiographed.</p>
<p>Automatic welding process with no addition of filler wire. Annealing after welding. Tension, Reverse, forward - bend and hardness tests of each bt. Hydrostatic of each tube. Wall thickness may not be more than 12.5% under nominal thickness.</p>	<p>1.3.2 Class 2—Pipe shall be double welded by processes employing filler metal in all passes. No radiography is required.</p>
<p>Normally finished in square cut ends, pipe with beveled ends can be provided. Spot radiography and 100% radiography can be provided on all weld seams. Pipe is pickled and passivated as per ASTM A380 to maintain corrosion resistance and to prevent surface discoloration from free iron oxidation.</p>	<p>This specification covers electric - fusion - welded austenitic chromium - nickel alloy steel pipe suitable for corrosion or high - temperature service or both. Although no restrictions are made on sizes commercial practice is usually above NPS½.</p>
<p>The principal manufacturing procedures specified under A358 are:</p>	<p>The principal manufacturing procedures specified under A358 are:</p>
<p>Automatic welding process with no addition of filler wire. Annealing after welding. Tension, Reverse, forward - bend and hardness tests of each bt. Hydrostatic of each tube. Wall Thickness may not be more than 12.5% under nominal.</p>	<p>Automatic welding process with the addition of filler wire. Annealing after welding. A product analysis of both the weld metal and base metal after annealing. Tension, Reverse, forward - bend and hardness tests of each bt. Hydrostatic of each tube. Wall Thickness may not be more than .010" under nominal.</p>
<p>Normally furnished in square cut ends, pipe with beveled ends can be provided. Spot radiography or 100% radiography can be provided on all weld seams. Pipe is pickled and passivated as per ASTM A380 to maintain corrosion resistance and to prevent surface discoloration from free iron oxidation.</p>	<p>Normally furnished in square cut ends, pipe with beveled ends can be provided. Spot radiography or 100% radiography can be provided on all weld seams. Pipe is pickled and passivated as per ASTM A380 to maintain corrosion resistance and to prevent surface discoloration from free iron oxidation.</p>