

## Specifications

### Pipe and Tubing (continued)

**ASTM A 358** (ASME SA-358 is generally identical with some additional requirements)

This specification covers stainless steel pipe intended for high temperature and general corrosive service. Production is generally limited to diameters and schedule wall thicknesses of 8" and larger as shown in ANSI B36.10 and ANSI B36.19 (See page 4, 40). Pipe is normally welded with filler metal (except the root pass on Class 4) and can be specified as: (a) single or double welded; (b) 100%, spot, or no radiography; (c) heat treated after welding, made from annealed plate and not heat treated after welding, or made from unannealed plate and not heat treated after welding.

The principle manufacturing procedures specified under A 358 are:

1. Hydrostatic testing of each length (unless waived).
2. Transverse guided-bend tests and transverse tension tests per lot.

**ASTM A 376** (ASME SA-376 is generally identical) This specification covers seamless austenitic stainless steel pipe intended for high temperature

service. Among the grades covered are five H grades and two nitrogen grades that are specifically intended for high temperature service. All material is furnished in the heat treated condition unless waived and specifically marked "HT-O". Hydrostatic tests are required for each length of pipe. Tension and flattening tests are required per lot.

**ASTM A 409** (ASME SA-409 is generally identical with some additional requirements)

This specification covers Schedule 5s and 10s straight-seam or spiral-seam welded stainless steel pipe intended for high temperature and general corrosive service. Production is normally limited to sizes of 14" through 30", however, special diameters, lengths and alloys can be specified. Pipe manufactured to A 409 may be heated after welding, made from annealed plate and not heat treated after welding, or made from unannealed plate and not heat treated after welding. The principal manufacturing procedures specified under A 409 are:

1. Either hydrostatic, air or gas pressure testing per lot.
2. Transverse guided-bend test and transverse tension test each length.

#### **MIL-P-24691**

Formerly MIL-P-1144 this specification covers seamless and welded austenitic stainless steel pipe intended for elevated temperature and general corrosive service, including cryogenic applications. This specification is approved for use by the Naval Sea Systems Command and is available for use by all Departments and Agencies of the Department of Defense. All pipe is to be furnished in the heat treated condition and subjected to nondestructive electric or hydrostatic pressure test as applicable. Tension, flattening and intergranular corrosion tests are required by lot.

### Welding Fittings

#### **"As Welded" Grade**

Alaskan "as welded" fittings are welded using ASME qualified welding procedures and can be supplied in a wide range of diameters and wall thicknesses from any of the weldable corrosion resistant alloys. Welding elbows can be provided with smooth flow or mitered construction, tees and crosses can be drawn outlet or nozzle-welded types and reducers can be conical or bell-shaped. Alaskan manufactures "as welded" fittings to ANSI B16.9, ANSI B16.28 or MSS SP-43 dimensions, with weld ends furnished square cut. Fittings with special dimensions or those that

beveled, belled or roll-grooved ends can be provided. Spot radiography or 100% radiography of welded seams can also be performed. Alaskan pickles and passivates its fittings to maintain corrosion resistant and to prevent surface discoloration from free iron oxidation. "As welded" fittings are commonly used with "as welded" pipe and tubing in pulp and paper mills, food processing plants and other industries where corrosion resistance is essential.

#### **ASTM A 774**

This specification covers "as welded" stainless steel pipe fittings for low

pressure piping intended for low to moderate temperatures and general corrosive service where heat treatment is not required for corrosion resistance. Fittings are normally furnished per MSS-SP-43 dimensions unless otherwise agreed upon between the purchaser and manufacturer. A 774 is generally considered to be the most applicable ASTM specification for "as welded" fittings.

## Specifications

### Welding Fittings (continued)

#### ASTM A 403

This specification includes seamless and welded wrought austenitic stainless steel butt welding fittings and consists of two general Classes, WP and CR. Class WP fittings are manufactured to the dimensional requirements of ANSI B16.9 or ANSI B16.28 and have pressure ratings equal to that prescribed for the specific matching pipe. Class CR fittings are manufactured to the dimensional requirements and pressure ratings of MSS SP-43. Both Classes require carbide solution heat treatment which includes rapid cooling to prevent reprecipitation of carbides. Fitting sub-classes covered by ASTM A 403 include the following specific requirements:

Sub-class	Requirement
WP-S	Seamless construction
WP-W	Welded fittings where fitting construction welds are 100% radiographed or ultrasonically examined and where welds made with the addition of filler metal in any starting material (e.g., welded pipe) are 100% radiographed.
WP-WX	Welded fittings where all welds are 100% radiographed or ultrasonically examined.
CR	Seamless or welded fittings with no nondestructive testing required.

Special fittings with sizes and shapes not included in the above dimensional specifications can be ordered per A 403, provided they are marked "S9" and meet all other requirements of the sub-class specified.

#### ASME SA-403

This specification includes seamless and welded wrought austenitic stainless steel butt welding fittings intended for use as commercial components that comply with Sections I, IV and VIII and nuclear power plant components that comply with Section III of the ASME Boiler and Pressure

Code. With the exception of changes in tensile properties of 304L, 316L and 316N, and the additional requirements for ASME Code documentation, this specification is identical to ASTM A 403. Alaskan produces and stocks SA-403 quality fittings, welded with filler metal and stamped with the "U" symbol (Section VIII) under a Certificate of Authorization from the American Society of Mechanical Engineers.

#### ASTM B 361

This specification includes seamless and welded aluminum and aluminum alloy butt welding fittings manufactured to the dimensional requirements of ANSI B16.9 and B16.28 and are generally available in diameters and schedule wall thicknesses shown in ANSI B36.10 and ANSI B36.19 (See page 40).

#### ASTM B 363

This specification covers seamless and welded unalloyed titanium butt welding fittings intended for general corrosion resisting and elevated temperature service. Dimensions are in accordance with ANSI B16.9 or MSS SP-43 standards and are generally available in diameters and schedule wall thicknesses shown in ANSI B36.10 and ANSI B36.19 (See page 40). Alaskan manufactures these fittings using ASME qualified welders and welding procedures.

#### ASTM B 366

This specification includes seamless and welded wrought nickel and nickel alloy butt welding fittings and consists of two general Classes, WP and CR. Class WP fittings are manufactured to the dimensional requirements of ANSI B16.9 or ANSI B16.28 and have pressure ratings equal to that prescribed for the specified matching pipe. Class SP-43. CR fittings are

to the dimensional requirements and have pressure ratings of MSS Heat treating is optional as agreed upon with the purchaser. Fitting sub-classes covered by ASTM B 366 include the following specific requirements:

Sub-class	Requirement
WP-S	Seamless construction
WP-W	Welded fittings where fitting construction welds are 100% radiographed or ultrasonically examined and where welds made with the addition of filler metal in any starting material (e.g., welded pipe) are 100% radiographically examined.
WP-WX	Welded fittings where all welds are 100% radiographically or ultrasonically examined.
CR	Seamless or welded fittings with no nondestructive testing required.