

# ASTM B363 / ASME SB363

## Standard Specification for Seamless and Welded Unalloyed Titanium and Titanium Alloy Welding Fittings

This specification covers fittings intended for general corrosion-resisting and elevated-temperature services, factory made from unalloyed titanium and titanium alloys. The term welding fittings applies to butt-welding parts such as 45° and 90° elbows, 180° returns, caps, tees, reducers, lap-joint stub ends, and other types.

### A. Chemical Composition :-

- The titanium shall conform to the requirements as to chemical composition prescribed in the specifications referred to in Table 1.

**Table 1**

Grade <sup>A</sup>	Product and ASTM Designation					
	Pipe	Tube	Plate	Bar and Billet	Casting	Forging
WPT1	B861/B862 Grade 1	B338 Grade 1	B265 Grade 1	B348 Grade 1	B367 Grade C1	B381 Grade F-1
WPT2	B861/B862 Grade 2	B338 Grade 2	B265 Grade 2	B348 Grade 2	B367 Grade C2	B381 Grade F-2
WPT2H	B861/B862 Grade 2H	B338 Grade 2H	B265 Grade 2H	B348 Grade 2H	...	B381 Grade F-2H
WPT3	B861/B862 Grade 3	B338 Grade 3	B265 Grade 3	B348 Grade 3	B367 Grade C3	B381 Grade F-3
WPT7	B861/B862 Grade 7	B338 Grade 7	B265 Grade 7	B348 Grade 7	B367 Grade C7	B381 Grade F-7
WPT7H	B861/B862 Grade 7H	B338 Grade 7H	B265 Grade 7H	B348 Grade 7H	...	B381 Grade F-7H
WPT9	B861/B862 Grade 9	B338 Grade 9	B265 Grade 9	B348 Grade 9	...	B381 Grade F-9
WPT11	B861/B862 Grade 11	B338 Grade 11	B265 Grade 11	B348 Grade 11	B367 Grade C11	B381 Grade F-11
WPT12	B861/B862 Grade 12	B338 Grade 12	B265 Grade 12	B348 Grade 12	...	B381 Grade F-12
WPT13	B861/B862 Grade 13	B338 Grade 13	B265 Grade 13	B348 Grade 13	...	B381 Grade F-13
WPT14	B861/B862 Grade 14	B338 Grade 14	B265 Grade 14	B348 Grade 14	...	B381 Grade F-14
WPT15	B861/B862 Grade 15	B338 Grade 15	B265 Grade 15	B348 Grade 15	...	B381 Grade F-15
WPT16	B861/B862 Grade 16	B338 Grade 16	B265 Grade 16	B348 Grade 16	...	B381 Grade F-16
WPT16H	B861/B862 Grade 16H	B338 Grade 16H	B265 Grade 16H	B348 Grade 16H	...	B381 Grade F-16H
WPT17	B861/B862 Grade 17	B338 Grade 17	B265 Grade 17	B348 Grade 17	...	B381 Grade F-17
WPT18	B861/B862 Grade 18	B338 Grade 18	B265 Grade 18	B348 Grade 18	...	B381 Grade F-18
WPT19	B861/B862 Grade 19	...	B265 Grade 19	B348 Grade 19	...	B381 Grade F-19
WPT20	B861/B862 Grade 20	...	B265 Grade 20	B348 Grade 20	...	B381 Grade F-20
WPT21	B861/B862 Grade 21	...	B265 Grade 21	B348 Grade 21	...	B381 Grade F-21
WPT23	B861/B862 Grade 23	...	B265 Grade 23	B348 Grade 23	...	B381 Grade F-23
WPT24	B861/B862 Grade 24	...	B265 Grade 24	B348 Grade 24	...	B381 Grade F-24
WPT25	B861/B862 Grade 25	...	B265 Grade 25	B348 Grade 25	...	B381 Grade F-25
WPT26	B861/B862 Grade 26	B338 Grade 26	B265 Grade 26	B348 Grade 26	...	B381 Grade F-26
WPT26H	B861/B862 Grade 26H	B338 Grade 26H	B265 Grade 26H	B348 Grade 26H	...	B381 Grade F-26H
WPT27	B861/B862 Grade 27	B338 Grade 27	B265 Grade 27	B348 Grade 27	...	B381 Grade F-27
WPT28	B861/B862 Grade 28	B338 Grade 28	B265 Grade 28	B348 Grade 28	...	B381 Grade F-28
WPT33	B861/B862 Grade 33	B338 Grade 33	B265 Grade 33	B348 Grade 33	...	B381 Grade F-33
WPT34	B861/B862 Grade 34	B338 Grade 34	B265 Grade 34	B348 Grade 34	...	B381 Grade F-34
WPT35	B861/B862 Grade 35	B338 Grade 35	B265 Grade 35	B348 Grade 35	...	B381 Grade F-35
WPT36	B861/B862 Grade 36	B338 Grade 36	B265 Grade 36	B348 Grade 36	...	B381 Grade F-36
WPT37	B861/B862 Grade 37	B338 Grade 37	B265 Grade 37	B348 Grade 37	...	B381 Grade F-37
WPT38	B861/B862 Grade 38	B338 Grade 38	B265 Grade 38	B348 Grade 38	...	B381 Grade F-38

<sup>A</sup> When fittings are of welded construction, the symbol shown shall be supplemented by the letter "W".

NOTE 1—Annealing of the unalloyed and alloyed grades of titanium covered by this specification is for the purpose of assuring uniform properties.

**B. Tensile Properties :-**

1. The titanium shall conform to the requirements as to tensile properties prescribed in the specifications referred to in Table 1.

**C. Hydrostatic Tests :-**

1. All fittings shall be capable of withstanding without failure, leakage, or impairment of their serviceability, a test pressure prescribed in the specifications for the pipe or tubing with which the fitting is recommended to be used (see Table 1).
2. For sizes outside the capability for hydrostatic testing, consideration should be given to radiographic inspection in accordance with Section 1 under Supplementary Requirements.
3. Hydrostatic tests need not be performed or reported, unless required by agreement between the manufacturer and the purchaser and so stated on the order.

**D. Supplementary requirements :-**

1. Radiographic Inspections of Welds:
  - i. Radiographic inspection may be performed on all weldments of the fittings in accordance with paragraph UW-51, Section VIII of the ASME Boiler and Pressure Vessel Code.
2. Stress Relief Heat Treatment:
  - i. The stress-relieving treatment shall consist of holding the fitting at a minimum temperature of 1100°F for not less than 1/2 h/in. of thickness.
  - ii. Minimum time at temperature is 15 min.

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