



# BPE, Pharmaceutical Fitting



# CSE HIGH PURITY TUBE & FITTING VALVE (ASME BPE STANDARD)

Pharmaceutical/Biotechnology fitting. CSE have over 15 years hygienic fitting experiences for developing out the ASME bioprocessing equipment (BPE) standard tube, fitting, valve components for high purity application such as water for injection, pharmaceutical, cosmetics use. Material : low sulphur ASTM SS316L, S :  $\leq 0.005\% \sim 0.017\%$ ,



MTR certificate will be offered.

Surface options:

Ra Reading for Tubing

As drawing and / or mechanical polished			Mechanical Polished and Electropolished or Electropolished		
Surface Designation	Ra Average		Surface Designation	Ra Average	
	μ-in	μ-m		μ-in	μ-m
SF1	20	0.5	SF4	15	0.375
SF2	25	0.63	SF5	20	0.5
SF3	30	0.76	SF6	25	0.635

Ra Reading for Fitting

Mechanical polished			Mechanical Polished and Electropolished		
Surface Designation	Ra Average		Surface Designation	Ra Average	
	μ-in	μ-m		μ-in	μ-m
SF1	20	0.5	SF4	15	0.38
SF2	25	0.63	SF5	20	0.5
SF3	30	0.76	SF6	25	0.63

Outer surface: Tubes and fittings Ra $\leq$  32μin (0.8μm)

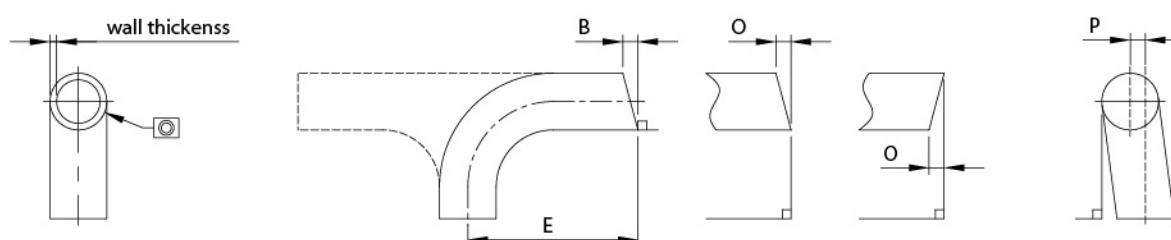
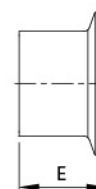
Dimension & tolerance :

SIZE	OD	Wall thickness		Squareness face To tangent ' B	Off angle O	Off plane P
		Mechanical polished	Electropolished			
1/2"	±0.13	+0.13/-0.2	+0.13/-0.25	0.13	0.36	0.76
3/4"	±0.13	+0.13/-0.2	+0.13/-0.25	0.13	0.46	0.76
1.0"	±0.13	+0.13/-0.2	+0.13/-0.25	0.2	0.64	0.76
1.5"	±0.2	+0.13/-0.2	+0.13/-0.25	0.2	0.86	1.27
2.0"	±0.2	+0.13/-0.2	+0.13/-0.25	0.2	1.09	1.27
2.5"	±0.25	+0.13/-0.2	+0.13/-0.25	0.25	1.37	1.27
3.0"	±0.25	+0.13/-0.2	+0.13/-0.25	0.41	1.73	1.27
4.0"	±0.38	+0.2/-0.25	+0.2/-0.30	0.41	2.18	1.52

General Notes :

Tolerance on E end-to-end and center-to-end : 1.27mm

Tolerance for centerline radius (CLR) is  $\pm 10\%$  of the nominal dimension.



## BPE Stainless Steel Tubing

Absolutely hygienic conditions are necessary for the entire production cycle of pharmaceutical and ultra-high industries.

Therefore, tubes, fittings, and valves with a smooth internal surface are extensively installed with the advantages of cleaning easily and avoiding bacteria contamination.

CSE only offers tubes that are manufactured, quality controlled, marked, and certified according to the highest standards for hygienic equipment design and guarantees extended quality and traceability.

CSE BPE tubing significantly reduces inspection requirements prior to installation by utilizing only the highest quality stainless steel materials.

CSE delivers directly from stock the following stainless steel tubes in grade TP316L with low sulfur content of 0.005% to 0.0017% and SF1 and SF4 finishes (according to the ASME BPE specification)



### STANDARDS:

ASTM A270-2015 S2

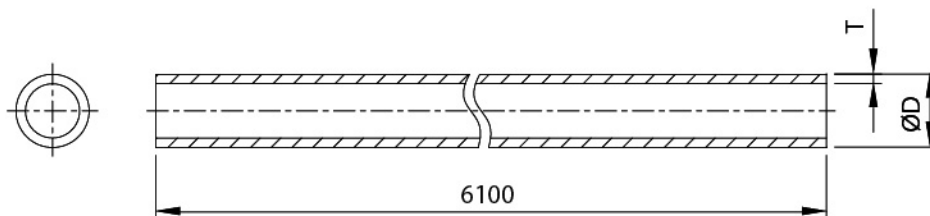
### SURFACE FINISH: SF0~SF6

SF1 ID Pol.  $R_a < 0.5\mu\text{m}$  / OD Pol.  $R_a < 0.8\mu\text{m}$

SF4 ID EP Finished  $R_a < 0.38\mu\text{m}$  / OD Pol.  $R_a < 0.8\mu\text{m}$

### CSE BPE EP products with following advantages:

- Homogeneously EP layer to minimize rouging
- Higher chrome concentration for better corrosion resistance
- Guaranteed smoothness of all internal surfaces to reduce Bio film



SIZE	1/8"	1/4"	3/8"	1/2"	3/4"	1.0"	1.5"	2.0"	2.5"	3.0"	4.0"	6.0"
ØD	3.18	6.35	9.53	12.7	19.05	25.4	38.1	50.8	63.5	76.2	101.6	152.4
T	0.56	0.89	0.89	1.65	1.65	1.65	1.65	1.65	1.65	1.65	2.11	2.77

## Marking:



ASME BPE (BPE REFERENCE NO.)  
TP316L size SFX  
(H.T.NO.)



ASTM A270 S2 2015 TP316L ASME-BPE DT-4-1 SF-X WLD NDE Size X length X Heat NO X

## Package Type:

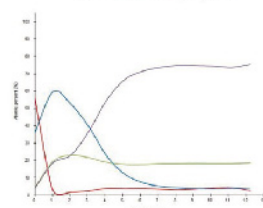
SF1

SF4



Survey	O1s	Cr2p3	Fe2p3	Ni2p3	Mo3d	Cr : Fe
1.5" TEE 1810D (sputter 1.5nm)	56.28	19.74	19.62	3.94	1.02	1.04 : 1

1.5" TEE 1810D Depth profile



Note: "--" is shown the value under detection limit of XPS analysis.