

# High Purity Tubing

## TBA Series and TEP Series

### Features

- ⦿ Material: 316L
- ⦿ Standard: ASTM A269 or JIS G3459
- ⦿ Sizes: 1/4" to 2 1/2" and 6A to 50A
- ⦿ Process:
  - TBA series tubing: specially rolled and bright annealed, metallic inner surface finish of Ra 20  $\mu\text{in.}$  (0.51  $\mu\text{m}$ ) max.
  - TEP series tubing: machined from TBA series tubing, electropolished inner surface finish of Ra 10  $\mu\text{in.}$  (0.25  $\mu\text{m}$ ) max.
- ⦿ Cleaning:
  - TBA series: ultrasonically cleaned and dried
  - TEP series: ultrasonically cleaned, washed, rinsed, purged with filtered hot Nitrogen and dried in clean room
- ⦿ Packaging:
  - TBA series: tubing ends are capped and tubing is packed individually in a single polyethylene bag
  - TEP series: tubing ends are capped, and tubing is packed individually in double polyethylene bags
- ⦿ Marking:
  - TBA series: tubing body is marked with brand, material grade, standard, specification, and heat number
  - TEP series: packing bags are marked with brand, material grade and specification
- ⦿ Standard length: 20 ft, 4 m and 6 m



### Materials

Grade	Standard	FITOK Designator	Composition %							
			C	Mn	P	S	Si	Ni	Cr	Mo
316L	ASTM A269	6L	$\leq 0.035$ <sup>①</sup>	$\leq 2.00$	$\leq 0.045$	$\leq 0.03$	$\leq 1.00$	10.0-15.0	16.0-18.0	2.0-3.0
	JIS G3459	6LJ	$\leq 0.03$					12.0-16.0		

① The carbon content of tubing with outside diameter smaller than 1/2" or wall thickness smaller than 0.049" is allowed up to 0.04%.

### Surface Roughness

Tube O.D. (D) mm	Outer Surface $\mu\text{in.}$ ( $\mu\text{m}$ )		Inner Surface $\mu\text{in.}$ ( $\mu\text{m}$ )	
	TBA	TEP	TBA	TEP
$6.35 \leq D \leq 48.6$	Ra $\leq 63$ (1.6)		Ra $\leq 15$ (0.38)	Ra $\leq 10$ (0.25)
$48.6 < D \leq 63.5$			Ra $\leq 20$ (0.51)	

### Purity Values

Inspection Item	TBA	TEP
Oil Content	$< 0.1 \text{ mg/ft}^2$	$< 0.01 \text{ mg/ft}^2$
Particle	$> 4 \mu\text{in.}$ (0.1 $\mu\text{m}$ ), Max.5 PCS	$> 4 \mu\text{in.}$ (0.1 $\mu\text{m}$ ), Max.1 PC
Dew Point	-40°F (-40 °C)	-94°F (-70 °C)

### Dimensional Tolerance and Scope of Supply

Tube O.D.			Wall Thickness			O.D. Tolerance	Wall Thickness Tolerance	Tubing Length				
in.	mm	A Size	in. (mm)	SCH5S	SCH10S	in. (mm)	%	m	ft			
1/4	6.35		0.035 (0.89)			+/-0.004 (0.10)	+/-10	4 or 6	20			
			0.039 (1.0)									
3/8	9.53		0.035 (0.89)									
			0.039 (1.0)									
1/2	12.7		0.039 (1.0)									
			0.049 (1.24)									
3/4	19.05		0.049 (1.24)									
			0.065 (1.65)									
1	25.4		0.049 (1.24)									
			0.065 (1.65)									
1 1/2	38.1		0.065 (1.65)							+/-0.008 (0.20)		
2	50.8		0.065 (1.65)							+/-0.010 (0.25)		
2 1/2	63.5		0.065 (1.65)									
	10.5	6A		1.0	1.2	+/-0.004 (0.10)			/			
	13.8	8A		1.2	1.65							
	17.3	10A		1.2	1.65							
	21.7	15A		1.65	2.1							
	27.2	20A		1.65	2.1							
	34.0	25A		1.65	2.8							
	42.7	32A		1.65	2.8							
	48.6	40A		1.65	2.8	+/-0.012 (0.30)						
	60.5	50A		1.65	2.8	+/-0.020 (0.50)						

## Ordering Information

To order, add designators for materials, series, and tubing length to get a complete ordering number.

Examples:

1. Tubing, 316L stainless steel, ASTM A269 compliant, TBA series, 1/4" O.D. x 0.035" wall thickness, 20 ft length, the ordering number is 6L-TBA-4-035-20.
2. Tubing, 316L stainless steel, ASTM A269 compliant, TEP series, 1/4" O.D. x 0.035" wall thickness, 4 m length, the ordering number is 6L-TEP-4-035-4M.
3. Tubing, 316L stainless steel, JIS G3459 compliant, TEP series, 8A O.D. x 1.2 mm wall thickness, 4 m length, the ordering number is 6LJ-TEP-8A-1.2-4M.

Tube O.D. in.	Wall Thickness in.	Basic Ordering Number
1/4	0.035	□□-□□-4-035-□□
	0.039	□□-□□-4-039-□□
3/8	0.035	□□-□□-6-035-□□
	0.039	□□-□□-6-039-□□
1/2	0.039	□□-□□-8-039-□□
	0.049	□□-□□-8-049-□□
3/4	0.049	□□-□□-12-049-□□
	0.065	□□-□□-12-065-□□
1	0.049	□□-□□-16-049-□□
	0.065	□□-□□-16-065-□□
1 1/2	0.065	□□-□□-24-065-□□
2		□□-□□-32-065-□□
2 1/2		□□-□□-40-065-□□

Tube O.D.	Wall Thickness		Basic Ordering Number
	SCH5S	SCH10S	
6A	1.0		□□-□□-6A-1.0-□□
		1.2	□□-□□-6A-1.2-□□
8A	1.2		□□-□□-8A-1.2-□□
		1.65	□□-□□-8A-1.65-□□
10A	1.2		□□-□□-10A-1.2-□□
		1.65	□□-□□-10A-1.65-□□
15A	1.65		□□-□□-15A-1.65-□□
		2.1	□□-□□-15A-2.1-□□
20A	1.65		□□-□□-20A-1.65-□□
		2.1	□□-□□-20A-2.1-□□
25A	1.65		□□-□□-25A-1.65-□□
		2.8	□□-□□-25A-2.8-□□
32A	1.65		□□-□□-32A-1.65-□□
		2.8	□□-□□-32A-2.8-□□
40A	1.65		□□-□□-40A-1.65-□□
		2.8	□□-□□-40A-2.8-□□
50A	1.65		□□-□□-50A-1.65-□□
		2.8	□□-□□-50A-2.8-□□