

# SEALING SYSTEMS

Engineering Equipment for Sanitary Applications

## BPE Tubing to Meet the Demands of Your Application

Our ASTM A270 tubing meets the demands of the stringent environments in the pharmaceutical and biotechnology industries. Some applications are extremely sensitive and require the highest level of purity. Others have less rigorous standards.

## We are now offering two options for BPE tubing that meet SF1 requirements.

**BPE Ultra-Pure:** For your most critical applications, ready for electropolishing.

**BPE Pure:** Cost-effective alternative when electropolishing is not required.

Made in America with 100% USA steel, you can be assured of the highest quality with either option.

## LASER-WELDED TUBING FOR MAXIMUM PERFORMANCE

Since demanding applications require the highest quality tubing, United Industries has been perfecting its laser welding capabilities since 1992, using a high-energy density process. Our 100% laser welded tubing has:

- Less potential for corrosion in the weld area
- Full finished tube appearance
- Superior performance

### SIZE RANGE:

1/2" – 8"

### FINISH:

Pharmaceutical A270-S2 ASME BPE:  
SF1 (Mechanical Polish) 20Ra max. (0.5µm) ID, 32Ra max. (0.8µm) OD

### STANDARDS:

All mechanical polished tubes meet or exceed A270, 3A, A270-S2.

ISO/TS 16959:2009 Registered Quality Management System

Material Certification is shipped with all tubing.

ASME-BPE Certified: Certificate # 101

### SIZES:

- 1/2" – 8"
- .019" – .145" wall

### LENGTHS:

- 1" – 60'

### SURFACE FINISH:

- Mechanical Polish 20 Ra/32 Ra
- Electro Polish 15 Ra/10 Ra
- Hydrogen Bright Annealing (H-BA)



BPE Pure tubing for your less sensitive applications



BPE Ultra-Pure tubing for your most critical applications

## High Purity Pharmaceutical & BPE Tubing

The highest standard of quality for the most demanding applications

### Proven Quality, Every Time: ASTM Testing and More

All of our pharmaceutical tubing is tested to meet or exceed ASTM 270/S2 requirements. We also perform flare, flatten, flange, and reverse bend tests. Surface roughness is measured per ASME/ANSI B46.1 requirements. These measurements are derived from four (4) readings taken at cross sections approximately 90 degrees apart.

### Finished to Perfection: The Ultimate in Purity, Inside and Out

Our High Purity pharmaceutical tubing meets the rigorous A270-S2 ASME BPE requirements for contaminant and corrosion resistant smooth surfaces.

### We Offer:

SF1 (Mechanical Polish) – 20Ra max. (0.5µm) ID, 32Ra max. (0.8µm) OD  
SF4 (Electro Polish) – 15Ra max. (0.4µm), 32Ra max. (0.8µm) OD  
All mechanical polished tubes meet or exceed A270, A270-S2, ASME BPE.

### Ensuring the Best Results: Bright Annealing

United Industries tubing is bright annealed and rapidly quenched to meet ASTM requirements. This process results in improved fabrication, formability, and corrosion resistance.

### PACKAGING:

- Square pack, scored cardboard, tri-wall box, paper/poly sleeve, interleave, interweave, cardboard tubes, hex pack, bulk skids, customer returnables
- Export packaging available

### FINISHED INVENTORY:

- Sanitary and H-BA 1"–8", 304L and 316L

### QUALITY ASSURANCE/TESTING:

- Quality Management System
- Inline Eddy Current
- Expansion
- Flatten
- Tension
- Rockwell
- Metallurgical
- Dimensional
- Bend
- Flare
- Reverse Bend
- Flange
- Surface Roughness
- Surface Passivity
- Others Upon Request



### ASTM Chemical Composition Requirements (Max.)

ELEMENTS	T316L
(C) Carbon, max.	0.030
(Mn) Manganese, max.	2.000
(P) Phosphorus, max.	0.045
(S) Sulphur, A270-S02	0.005-.017
(Si) Silicon, max.	0.750
(Ni) Nickel	10.0-14.0
(Cr) Chromium	16.0-18.0
(Mo) Molybdenum	2.0-3.0

## Delivering on our Promises: Packaging

All material is end capped and poly sleeved. Tubes are packaged in tri-wall cardboard boxes with wood ends for shipping within the US.

We offer three packaging options for international shipping:

**"A" Style** – Tubes are packed in tri-wall boxes and shipped in plastic-lined wooden crates.

**"D" Style** – Tubes are end capped and polysleeved, and packed in a wooden crate lined with plastic and cardboard.

**"F" Style** – Tubes are individually packed in tri-wall boxes, palletized and securely strapped with steel banding.

Material Certification is shipped with all tubing.

O2 Clean Service Available.

## Tubing Dimensional Tolerances: Tubing Specification, ASTM A-269/A270-S2

Tubing Diameter		Wall Thickness		OD Tolerance Length (ASTM Spec.)		Length (ASTM Spec.)		Wall Thickness Tolerance (ASTM Spec.)
in.	mm	in.	mm	in.	mm	in.	mm	
1/4	6.35	0.035	0.89	+/-0.005	+/-0.127	0.125	3.175	+/-10%
3/8	9.53	0.035	0.89	+/-0.005	+/-0.128	0.125	3.175	+/-10%
1/2	12.70	0.065	1.65	+/-0.005	+/-0.129	0.125	3.175	+/-10%
3/4	19.05	0.065	1.65	+/-0.005	+/-0.130	0.125	3.175	+/-10%
1	25.40	0.065	1.65	+/-0.005	+/-0.131	0.125	3.175	+/-10%
1½	38.10	0.065	1.65	+/-0.008	+/-0.203	0.125	3.175	+/-10%
2	50.80	0.065	1.65	+/-0.008	+/-0.204	0.125	3.175	+/-10%
2½	63.50	0.065	1.65	+/-0.010	+/-0.254	0.125	3.175	+/-10%
3	76.20	0.065	1.65	+/-0.015	+/-0.381	0.125	3.175	+/-10%
4	101.60	0.083	2.11	+/-0.015	+/-0.381	0.188	4.763	+/-10%
6	152.40	0.109	2.77	+/-0.030	+/-0.762	0.188	4.763	+/-10%

Inside Surface	Outside Surface	Ordering Code
No finish requirement	No finish requirement	0
SF1(MP* 20µ-in 0.51µm)	Mechanically polished to 32RA µ-in	4
SF4(MPE** 15µ-in 0.38µm)	Mechanically polished to 32RA µ-in	M
MPE** 10µ-in 0.25µm	Mechanically polished to 32RA µ-in	R

\*MP: Mechanically Polished

\*\*MPE: Mechanically Polished & Electropolished

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