

# A270-BPE

## High Purity Stainless Steel Tubing

Mechanically polished tubing to 20  $\mu$ -in Ra ID for pharmaceutical, semiconductor, biotechnology, and other high purity processes.

Manufactured to the stringent ASME BPE and ASTM A270 S2 specifications, this high quality tubing is 100% bore-scoped and mechanically polished on both the ID and OD. RathGibson proprietary finishing processes guarantee specific ID and OD Ra values for customers application, minimizing surface anomalies. RathGibson's A270-BPE series tubing significantly reduces customer inspection requirements prior to installation by utilizing only the highest quality stainless steel materials made exclusively to RathGibson melt criteria. The RathGibson Micro-Weld™ process forms a weld seam integrity that meets the most demanding applications. This tubing is available in 1/2" (12.7 mm) to 6" (152.4 mm) OD in 20 ft. (6.1 m) lengths.



**ISO 9001:2000**  
CERTIFIED

**PED 97/23/EC**  
CERTIFIED



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# High Purity Stainless Steel Tubing

## Materials

- 316L available from stock.

## Mechanical Tests

To ensure the highest surface quality in all of our sanitary tubing, RathGibson goes beyond the requirements of ASTM A269 and A270 by performing the full battery of ASTM bend and deformation tests required by ASME SA249 as well as additional deformation tests developed by RathGibson. The tests, combined with specific raw material requirements, eddy current testing at the tube mill, 100% bore-scoping prior to mechanical polish, and tighter OD and wall tolerances allow RathGibson to provide a more consistent superior quality product.

## Annealing

- Hydrogen bright annealed in line to 1900°F (1040°C) minimum and rapidly quenched.

## Cleaning

RathGibson A270-BPE high purity tubing is available, upon request, with the ID cleaned for oxygen service, thermocouple cleaning per ASTM A632 S3 or Nitric Acid & deionized water rinsed. RathGibson's deionized water system guarantees less than 50 ppb TOC with an average of 10 ppb and a resistivity up to 18 MΩ. RathGibson also utilizes 99.9999% pure Nitrogen which is filtered to 0.003 μm at the point of use.

## Surface Finish

Surface finish is 20 μ-in Ra (0.5 μm) ID maximum, 30 μ-in Ra (0.8 μm) OD maximum measured per ASME/ANSI B46.1 with the profilometer reading at 90 degrees to major polishing pattern.

## Packaging

As a final step in maintaining purity standards, RathGibson's A270-BPE tubing is packaged using protective 2 mil poly sleeving along with air tight plastic end caps. The tubing is then placed in triple wall boxes for maximum protection during shipment. Other packaging is available on customer request.

## Specification

Tubing shall be RathGibson A270-BPE 316L tubing exceeding the requirements of ASME BPE SFT1 and ASTM A270 S2. All tubing will be 100% bore-scoped and certified to 20 μ-in Ra (0.5 μm) ID maximum, 30 μ-in Ra (0.8 μm) OD maximum surface roughness measured per ASME/ANSI B46.1 with the profilometer reading at 90 degrees to major polishing pattern.

## Chemical Composition

Elements	316L (wt%)
(C) Carbon, max	0.035
(Mn) Manganese, max	2.00
(P) Phosphorus, max	0.040
(S) Sulfur	0.005 - 0.017
(Si) Silicon, max	0.75
(Ni) Nickel	10.0 - 15.0
(Cr) Chromium	16.0 - 18.0
(Mo) Molybdenum	2.0 - 3.0

## Dimensional Tolerances

all dimensions in inches (mm)

Size OD	Nominal Wall	Outside Diameter	Length	Wall
1/2" (12.7)	0.065" (1.65)	+/-0.005 (0.13)	+1/8" (3.18) - 0	+/-10.0%
3/4" (19.1)	0.065" (1.65)	+/-0.005 (0.13)	+1/8" (3.18) - 0	+/-10.0%
1" (25.4)	0.065" (1.65)	+/-0.005 (0.13)	+1/8" (3.18) - 0	+/-10.0%
1-1/2" (38.1)	0.065" (1.65)	+/-0.008 (0.20)	+1/8" (3.18) - 0	+/-10.0%
2" (50.8)	0.065" (1.65)	+/-0.008 (0.20)	+1/8" (3.18) - 0	+/-10.0%
2-1/2" (63.5)	0.065" (1.65)	+/-0.010 (0.25)	+1/8" (3.18) - 0	+/-10.0%
3" (76.2)	0.065" (1.65)	+/-0.010 (0.25)	+1/8" (3.18) - 0	+/-10.0%
4" (101.6)	0.083" (2.11)	+/-0.015 (0.38)	+1/8" (3.18) - 0	+/-10.0%
6" (152.4)	0.109" (2.77)	+/-0.030 (0.76)	+1" (25.4) - 0	+/-10.0%

The information herein was correct at the time of publication and is subject to change without notice.

**Lincolnshire, Illinois, USA**  
(Corporate Headquarters)  
RathGibson  
Telephone: (01) 1.847.276.2100  
Fax: (01) 1.847.276.2471

**Janesville, Wisconsin, USA**  
(Sales and Manufacturing)  
RathGibson  
Telephone: (01) 1.608.754.2222  
Toll-Free: 1.800.367.7284  
Fax: (01) 1.608.754.0889

**North Branch, New Jersey, USA**  
(Sales and Manufacturing)  
RathGibson  
Telephone: (01) 1.908.218.1400  
Toll-Free: 1.800.468.9459  
Fax: (01) 1.908.218.0008

**Clarksville, Arkansas, USA**  
(Manufacturing)  
Greenville Tube Company  
Toll-Free: 1.800.660.5810  
Fax: (01) 1.608.531.0422  
[www.greenvilletube.com](http://www.greenvilletube.com)

**Marrero, Louisiana, USA**  
(Manufacturing)  
Mid-South Control Line  
Telephone: (01) 1.504.348.0867  
Toll-Free: 1.888.464.3768  
Fax: (01) 1.504.348.4122  
[www.controlline.com](http://www.controlline.com)

**Shanghai, China**  
(Sales)  
RathGibson  
Telephone: (86) 21 6319 1515  
Fax: (86) 21 6319 0558

**Knoxfield, Australia**  
(Sales)  
RathGibson  
Telephone: (61) 397640001  
Telephone: (61) 407366449  
Fax: (61) 384565950

**Manama, Bahrain**  
(Sales)  
RathGibson  
Telephone: (973) 36533000  
Fax: (973) 17 595767

**Seoul, Korea**  
(Sales)  
RathGibson  
Telephone: (82) 1029874066  
Telephone: (61) 407366449  
Fax: (61) 384565950

[www.RathGibson.com](http://www.RathGibson.com)  
[sales@rathgibson.com](mailto:sales@rathgibson.com)



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