

# Sanitary Stainless Steel Tubing

*For Dairy, Food, Beverage, and Other Sanitary Processes*

## Summary:

Rath's sanitary tubing exceeds ASTM A270 S2 and 3A specifications and most user specifications. It is manufactured from the finest quality stainless steel materials made exclusively to the Rath melt criteria and formed by the Rath Micro-Weld™ process to assure weld seam integrity and industry leading ID & OD finishes to the low Ra values demanded by Rath's customers. Rath leads the industry in manufacturing the highest quality welded sanitary tubing, backed with technical expertise, special manufacturing and polishing capabilities and unmatched service before and after the sale. All standard sanitary tubing sizes 1/2" (12.7 mm) to 6" (152.4 mm) OD in 20 ft. (6.1 m) lengths are available with polished ID & OD for same day shipping.

## Materials

- 304L & 316L available from stock. 6-MOLY and other alloys available on request.
- See reverse side for complete specifications regarding materials and dimensional tolerances.

## Mechanical Tests

To ensure the highest surface quality in all of our sanitary tubing, Rath 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 Rath. The tests, combined with specific raw material requirements, eddy current testing at the tube mill, and tighter OD and wall tolerances allow Rath to provide a more consistent superior quality product.

## Annealing

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

## Surface Finishes\*

Tubing is supplied with bright annealed finishes or mechanically polished to 20 µ-in Ra (0.5 µm) ID maximum and/or 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. Rath's polishing techniques result in surface finishes that lead the industry. Tubes are printed with size, gauge, alloy, ASTM and ASME specifications, heat number and Rath mill operator initials for full traceability.

## Packaging

As a final step in maintaining sanitary process standards, Rath tubing is protected with plastic caps and sealed in 2-mil poly sleeves to prevent contamination. Tubing is packed in sturdy triple-wall cardboard boxes with wood ends and banded for optimum protection during shipping. Other packaging options include cardboard sleeves or wood boxes.

## Specification

**Tubing shall be Rath Sanitary Stainless Steel Tubing. Surface finish is 20 µ-in Ra (0.5 µm) ID and 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, with ends suitable for orbital welding.**

\* Notes: 1/2" (12.7 mm) and 3/4" (19.1 mm) tubing

- Surface finish for this size range is 30 µ-in Ra (0.8 µm) ID maximum. Other Ra finishes are available upon request.

## Tubing Sizes

**1/2" (12.7 mm) to 6" (152.4 mm) OD**



**Rath Manufacturing Company, Inc.**

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## Chemical Composition

Elements	304L (wt%)	316L (wt%)	6-MOLY	
			N08926 (wt%)	N08367 (wt%)
(C) Carbon, max	0.035	0.035	0.020	0.030
(Mn) Manganese, max	2.00	2.00	2.0	2.0
(P) Phosphorus, max	0.040	0.040	0.03	0.040
(S) Sulfur, max	0.030	0.030	0.01	0.030
(Si) Silicon, max	0.75	0.75	0.5	1.00
(Ni) Nickel	8.0 - 13.0	10.0 - 15.0	24.0/26.0	23.5/25.5
(Cr) Chromium	18.0 - 20.0	16.0 - 18.0	19.0 - 21.0	20.0 - 22.0
(Mo) Molybdenum	N/A	2.0 - 3.0	6.0/7.0	6.0/7.0
(Fe) Iron	Bal.	Bal.	Bal.	Bal.
(Cu) Copper	N/A	N/A	0.5/1.5	0.75 Max
(N) Nitrogen	N/A	N/A	0.15/0.25	0.18/0.25

## Dimensional Tolerances

all dimensions in inches (mm)

Size OD	Nominal Wall	Outside Diameter	Length	Wall
1/2" (12.7)	0.065" (1.65)/0.049" (1.25)	+/-0.004" (0.10)	+1/8" (3.18) - 0	+/-10.0%
3/4" (19.1)	0.065" (1.65)/0.049" (1.25)	+/-0.004" (0.10)	+1/8" (3.18) - 0	+/-10.0%
1" (25.4)	0.065" (1.65)/0.049" (1.25)	+0.002" (0.05)/-0.008" (0.20)	+1/8" (3.18) - 0	+/-10.0%
1-1/2" (38.1)	0.065" (1.65)/0.049" (1.25)	+0.002" (0.05)/-0.008" (0.20)	+1/8" (3.18) - 0	+/-10.0%
2" (50.8)	0.065" (1.65)/0.049" (1.25)	+0.002" (0.05)/-0.011" (0.28)	+1/8" (3.18) - 0	+/-10.0%
2-1/2" (63.5)	0.065" (1.65)	+0.002" (0.05)/-0.011" (0.28)	+1/8" (3.18) - 0	+/-10.0%
3" (76.2)	0.065" (1.65)	+0.003" (0.08)/-0.012" (0.30)	+1/8" (3.18) - 0	+/-10.0%
4" (101.6)	0.083" (2.11)/0.065" (1.65)	+0.003" (0.08)/-0.015" (0.38)	+1/8" (3.18) - 0	+/-10.0%
6" (152.4)	0.109" (2.77)	+/-0.030" (0.76)	+1/8" (3.18) - 0	+/-10.0%

*Take Full Advantage of Rath® Performance*

Rath's extensive manufacturing facility in Janesville, Wisconsin can deliver superior tube and pipe quality along with the service performance needed by Rath's customers. We offer prompt quotations, tight production controls for best possible delivery, plus complete in-house testing and finishing for an extra measure of value. Rely on Rath® technology and the experience of our entire team to meet customers application requirements.



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