

Stainless Steel Tubing

Imperial Sizes

- Standard instrumentation tubing
- Chemically cleaned and passivated tubing
- Thermocouple-cleaned tubing

Features

- Available in sizes from 1/16 to 1 in. outside diameter; metric sizes available upon request



Standard Instrumentation Tubing

Material Standards

| Grade | UNS | SS | AFNOR | W.-NR. | ASTM |
|----------|---------------|------|------------|--------|-------------------------|
| 316/316L | S31603/S31603 | 2353 | Z2CND17-13 | 1.4435 | A213 ^① /A269 |

① Nominal wall thickness, not minimum wall thickness.

Chemical Composition

| Element | Composition wt. % |
|------------|-------------------|
| Chromium | 17.0 to 18.0 |
| Nickel | 12.5 to 14.0 |
| Molybdenum | 2.50 to 3.00 |
| Carbon | 0.030 max |

Pressure Ratings

See Swagelok® *Tubing Data*, MS-01-107, for complete pressure ratings.

Ordering Information and Dimensions

Select an ordering number.

| Tube OD in. | Nominal Wall Thickness in. | Ordering Number | Nominal Length m (ft) | Weight kg/m |
|----------------------------|----------------------------|------------------|-----------------------|-------------|
| 316 / 316L Seamless | | | | |
| 1/16 | 0.014 | SS-T1-S-014-6ME | 6 (19.7) | 0.01 |
| | 0.020 | SS-T1-S-020-6ME | | 0.01 |
| 1/8 | 0.028 | SS-T2-S-028-6ME | | 0.04 |
| | 0.035 | SS-T2-S-035-6ME | | 0.05 |
| 1/4 | 0.035 | SS-T4-S-035-6ME | | 0.12 |
| | 0.049 | SS-T4-S-049-6ME | | 0.16 |
| | 0.065 | SS-T4-S-065-6ME | | 0.19 |
| 3/8 | 0.035 | SS-T6-S-035-6ME | | 0.19 |
| | 0.049 | SS-T6-S-049-6ME | | 0.25 |
| | 0.065 | SS-T6-S-065-6ME | | 0.32 |
| 1/2 | 0.035 | SS-T8-S-035-6ME | | 0.26 |
| | 0.049 | SS-T8-S-049-6ME | | 0.35 |
| | 0.065 | SS-T8-S-065-6ME | | 0.45 |
| | 0.083 | SS-T8-S-083-6ME | | 0.55 |
| 5/8 | 0.049 | SS-T10-S-049-6ME | | 0.45 |
| | 0.065 | SS-T10-S-065-6ME | | 0.58 |
| 3/4 | 0.049 | SS-T12-S-049-6ME | 0.56 | |
| | 0.065 | SS-T12-S-065-6ME | 0.71 | |
| 1 | 0.083 | SS-T16-S-083-6ME | 1.2 | |

Chemically Cleaned and Passivated and Thermocouple-Cleaned Tubing

Material Standards

| Grade | UNS | ASTM | ASME |
|-------|--------|-------------------|--------------------|
| 316L | S31603 | A269 ^① | SA213 ^① |

^① Nominal wall thickness, not minimum wall thickness.

Chemical Composition

| Element | Composition, wt. % |
|--|--|
| Chromium | 16.0 to 18.0 |
| Nickel | 10.0 to 15.0 |
| Molybdenum | 2.00 to 3.00 |
| Manganese | 2.00 max |
| Silicon | 0.75 max |
| Carbon | 0.035 max ^① |
| Sulfur (chemically cleaned and passivated) | 0.005 to 0.012 (seamless) 0.005 to 0.017 (welded) |
| Sulfur (thermocouple-cleaned) | 0.030 max |

^① Tubing sizes smaller than 1/2 in. outside diameter contain up to 0.040 wt. % carbon.

Tools and Accessories

See the Swagelok *Tools and Accessories* catalog, MS-01-169, for more information.



Tube Fittings

See the Swagelok *Gaugeable Tube Fittings and Adapter Fittings* catalog, MS-01-140, for information.



Swagelok Orbital Welding System

See the Swagelok *Orbital Welding System Quick Reference Guide*, MS-02-143, for more information.



Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Cleaning and Packaging

Chemically Cleaned and Passivated Tubing

This tubing complies with ASTM G93, Level A requirement for nonvolatile residue levels and also meets requirements of CGA G4.1. Tubing ends are protected with polyamide nylon film and polyethylene caps. Tubing is packed in single polyethylene, heat-sealed bags.

Thermocouple-Cleaned Tubing

This tubing meets the cleanliness requirements of ASTM A632-S3. Tubing ends are protected with polyethylene caps. Tubing is bulk packaged in polyethylene, heat-sealed bags.

| Product | Inside Diameter Surface Finish | Process Designator | External Finish |
|-----------------------------------|---------------------------------|--------------------|-----------------|
| Chemically cleaned and passivated | 20 μ m. R_a max | G20 | Satin |
| | 32 μ m. R_a max | G30 | |
| Thermocouple-cleaned | Standard finish (see ASTM A269) | G | |

Ordering Information and Dimensions

To order, add a process designator from the table above to a basic ordering number.

| Tube OD in. | Nominal Wall Thickness in. | Basic Ordering Number | Nominal Length m (ft) | Weight kg/m |
|----------------------|----------------------------|----------------------------------|-----------------------|-------------|
| 316L Seamless | | | | |
| 1/8 | 0.020 | 6L-T2-S-020-6M- | 6 (19.7) | 0.03 |
| | 0.028 | 6L-T2-S-028-6M-G ^① | | 0.04 |
| 1/4 | 0.035 | 6L-T4-S-035-6M- | | 0.12 |
| | 0.049 | 6L-T4-S-049-6M- | | 0.16 |
| 3/8 | 0.035 | 6L-T6-S-035-6M- | | 0.19 |
| | 0.049 | 6L-T6-S-049-6M- | | 0.25 |
| 1/2 | 0.035 | 6L-T8-S-035-6M- | | 0.26 |
| | 0.049 | 6L-T8-S-049-6M- | | 0.35 |
| | 0.065 | 6L-T8-S-065-6M- | | 0.45 |
| 5/8 | 0.065 | 6L-T10-S-065-6M- | | 0.58 |
| 3/4 | 0.065 | 6L-T12-S-065-6M- | | 0.71 |
| | 0.065 | 6L-T16-S-065-6M-G20 ^② | | 0.97 |
| 1 | 0.065 | 6L-T16-S-065-6M-G20 ^② | 0.97 | |
| | 0.083 | 6L-T16-S-083-6M- | 1.2 | |

^① For thermocouple-cleaned tubing only. To order, use ordering number shown.

^② For 20 μ m. tubing only. To order, use ordering number shown.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.