

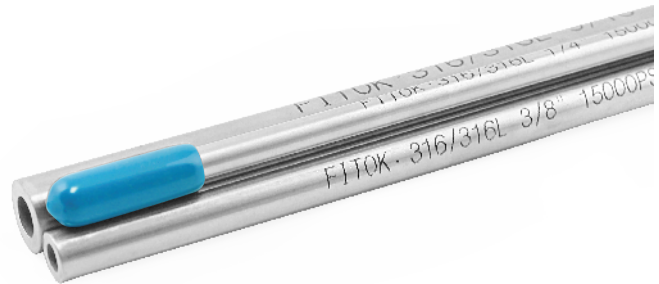
Medium and High Pressure Tubing

T15, T20D, T20M and T60 Series

T15 Series

Features

- Material: 316/316L, enhanced-316/316L
- Working pressure up to 15,000 psig (1034 bar)
- Working temperature: -325°F to 800°F (-198°C to 427°C)
- Annealed seamless or cold-drawn 1/8-hard seamless tubing
- For use with FITOK 20D series (formerly DHL series) tube fittings
- Marked with brand, material grade, specification, pressure, annealing code and heat number
- Standard length: 20 ft and 6 m



Materials

| UNS | Grade | FITOK Designator | Composition % | | | | | | | |
|------------------------|--------------------------------|------------------|---------------|-------|--------|-------|-------|-------|-------|---------|
| | | | C | Mn | P | S | Si | Cr | Ni | Mo |
| S31600/S31603 | 316/316L | SS | 0.035 | ≤2.00 | ≤0.045 | ≤0.03 | ≤1.00 | 16-18 | 10-14 | 2.0-3.0 |
| Enhanced-S31600/S31603 | Enhanced-316/316L ^① | SH | 0.030 | | | | | 17-18 | 12-14 | 2.6-3.0 |

① Enhanced-316/316L complying with GB50516-2021 Technical Code for Hydrogen Fuelling Station is available, in which Ni_{eq} is not less than 28.5%. Leave a note for your requirements when placing order.

Mechanical Properties

Cold-drawn 1/8-hard Seamless Tubing

| UNS | Grade | Yield Strength ksi | Tensile Strength ksi | Elongation % | Hardness |
|------------------------|-------------------|--------------------|----------------------|--------------|----------|
| S31600/S31603 | 316/316L | 75 to 110 | 105 to 140 | ≥25 | ≤26 HRC |
| Enhanced-S31600/S31603 | Enhanced-316/316L | | | | |

Annealed Seamless Tubing

| UNS | Grade | Yield Strength ksi | Tensile Strength ksi | Elongation % | Hardness |
|------------------------|-------------------|--------------------|----------------------|--------------|----------|
| S31600/S31603 | 316/316L | ≥30 | ≥75 | ≥30 | ≤90 HRB |
| Enhanced-S31600/S31603 | Enhanced-316/316L | | | | |

Dimensional Tolerance

| Tube O.D. in. | O.D. Tolerance in. | Wall Thickness Tolerance % |
|------------------|-----------------------|-------------------------------|
| 1/8 | +/-0.003 | +/-10 |
| 1/4 | +/-0.005 | |
| 3/8 | | |
| 1/2 | | |
| 9/16 | | |
| 3/4 | | |
| 1 | | |

Working Pressure at Ambient Temperature

Cold-drawn 1/8-hard Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Working Pressure ^① psig (bar) |
|------------------|-----------------------|---|
| 1/4 | 0.065 | 15,000 (1034) |
| 3/8 | 0.083 | |
| 1/2 | 0.109 | |
| 9/16 | 0.125 | |
| 3/4 | 0.165 | |
| 1 | 0.172 | 12500 (862) |

① Working pressures are calculated from an S value of 35,000 psi (241 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3.

Annealed Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Working Pressure ^① psig (bar) |
|------------------|-----------------------|---|
| 1/8 | 0.037 | 15,000 (1034) |
| 1/4 | 0.083 | 15,000 (1034) |
| | 0.065 | 10,300 (710) |
| 3/8 | 0.118 | 15,000 (1034) |
| | 0.095 | 10,000 (690) |
| 1/2 | 0.156 | 15,000 (1034) |
| | 0.134 | 11,200 (772) |
| 9/16 | 0.188 | 15,000 (1034) |
| 3/4 | 0.240 | 15,000 (1034) |
| | 0.188 | 10,000 (690) |
| 1 | 0.220 | 10,000 (690) |

① Working pressures are calculated from an S value of 20,000 psi (138 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3.

Elevated Temperature Factors

| Temperature | | Factor |
|-------------|-----|--------|
| °F | °C | |
| 100 | 38 | 1.00 |
| 200 | 93 | |
| 300 | 149 | |
| 400 | 204 | 0.96 |
| 500 | 260 | 0.89 |
| 600 | 316 | 0.85 |
| 700 | 371 | 0.81 |
| 800 | 427 | 0.79 |

Ordering Information

Cold-drawn 1/8-hard Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Ordering Number ^{①②} | |
|------------------|-----------------------|--|--|
| 1/4 | 0.065 | <input type="checkbox"/> <input type="checkbox"/> -T15-4-065-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-4-065-20 |
| 3/8 | 0.083 | <input type="checkbox"/> <input type="checkbox"/> -T15-6-083-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-6-083-20 |
| 1/2 | 0.109 | <input type="checkbox"/> <input type="checkbox"/> -T15-8-109-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-8-109-20 |
| 9/16 | 0.125 | <input type="checkbox"/> <input type="checkbox"/> -T15-9-125-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-9-125-20 |
| 3/4 | 0.165 | <input type="checkbox"/> <input type="checkbox"/> -T15-12-165-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-12-165-20 |
| 1 | 0.172 | <input type="checkbox"/> <input type="checkbox"/> -T15-16-172-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-16-172-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② To order, add the appropriate material designator as prefix: SS for 316/316L and SH for enhanced-316/316L.

Annealed Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Ordering Number ^{①②} | |
|------------------|-----------------------|--|--|
| 1/8 | 0.037 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-2-037-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-2-037-20 |
| 1/4 | 0.083 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-4-083-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-4-083-20 |
| | 0.065 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-4-065-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-4-065-20 |
| 3/8 | 0.118 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-6-118-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-6-118-20 |
| | 0.095 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-6-095-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-6-095-20 |
| 1/2 | 0.156 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-8-156-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-8-156-20 |
| | 0.134 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-8-134-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-8-134-20 |
| 9/16 | 0.188 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-9-188-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-9-188-20 |
| 3/4 | 0.240 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-12-240-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-12-240-20 |
| | 0.188 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-12-188-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-12-188-20 |
| 1 | 0.220 | <input type="checkbox"/> <input type="checkbox"/> -T15-A-16-220-6M | <input type="checkbox"/> <input type="checkbox"/> -T15-A-16-220-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② To order, add the appropriate material designator as prefix: SS for 316/316L and SH for enhanced-316/316L.