

Instrumentation Tubing

TMP and TCT Series

TMP Series

Features

- Materials: stainless steel, duplex stainless steel or Nickel-based alloy
- Sizes: 1/16" to 2" and 2 mm to 50 mm
- Working temperature: -325°F to 1000°F (-198°C to 537°C)
- Bright annealed or pickled with mechanically polished external surface
- For use with FITOK 6 series tube fittings, 4:1 safety factor for the tubing and connection part of fitting and tubing
- Marked with brand, material grade, standard, specification and heat number
- Standard length: 10 ft, 20 ft, 3 m and 6 m



Materials

| UNS | Grade | ASTM Standard | FITOK Designator | Composition % | | | | | Mechanical Properties | | | |
|--------------------------------|-----------------------|---------------|------------------|--------------------|-----------|-----------|-----------|----------|-----------------------|------------------------|----------------|------------|
| | | | | C ≤ | Cr | Ni | Mo | Others | Yield Strength MPa ≥ | Tensile Strength MPa ≥ | Elongation % ≥ | Hardness ≤ |
| S31600/ S31603 | 316/316L | A269 | SS | 0.035 ^① | 16-18 | 10-15 | 2.0-3.0 | - | 205 | 515 | 35 | 80 HRB |
| Enhanced- S31600/ S31603 | Enhanced- 316/316L | | SH | | 17-18 | 12-15 | 2.6-3.0 | | | | | |
| S30400/ S30403 | 304/304L | | S4 | | 18-20 | 8-11 | - | | | | | |
| S31254 | 6Mo | A269 | S12 | 0.02 | 19.5-20.5 | 17.5-18.5 | 6.0-6.5 | - | 310 | 675 | 35 | 96 HRB |
| S31803 | 2205 | A789 | D5 | 0.03 | 21-23 | 4.5-6.5 | 2.5-3.5 | - | 450 | 620 | 25 | 30 HRC |
| S32750 | 2507 | A789 | D7 | 0.03 | 24-26 | 6-8 | 3.0-5.0 | Cu,N | 550 | 800 | 15 | 32 HRC |
| N04400 | Alloy 400 | B165 | M | 0.30 | - | ≥63 | - | Cu 28-34 | 195 | 480 | 35 | 75 HRB |
| N08020 | Alloy 20 | B729 | A20 | 0.07 | 19-21 | 32-38 | 2.0-3.0 | Cu,Nb,Ta | 240 | 550 | 30 | 95 HRB |
| N06600 | Alloy 600 | B167 | INC | 0.15 | 14-17 | ≥72 | - | Cu | 205 | 550 | 35 | 92 HRB |
| N06625 | Alloy 625 | B444 | A65 | 0.10 | 20-23 | ≥58 | 8.0-10.0 | Cb,Ta | 414 | 827 | 30 | 25 HRC |
| N08825 | Alloy 825 | B163 | A85 | 0.05 | 19.5-23.5 | 38-46 | 2.5-3.5 | Cu,Ti | 241 | 586 | 30 | 201 HV |
| N10276 | Alloy C-276 | B622 | HC | 0.01 | 14.5-16.5 | BAL | 15.0-17.0 | W | 283 | 690 | 40 | 100 HRB |

① The carbon content of tubing with outside diameter smaller than 1/2" or wall thickness smaller than 0.049" is allowed up to 0.04%.

Dimensional Tolerance

| Materials | Tube O.D. (D) in. (mm) | O.D. Tolerance in. (mm) | Wall Thickness Tolerance % |
|--|--|----------------------------|-------------------------------|
| 316/316L Enhanced-316/316L 304/304L 6Mo | $D < 3/32$ (2.38) | +0.002 (0.05)/-0 | +/-10 |
| | $3/32$ (2.38) $\leq D < 3/16$ (4.76) | +0.003 (0.08)/-0 | |
| | $3/16$ (4.76) $\leq D \leq 1$ (25.4) | +/-0.004 (0.10) | |
| | 1 (25.4) $< D < 1\ 1/2$ (38.1) | +/-0.005 (0.13) | |
| | $1\ 1/2$ (38.1) $\leq D < 2$ (50.8) | +/-0.008 (0.2) | |
| | $D \geq 2$ (50.8) | +/-0.010 (0.25) | |
| 2205 2505 | $D < 1/2$ (12.7) | +/-0.005 (0.13) | +/-15 |
| | $1/2$ (12.7) $\leq D \leq 3/4$ (19.05) | | +/-10 |
| Alloy 400 Alloy 20 | $D < 5/8$ (16) | +/-0.005 (0.13) | +/-15 |
| | $5/8$ (16) $\leq D < 1$ (25) | | +/-10 |
| Alloy 600 | $D < 5/8$ (16) | +/-0.005 (0.13) | +/-12.5 |
| Alloy 625 | $3/16$ (4.8) $\leq D < 1/2$ (12.7) | +0.004 (0.10)/-0 | +/-10 |
| | $D \geq 1/2$ (12.7) | +0.005 (0.13)/-0 | |
| Alloy 825 | $D \leq 1/2$ (12.7) | +/-0.005 (0.13)/-0 | +/-12.5 |
| Alloy C-276 | | +/-0.005 (0.13) | |

Working Pressure at Ambient Temperature

Working pressures in the table below apply only to 316/316L, enhanced-316/316L and 304/304L. For working pressures of other materials, please contact FITOK Group or our authorized distributors.

Fractional

| Tube O.D. in. | Wall Thickness in. | | | | | | | | | | | | | | | |
|---------------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 0.010 | 0.012 | 0.014 | 0.016 | 0.020 | 0.028 | 0.035 | 0.049 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 | 0.134 | 0.156 | 0.188 |
| | Working Pressure psig | | | | | | | | | | | | | | | |
| 1/16 | 5600 | 6800 | 8100 | 9400 | 12000 | | | | | | | | | | | |
| 1/8 | | | | | | 8500 | 10900 | | | | | | | | | |
| 3/16 | | | | | | 5400 | 7000 | 10200 | | | | | | | | |
| 1/4 | | | | | | 4000 | 5100 | 7500 | 10200 | | | | | | | |
| 5/16 | | | | | | | 4000 | 5800 | 8000 | | | | | | | |
| 3/8 | | | | | | | 3300 | 4800 | 6500 | | | | | | | |
| 1/2 | | | | | | | 2600 | 3700 | 5100 | 6700 | | | | | | |
| 5/8 | | | | | | | | 2900 | 4000 | 5200 | 6000 | | | | | |
| 3/4 | | | | | | | | 2400 | 3300 | 4200 | 4900 | 5800 | | | | |
| 7/8 | | | | | | | | 2000 | 2800 | 3600 | 4200 | 4800 | | | | |
| 1 | | | | | | | | | 2400 | 3100 | 3600 | 4200 | 4700 | | | |
| 1 1/4 | | | | | | | | | | 2400 | 2800 | 3300 | 3600 | 4100 | 4900 | |
| 1 1/2 | | | | | | | | | | | 2300 | 2700 | 3000 | 3400 | 4000 | 4900 |
| 2 | | | | | | | | | | | | 2000 | 2200 | 2500 | 2900 | 3600 |

Note: For gas service, select a tube thickness outside of the shaded area when the tube is used with 6 series tube fittings.

Metric

| Tube O.D. mm | Wall Thickness mm | | | | | | | | | | | | | |
|--------------------|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 |
| | Working Pressure bar | | | | | | | | | | | | | |
| 3 | 670 | | | | | | | | | | | | | |
| 6 | 310 | 420 | 540 | 710 | | | | | | | | | | |
| 8 | | 310 | 390 | 520 | | | | | | | | | | |
| 10 | | 240 | 300 | 400 | 510 | 580 | | | | | | | | |
| 12 | | 200 | 250 | 330 | 410 | 470 | | | | | | | | |
| 14 | | 160 | 200 | 270 | 340 | 380 | 430 | 490 | | | | | | |
| 15 | | 150 | 190 | 250 | 310 | 360 | 400 | 450 | | | | | | |
| 16 | | | 170 | 230 | 290 | 330 | 370 | 400 | | | | | | |
| 18 | | | 150 | 200 | 260 | 290 | 320 | 370 | | | | | | |
| 20 | | | 140 | 180 | 230 | 260 | 290 | 330 | 380 | | | | | |
| 22 | | | 140 | 160 | 200 | 230 | 260 | 300 | 340 | | | | | |
| 25 | | | | | 180 | 200 | 230 | 260 | 290 | 320 | | | | |
| 28 | | | | | | 180 | 200 | 230 | 260 | 280 | 330 | | | |
| 30 | | | | | | 170 | 180 | 210 | 240 | 260 | 310 | | | |
| 32 | | | | | | 160 | 170 | 200 | 220 | 240 | 290 | 330 | | |
| 38 | | | | | | | 140 | 160 | 190 | 200 | 240 | 270 | 310 | |
| 50 | | | | | | | | | | 150 | 180 | 210 | 240 | 270 |

Note: For gas service, select a tube thickness outside of the shaded area when the tube is used with 6 series tube fittings.

Elevated Temperature Factors

| Temperature | | Factor | |
|-------------|-----|-----------------------------------|----------|
| °F | °C | 316/316L and Enhanced-316/316L | 304/304L |
| 200 | 93 | 1.00 | 1.00 |
| 400 | 204 | 0.96 | 0.93 |
| 600 | 315 | 0.85 | 0.82 |
| 800 | 426 | 0.79 | 0.76 |
| 1000 | 537 | 0.76 | 0.69 |

TCT Series

Features

- Materials: 316/316L, enhanced-316/316L or 304/304L
- Sizes: 1/4" to 1/2" and 6 mm to 12 mm
- Working temperature: -325°F to 1000°F (-198°C to 537°C)
- Bright annealed with mechanically polished external surface
- For use with FITOK 6 series tube fittings, 4:1 safety factor for the tubing and connection part of fitting and tubing
- Marked with brand, material grade, standard, specification and heat number



Materials

| UNS | Grade | ASTM Standard | FITOK Designator | Composition % | | | | Mechanical Properties | | | |
|----------------------|-------------------|---------------|------------------|---------------------|-------|-------|---------|-----------------------|----------------------|--------------|----------|
| | | | | C | Cr | Ni | Mo | Yield Strength MPa | Tensile Strength MPa | Elongation % | Hardness |
| S31600/S31603 | 316/316L | A269 | SS | ≤0.035 ^① | 16-18 | 10-15 | 2.0-3.0 | ≥205 | ≥515 | ≥35 | ≤80 HRB |
| Enhanced-31600/31603 | Enhanced-316/316L | | SH | | 17-18 | 12-15 | 2.6-3.0 | | | | |
| S30400/S30403 | 304/304L | | S4 | | 18-20 | 8-11 | - | | | | |

① The carbon content of tubing with outside diameter smaller than 1/2" or wall thickness smaller than 0.049" is allowed up to 0.04%.

Working Pressure

Refer to the working pressure of TMP series tubing.

Scope of Supply

Fractional

| Tube O.D. in. | Wall Thickness in. | Standard Coil Length ^① ft | Max. Coil Length ^② ft |
|---------------|--------------------|--------------------------------------|----------------------------------|
| 1/4 | 0.035 | 400 | 2130 |
| | 0.049 | | 2040 |
| | 0.065 | | 1960 |
| 3/8 | 0.035 | 400 | 1380 |
| | 0.049 | | 1260 |
| | 0.065 | | 1190 |
| 1/2 | 0.035 ^③ | 300 | 1000 |
| | 0.049 | | 900 |
| | 0.065 | | 850 |
| | 0.083 | | 700 |

① Minimum guaranteed length.

② Custom shorter length available subject to confirmation from FITOK.

③ Not recommended for use with 6 series tube fittings in gas service.

Metric

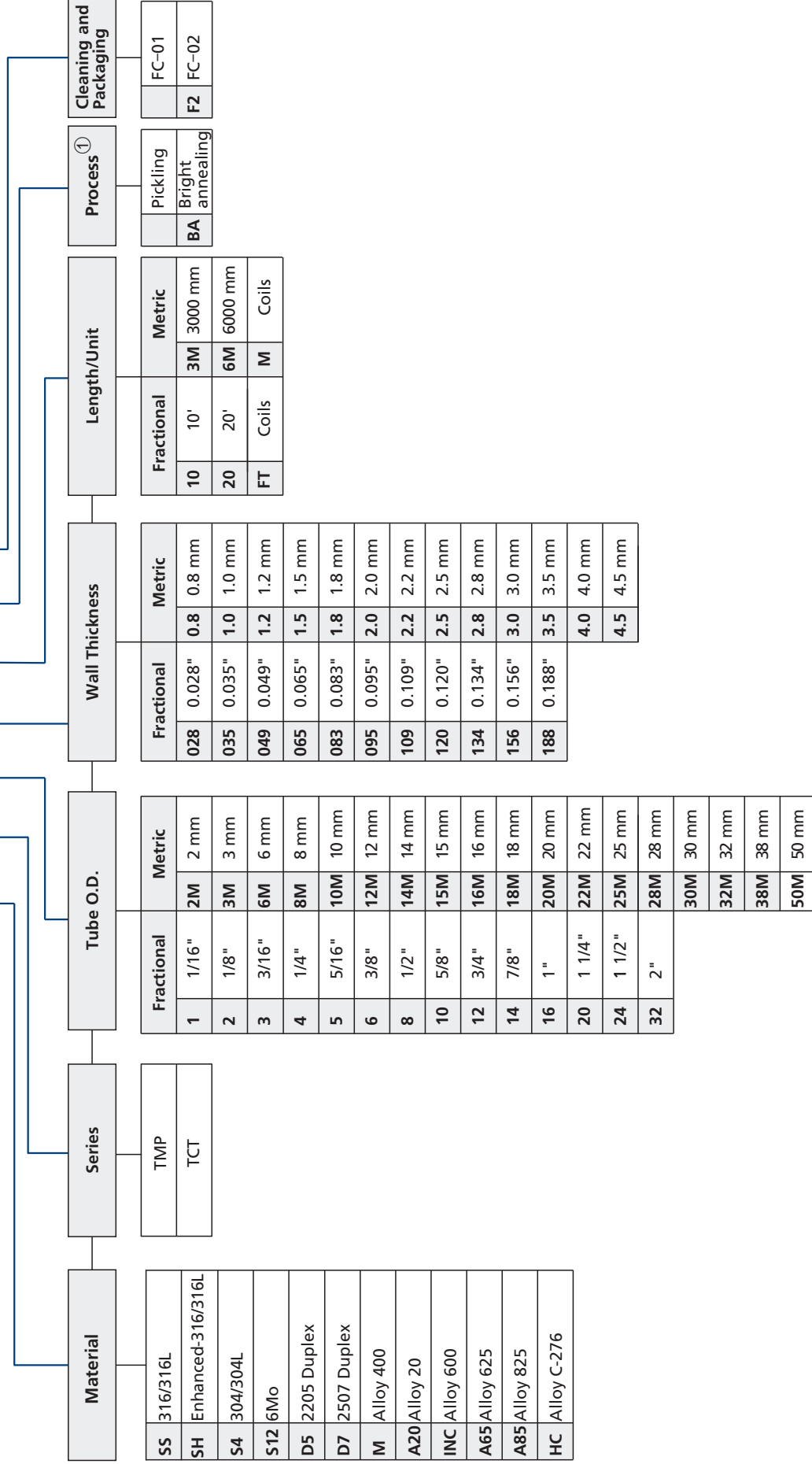
| Tube O.D. mm | Wall Thickness mm | Standard Coil Length ^① m | Max. Coil Length ^② m |
|--------------|-------------------|-------------------------------------|---------------------------------|
| 6 | 0.8 | 120 | 650 |
| | 1.0 | | 540 |
| | 1.2 | | 590 |
| | 1.5 | | 600 |
| 8 | 1.0 | 120 | 380 |
| | 1.2 | | 350 |
| | 1.5 | | 400 |
| 10 | 1.0 | 120 | 300 |
| | 1.2 | | 320 |
| | 1.5 | | 300 |
| 12 | 1.0 | 100 | 240 |
| | 1.2 | | 260 |
| | 1.5 | | 250 |
| | 2.0 | | 200 |

① Minimum guaranteed length.

② Custom shorter length available subject to confirmation from FITOK.

Ordering Number Description

SS - TMP - 6 - 049 - 20 - BA - F2



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available. For any questions, please contact FITOK group or our authorized distributors.

① Applicable to 316/316L and 304/304L TMP series tubing.