

Metal Chemistry

| Element | C | Mn | P | S | Si | Cr | Ni | Mo |
|--------------------------|------|------|-------|-------------|------|-----------|-----------|---------|
| 304 ¹ | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 18.0-20.0 | 8.0-10.0 | |
| 316L ¹ | 0.03 | 2.00 | 0.045 | 0.030 | 1.00 | 16.0-18.0 | 10.0-14.0 | 2.0-3.0 |
| 316L BPE ² | 0.03 | 2.00 | 0.045 | 0.05 - 0.17 | 1.00 | 16.0-18.0 | 10.0-14.0 | 2.0-3.0 |
| CF-8 ³ | 0.08 | 1.50 | 0.04 | 0.04 | 2.00 | 18.0-21.0 | 8.0-11.0 | |
| CF-8M ³ | 0.08 | 1.50 | 0.04 | 0.04 | 2.00 | 18.0-21.0 | 9.0-12.0 | 2.0-3.0 |

¹ AISI specifications for wrought material

² ASME BPE 2002

³ ASTM A743

- Percentages are maximums unless a range is specified

Finish Information

Finish Specifications

| PROCESS | RA micro inch | RA micron | ISO designation |
|--------------------------|---------------|--------------|-----------------|
| 150 grit | 30 - 35 | 0.75 - 0.875 | N6 |
| 150 grit + Electropolish | 12 - 20 | 0.3 - 0.5 | |
| 180 grit | 20 - 25 | 0.5 - 0.625 | |
| 180 grit + Electropolish | 10 - 16 | 0.25 - 0.4 | |
| 240 grit | 15 - 20 | 0.375 - 0.5 | N5 |
| 240 grit + Electropolish | 8 - 12 | 0.2 - 0.3 | |
| 320 grit | 8 - 12 | 0.2 - 0.3 | N4 |
| 320 grit + Electropolish | 6 - 12 | 0.15 - 0.3 | |

- Additional improvements to the surface finish require buffing and further electropolishing. The effect of electro polishing is to improve the existing surface by approximately 50%.
- Microinch = 2.54×10^{-5} m
Micron = 1.0×10^{-6} m

Finish Designations for Tubing and Fittings

| Finish Number | Finish Conditions |
|---------------|---|
| 1 | Mill Finish (bright annealed, pickled, sand blast or tumbled) |
| 3 | Polished 180 grit inside diameter (ID) only |
| 5 | Polished 150 grit outside diameter (OD) only |
| 7 | Polished 180 grit outside/inside diameter (OD/ID) |
| 3A | Polished 150 grit outside (OD), 180 grit inside diameter (ID) |

- 180 grit = 25Ra microinch = 0.5Ra micron (minimum)

3-A marking

Note: Bradford™ tubing meets 3A Sanitary Standards for Polished Metal Tubing for Milk and Milk products 33-01.

V