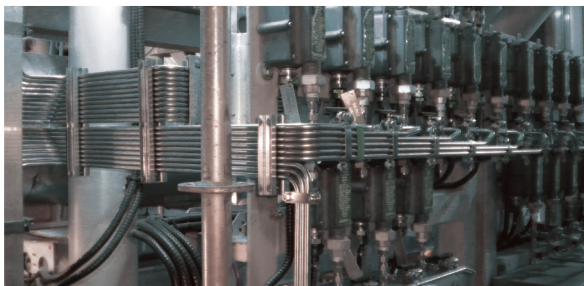


304/L & 316/L STAINLESS STEEL TUBING



Due to its excellent general corrosion resistance, high strength-to-weight ratio and remarkable ductility, stainless steel has become the predominant material choice for hydraulic and instrumentation tubing. The two grades of stainless steel tubing that are most commonplace are dual certified 304/L and 316/L. Often viewed as commodity grades, 304/L and 316/L can be found in use in a multitude of applications within countless industries worldwide. Whether it be seamless or welded, domestic or import, or 20 foot sticks or long length coils, stainless steel tubing is our core competency. It's not only in our name, it's at the heart of what we do.

PRODUCTION SPECIFICATIONS

ASME SA213/ASTM A213 (SEAMLESS),
ASME SA249/ASTM A249 (WELDED), ASTM A269

CHEMICAL COMPOSITION % (MAX.)		304/L UNS S30400 UNS S30403	316/L UNS S31600 UNS S31603
C	Carbon	0.035	0.035
Ma	Manganese	2.00	2.00
P	Phosphorous	0.045	0.045
S	Sulfur	0.030	0.030
Si	Silicon	1.00	1.00
Ni	Nickel	8.0-12.0	10.0-14.0
Cr	Chromium	18.0-20.0	16.0-18.0
Mo	Molybdenum	n/a	2.0-3.0

DIMENSIONAL TOLERANCES

Outside Diameter (OD)	OD Tolerance	Wall Tolerance
Up to .5"	+/- .005"	+/- 15%
.5" - 1.5" excl	+/- .005"	+/- 10%
1.5" - 3.5", excl	+/- .010"	+/- 10%
3.5" - 5.5", excl	+/- .015"	+/- 10%
Ni	Nickel	8.0-12.0
Cr	Chromium	18.0-20.0
Mo	Molybdenum	n/a

SIZE RANGE

Outside Diameter (OD)	Wall Thickness
1/16" - 4"	.010 " - .375"

FABRICATION

304/L and 316/L stainless steel has excellent fabrication properties. Its malleability allows it to be easily formed for flaring, bending and coiling. Good machinability and the low sulfur content promotes excellent weldability in applications requiring it.



SEAMLESS 304/L

OD	Wall	ID	Wt/Ft	OD	Wall	ID	Wt/Ft
1/16" (.0625")	.016 .020	.031 .023	.0080 .0091	1" (1.000")	.035 .049 .065 .083 .095 .109 .120 .134 .188 .250	.930 .902 .870 .834 .810 .782 .760 .732 .625 .500	.3607 .4977 .6491 .8129 .9182 1.037 1.128 1.239 1.630 2.033
1/8" (.125")	.010 .016 .020 .028 .035	.105 .093 .085 .069 .055	.0110 .0186 .0220 .0290 .0330	1 1/8" (1.125")	.049 .065	1.027 .995	.5630 .7359
3/16" (.1875")	.010 .016 .020 .028 .035	.168 .156 .148 .132 .118	.0190 .0294 .0350 .0478 .0570	1 1/4" (1.250")	.049 .065	1.152 1.120	.6280 .8226
1/4" (.250")	.010 .016 .020 .028 .035 .049 .065 .083 .095	.230 .218 .210 .194 .180 .152 .120 .084 .060	.0256 .0400 .0491 .0698 .0804 .1052 .1284 .1480 .1570	1 1/2" (1.500")	.035 .049 .065 .083 .095 .109 .120 .134 .156 .188 .250	1.430 1.402 1.370 1.328 1.282 1.260 1.232 1.188 1.125 1.000	.5470 .7593 .9962 1.256 1.426 1.619 1.769 1.955 2.239 2.634 3.338
5/16" (.3125")	.020 .028 .035 .049 .065	.272 .257 .243 .215 .183	.0620 .0852 .1037 .1441 .1720	1 3/4" (1.375")	.065	1.245	.9090
3/8" (.375")	.020 .028 .035 .035 .049 .065 .083 .095 .120	.335 .319 .305 .305 .277 .245 .209 .185 .135	.0758 .1030 .1271 .1271 .1706 .2152 .2588 .2841 .3260	2" (2.000")	.049 .065 .083 .095 .109 .120 .134 .156 .188 .250	1.902 1.870 1.834 1.782 1.760 1.732 1.625 1.500	1.021 1.343 1.699 2.201 2.409 2.671 3.638 4.673
7/16" (.4375")	.049	.339	.2040	2 1/4" (2.250")	.120	2.010	2.730
1/2" (.500")	.020 .028 .035 .049 .065 .083 .095 .109 .120	.460 .444 .430 .402 .370 .334 .310 .282 .260	1.025 1.411 1.738 2.360 3.020 3.696 4.109 4.550 4.870	2 1/2" (2.500")	.065 .120	2.370 2.260	1.690 3.050
5/8" (.625")	.028 .035 .049 .065 .083 .095 .120	.569 .555 .527 .495 .459 .435 .385	.1780 .2205 .3014 .3888 .4805 .5377 .6472	3" (3.000")	.065 .188 .250	2.870 2.624 2.500	2.037 5.646 7.343
3/4" (.750")	.028 .035 .049 .065 .083 .095 .109 .120 .188 .250	.694 .680 .652 .620 .584 .560 .532 .510 .374 .250	2.150 2.673 3.668 4.755 5.193 6.646 7.460 8.074 1.128 1.335	4" (4.000")	.065 .083	3.870 3.834	2.732 3.472
7/8" (.875")	.028 .035 .049 .065 .083 .095 .120	.819 .805 .777 .745 .709 .685 .635	2.533 3.140 4.323 5.623 7.021 7.914 9.676				

WELDED 304/L

OD	Wall	ID	Wt/Ft	OD	Wall	ID	Wt/Ft
1/8" (.125")	.035	.055	.0330	1 1/8" (1.125")	.049 .065	1.027 .995	.5630 .7359
3/16" (.1875")	.028 .035	.132 .118	.0478 .0570	1 1/4" (1.250")	.065 .120	1.120 1.010	.8226 1.448
1/4" (.250")	.028 .035 .049 .065	.194 .180 .152 .120	.0698 .0804 .1052 .1284	1 3/8" (1.375")	.049	1.277	.6940
5/16" (.3125")	.035	.243	.1037	1 1/2" (1.500")	.035 .049 .065 .120	1.430 1.402 1.370 1.260	.5470 .7593 .9962 1.769
3/8" (.375")	.035 .049 .065	.305 .277 .245	.1271 .1706 .2152	1 5/8" (1.625")	.065	1.495	1.083
7/16" (.4375")	.049	.339	.2040	1 3/4" (1.750")	.065 .120	1.620 1.510	1.170 2.089
1/2" (.500")	.035 .049 .065	.430 .402 .370	.1738 2.360 3.020	2" (2.000")	.049 .065 .083 .095 .109 .120	1.902 1.870 1.834 1.782 1.760	1.021 1.343 1.699 2.201 2.409
5/8" (.625")	.028 .035 .049 .065 .120	.569 .555 .527 .495 .385	.1780 .2205 .3014 .3888 .6472	2 1/2" (2.500")	.065 .083 .120	2.370 2.334 2.260	1.690 2.143 3.050
3/4" (.750")	.035 .049 .065 .083	.680 .652 .620 .584	.2673 .3668 .4755 .5913	3" (3.000")	.065 .083 .120	2.870 2.834 2.760	2.037 2.586 3.691
1" (1.000")	.035 .049 .065 .035 .049 .065 .083 .095 .120	.805 .777 .745 .930 .902 .870 .834 .810 .760	.3140 .4323 .5623 .3607 .4977 .6491 .8129 .9182 1.128	4" (4.000")	.065	3.870	2.732



SEAMLESS 316/L

OD	Wall	ID	Wt/Ft	OD	Wall	ID	Wt/Ft
1/16" (.0625")	.010 .016 .020	.043 .031 .023	.0050 .0080 .0091	1" (1.000")	.035 .049 .065	.930 .902 .870	.3607 .4977 .6491
1/8" (.125")	.010 .020 .028 .035 .049	.105 .085 .069 .055 .027	.0110 .0220 .0290 .0330 .0400		.083 .095 .109 .120 .134 .156 .188 .250	.834 .810 .782 .760 .732 .688 .625 .500	.8129 .9182 .1037 .1128 .1239 .1406 .1630 .2033
3/16" (.1875")	.020 .028 .035 .049	.148 .132 .118 .090	.0350 .0478 .0570 .0727	1 1/8" (1.125")	.035 .049 .065 .120	1.055 1.027 .995 .885	4074 5630 .7359 1.288
1/4" (.250")	.010 .016 .020 .028 .035 .049 .065 .083 .095	.230 .218 .210 .194 .180 .152 .120 .084 .060	.0256 .0400 .0491 .0698 .0804 .1052 .1284 .1480 .1570	1 1/4" (1.250")	.035 .049 .065 .083 .095 .109 .120 .134 .156 .188 .250	1.180 1.152 1.120 1.084 1.060 1.032 1.010 .982 .938 .875 .750	4540 6280 .8226 1.034 1.172 1.328 1.448 1.597 1.823 2.132 2.670
5/16" (.3125")	.020 .028 .035 .049 .065 .083 .095	.272 .257 .243 .215 .183 .147 .123	.0620 .0852 .1037 .1441 .1720 2030 2210	1 3/8" (1.375")	.065	1.245	.9090
3/8" (.375")	.020 .028 .035 .049 .065 .083 .095 .120	.335 .319 .305 .277 .245 .209 .185 .135	.0758 .1030 1271 .1706 2152 2588 2841 3260	1 1/2" (1.500")	.035 .049 .065 .083 .095 .120 .134 .156 .188 .250	1.430 1.402 1.370 1.334 1.310 1.282 1.260 1.232 1.188 1.125 1.000	5470 7593 9962 1.256 1.426 1.619 1.769 1.955 2.239 2.634 3.338
7/16" (.4375")	.020 .035 .049 .065	.398 .367 .339 .307	.0890 .1510 2040 2529	1 5/8" (1.625")	.065 .095	1.495 1.435	1.083 1.552
1/2" (.500")	.020 .028 .035 .049 .065 .083 .095 .109 .120	.460 .444 .430 .402 .370 .334 .310 .282 .260	1025 1411 1738 2360 3020 3696 4109 4550 4870	1 3/4" (1.750")	.065 .120	1.620 1.510	1.170 2.089
9/16" (.5625")	.035 .065	.492 .432	1970 3460	2" (2.000")	.035 .065 .083 .095 .109 .120 .140 .156 .188 .250 .313 .375	1.930 1.870 1.834 1.810 1.782 1.760 1.732 1.720 1.688 1.625 1.500 1.384 1.250	.7345 1.343 1.699 1.933 2.201 2.409 2.671 2.781 3.072 3.638 4.673 5.639 6.510
5/8" (.625")	.035 .049 .065 .083 .095 .120	.555 .527 .495 .459 .435 .385	2205 3014 3888 4805 5377 6472	2 1/4" (2.250")	.065 .120	2.120 2.010	1.517 2.730
3/4" (.750")	.035 .049 .065 .083 .095 .109 .120 .188 .250	.680 .652 .620 .584 .560 .532 .510 .374 .250	2673 3668 4755 5913 6646 7460 8074 1.128 1.335	2 1/2" (2.500")	.065 .120 .188 .250	2.370 2.260 2.124 2.000	1.690 3.050 4.642 6.008
				3" (3.000")	.065 .083 .120 .188 .250 .375	2.870 2.834 2.760 2.624 2.500 2.250	2.037 2.586 3.691 5.646 7.343 10.510
7/8" (.875")	.035 .049 .065 .120	.805 .777 .745 .635	3140 4323 5623 9676	3 1/2" (3.500")	.065 .083	3.370 3.334	2.385 3.030
				4" (4.000")	.065 .120	3.870 3.760	2.732 4.973

WELDED 316/L

OD	Wall	ID	Wt/Ft	OD	Wall	ID	Wt/Ft
1/8" (.125")	.035 .055	.0330	.0330	1 1/8" (1.125")	.049 .065	1.027 .995	.5630 .7359
1/4" (.250")	.028 .035 .049 .065	.194 .180 .152 .120	.0698 .0804 .1052 .1284	1 1/4" (1.250")	.065 .120	1.120 1.010	.8226 1.448
5/16" (.3125")	.035	.243	.1037	1 3/8" (1.375")	.065	1.245	.9090
3/8" (.3750")	.035 .049 .065	.243 .277 .245	.1271 .1706 .2152	1 1/2" (1.500")	.035 .049 .065	1.430 1.402 1.370 1.334 1.260	.5470 .7593 9962 1.256 1.769
1/2" (.500")	.035 .049 .065	.430 .402 .370	.1738 2360 3020	1 5/8" (1.625")	.065	1.495	1.083
5/8" (.625")	.035 .049 .065	.555 .527 .495	.2205 3014 3888	1 3/4" (1.750")	.065 .120	1.620 1.510	1.170 2.089
3/4" (.750")	.035 .049 .065 .083	.680 .652 .620 .584	.2673 3668 4755 5913	2" (2.000")	.049 .065 .083 .109 .120	1.902 1.870 1.834 1.782 1.760	1.201 1.343 1.699 2.201 2.409
7/8" (.8750")	.065	.745	.5623	2 1/4" (2.250")	.065 .120	2.120 2.010	1.517 2.730
1" (1.000")	.035 .049 .065 .083 .095 .120	.930 .902 .870 .834 .095 .120	.3607 .4977 .6491 .8129 .9182 1.128	2 1/2" (2.500")	.065 .083 .120	2.370 2.334 2.260	1.690 2.143 3.050
				3" (3.000")	.065 .083 .120	2.870 2.834 2.760	2.037 2.586 3.691
				4" (4.000")	.065 .083	3.870 3.834 3.760	2.732 3.472 4.973

