

PASLANMAZ ÇELİK BORU İMALAT NORMLARI



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BORŞEN

BORU SANAYİ ve TİCARET LTD. ŞTİ.

BWG VE SWG STANDARTLARININ ÖLÇÜ VE AĞIRLIKLARI

Dimensions and weight for BWG and SWG standard

| BD | | BWG-S (Birmingham Wire Gauge) | | | | | | | | | | | | | | | |
|--------|---------|-------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| UD | | 22 | | 20 | | 18 | | 16 | | 14 | | 12 | | 11 | | 10 | |
| AD | | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm |
| | | .028 | .711 | .035 | .889 | .049 | 1.244 | .065 | 1.650 | .083 | 2.108 | .109 | 2.768 | .120 | 3.047 | .134 | 3.403 |
| inch | mm | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m |
| 1/4" | 6,350 | | | .082 | .122 | .107 | .159 | .130 | .194 | | | | | | | | |
| 5/16" | 7,950 | | | .106 | .157 | .140 | .209 | .175 | .260 | | | | | | | | |
| 3/8" | 9,525 | | | .129 | .192 | .173 | .258 | .219 | .326 | .263 | .392 | | | | | | |
| 1/2" | 12,700 | .143 | .213 | .177 | .263 | .240 | .357 | .307 | .457 | .376 | .559 | .362 | .688 | .495 | .737 | | |
| 5/8" | 15,875 | .181 | .270 | .224 | .334 | .306 | .456 | .395 | .588 | .489 | .727 | .610 | .908 | .658 | .979 | | |
| 3/4" | 19,050 | | | .271 | .404 | .373 | .555 | .483 | .719 | .601 | .894 | .759 | 1.130 | .820 | 1.220 | .894 | 1.33 |
| 7/8" | 22,225 | .257 | .383 | .319 | .475 | .439 | .654 | .572 | .851 | .712 | 1.060 | .907 | 1.350 | .981 | 1.460 | 1.080 | 1.60 |
| 1" | 25,400 | .296 | .440 | .367 | .546 | .505 | .752 | .660 | .982 | .826 | 1.230 | 1.060 | 1.570 | 1.150 | 1.710 | 1.260 | 1.87 |
| 1.1/4" | 31,750 | .372 | .553 | .462 | .687 | .638 | .950 | .833 | 1.240 | 1.060 | 1.570 | 1.350 | 2.010 | 1.470 | 2.190 | 1.630 | 2.42 |
| 1.1/2" | 38,100 | .448 | .666 | .556 | .828 | .773 | 1.150 | 1.010 | 1.510 | 1.280 | 1.900 | 1.650 | 2.450 | 1.800 | 2.680 | 1.990 | 2.96 |
| 1.3/4" | 44,450 | .523 | .779 | .652 | .970 | .907 | 1.350 | 1.190 | 1.770 | 1.510 | 2.240 | 1.940 | 2.890 | 2.120 | 3.160 | 2.350 | 3.50 |
| 2" | 50,800 | .599 | .892 | .746 | 1.110 | 1.040 | 1.540 | 1.360 | 2.030 | 1.730 | 2.570 | 2.240 | 3.330 | 2.450 | 3.650 | 2.710 | 4.04 |
| 2.1/2" | 63,500 | | | | | 1.300 | 1.940 | 1.720 | 2.560 | 2.180 | 3.240 | 2.830 | 4.210 | 3.100 | 4.610 | 3.440 | 5.12 |
| 3" | 76,200 | | | | | 1.570 | 2.340 | 2.700 | 3.080 | 2.630 | 3.910 | 3.420 | 5.090 | 3.750 | 5.580 | 4.170 | 6.20 |
| 3.1/2" | 88,900 | | | | | 1.830 | 2.730 | 2.430 | 3.610 | 3.080 | 4.580 | 4.010 | 5.970 | 4.400 | 6.550 | 4.900 | 7.29 |
| 4" | 101,600 | | | | | 2.100 | 3.130 | 2.780 | 4.130 | 3.530 | 5.250 | 4.600 | 6.850 | 5.050 | 7.520 | 5.620 | 8.37 |

| BD | | SWG-S (Standart Wire Gauge) | | | | | | | | | | | | | | | |
|--------|---------|-----------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| UD | | 22 | | 20 | | 18 | | 16 | | 14 | | 12 | | 11 | | 10 | |
| AD | | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm |
| | | .028 | .711 | .036 | .914 | .048 | 1.218 | .064 | 1.625 | .080 | 2.032 | .104 | 2.641 | .116 | 2.946 | .128 | 3.251 |
| inch | mm | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m | lb/ft | kg/m |
| 1/4" | 6,350 | | | .083 | .124 | .105 | .157 | .129 | .192 | | | | | | | | |
| 5/16" | 7,950 | | | .108 | .161 | .138 | .205 | .173 | .257 | | | | | | | | |
| 3/8" | 9,525 | | | .132 | .197 | .170 | .253 | .216 | .321 | .256 | .381 | | | | | | |
| 1/2" | 12,700 | .143 | .213 | .181 | .270 | .235 | .350 | .303 | .451 | .365 | .543 | .447 | .665 | .484 | .720 | | |
| 5/8" | 15,875 | .181 | .270 | .230 | .342 | .300 | .447 | .390 | .580 | .473 | .704 | .588 | .875 | .641 | .954 | | |
| 3/4" | 19,050 | | | .279 | .415 | .366 | .544 | .476 | .709 | .582 | .866 | .732 | 1.090 | .800 | 1.190 | .867 | 1.29 |
| 7/8" | 22,225 | .257 | .383 | .328 | .488 | .431 | .641 | .563 | .838 | .692 | 1.030 | .874 | 1.300 | .954 | 1.420 | 1.040 | 1.55 |
| 1" | 25,400 | .296 | .440 | .376 | .560 | .496 | .738 | .650 | .967 | .800 | 1.190 | 1.020 | 1.510 | 1.120 | 1.660 | 1.210 | 1.80 |
| 1.1/4" | 31,750 | .372 | .553 | .474 | .706 | .626 | .931 | .827 | 1.230 | 1.020 | 1.510 | 1.300 | 1.930 | 1.430 | 2.130 | 1.560 | 2.32 |
| 1.1/2" | 38,100 | .448 | .666 | .572 | .851 | .759 | 1.130 | .994 | 1.480 | 1.240 | 1.840 | 1.580 | 2.350 | 1.740 | 2.590 | 1.910 | 2.84 |
| 1.3/4" | 44,450 | .523 | .779 | .669 | .996 | .887 | 1.320 | 1.170 | 1.740 | 1.450 | 2.160 | 1.860 | 2.770 | 2.060 | 3.060 | 2.250 | 3.35 |
| 2" | 50,800 | .599 | .892 | .766 | 1.140 | 1.020 | 1.510 | 1.340 | 2.000 | 1.670 | 2.480 | 2.140 | 3.190 | 2.370 | 3.530 | 2.600 | 3.87 |
| 2.1/2" | 63,500 | | | | | 1.280 | 1.900 | 1.690 | 2.520 | 2.100 | 3.130 | 2.710 | 4.030 | 3.000 | 4.470 | 3.300 | 4.91 |
| 3" | 76,200 | | | | | 1.540 | 2.290 | 2.000 | 3.030 | 2.530 | 3.770 | 3.270 | 4.870 | 3.630 | 5.400 | 3.990 | 5.94 |
| 3.1/2" | 88,900 | | | | | 1.790 | 2.670 | 2.390 | 3.550 | 2.970 | 4.420 | 3.830 | 5.700 | 4.260 | 6.340 | 4.680 | 6.97 |
| 4" | 101,600 | | | | | 2.060 | 3.060 | 2.740 | 4.070 | 3.410 | 5.070 | 4.400 | 6.540 | 4.890 | 7.280 | 5.380 | 8.01 |

PASLANMAZ DİKİŞSİZ BORU ASTM A EN 10216-5 NORM ÖLÇÜ VE BİRİM AĞIRLIKLARI
Dimensions and weight of seamless stainless steel pipes according Norm ASTM A EN 10216-5

| BORU DIŞ ÇAPLARI (mm) OUTSIDE DIAMETER | | 1 | 1,2 | 1,6 | 2 | 2,3 | 2,6 | 2,9 | 3,2 | 3,6 | 4 | 4,5 | 5 | 5,6 | 6,3 | 7,1 | 8 | 8,8 | 10 | 11 | 12,5 | 14,2 |
|---|-------|---|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-----|-----|-----|---|-----|----|----|------|------|
| 1 | 2 | | | | | | | | | | | | | | | | | | | | | |
| | 6 | | 0,125 | 0,144 | | | | | | | | | | | | | | | | | | |
| | 8 | | 0,176 | 0,204 | | | | | | | | | | | | | | | | | | |
| | 10 | | 0,225 | 0,264 | 0,410 | | | | | | | | | | | | | | | | | |
| | 10,2 | | 0,230 | 0,270 | 0,344 | | | | | | | | | | | | | | | | | |
| | 12 | | 0,275 | 0,313 | 0,416 | 0,601 | 0,769 | | | | | | | | | | | | | | | |
| | 13,5 | | 0,313 | 0,369 | 0,477 | 0,645 | | | | | | | | | | | | | | | | |
| | 14 | | 0,326 | 0,445 | 0,496 | 0,701 | | | | | | | | | | | | | | | | |
| | 16 | | 0,376 | 0,445 | 0,577 | 0,761 | 1,12 | | | | | | | | | | | | | | | |
| | 17,2 | | 0,406 | | 0,625 | 0,801 | 0,858 | | | | | | | | | | | | | | | |
| | 18 | | 0,425 | 0,535 | 0,657 | 0,851 | | | | | | | | | | | | | | | | |
| | 19 | | 0,451 | 0,535 | 0,697 | 0,901 | | | | | | | | | | | | | | | | |
| | 20 | | 0,476 | 0,564 | 0,737 | 0,966 | 1,14 | | | | | | | | | | | | | | | |
| | 21,3 | | 0,509 | | 0,789 | 1,00 | 1,10 | 1,45 | | 1,74 | | | | | | | | | | | | |
| | 22 | | 0,526 | | 0,815 | 1,15 | 1,46 | 1,75 | | | | | | | | | | | | | | |
| | 25 | | 0,601 | 0,715 | 0,937 | 1,17 | 1,48 | 1,75 | 1,90 | 2,10 | 2,29 | | | | | | | | | | | |
| | 26,9 | | 0,649 | 0,727 | 1,01 | 1,40 | 1,58 | 1,75 | 1,90 | 2,10 | 2,29 | | | | | | | | | | | |
| | 30 | | | 0,920 | 1,14 | 1,49 | 1,79 | 2,14 | 2,29 | 2,78 | | | | | | | | | | | | |
| | 31,8 | | | 0,920 | 1,21 | 1,58 | 1,90 | 2,29 | 2,78 | | | | | | | | | | | | | |
| | 32 | | | 0,926 | 1,21 | 1,58 | 1,90 | 2,29 | 2,78 | | | | | | | | | | | | | |
| | 33,7 | | 0,818 | 0,976 | 1,29 | 1,65 | 2,02 | 2,45 | 2,71 | 3,29 | | | | | | | | | | | | |
| | 35 | | | 1,02 | 1,46 | 1,81 | 2,30 | 2,79 | | | | | | | | | | | | | | |
| | 38 | | | 1,11 | 1,46 | 1,81 | 2,30 | 2,79 | | | | | | | | | | | | | | |
| | 40 | | | 1,17 | 1,54 | 2,02 | 2,44 | 2,86 | 3,14 | 3,49 | 4,27 | 4,68 | 5,16 | | | | | | | | | |
| | 42,4 | | | 1,63 | 2,02 | 2,44 | 2,86 | 3,14 | 3,49 | 4,27 | 4,68 | 5,16 | | | | | | | | | | |
| | 44,5 | | | 2,13 | 2,65 | 3,02 | 3,61 | 4,03 | 4,68 | 5,16 | 5,83 | 6,63 | | | | | | | | | | |
| | 48,3 | | 1,25 | 1,49 | 1,87 | 2,31 | 2,97 | 3,61 | 4,03 | 4,68 | 5,16 | 5,83 | 6,63 | | | | | | | | | |
| | 51 | | | 2,10 | 2,46 | 3,15 | 3,83 | 4,68 | 5,16 | 5,83 | 6,63 | 7,66 | 8,52 | | | | | | | | | |
| | 54 | | | 2,60 | 3,08 | 3,96 | 4,83 | 5,83 | 6,63 | 7,66 | 8,52 | 9,52 | 10,5 | | | | | | | | | |
| | 57 | | | 2,22 | 2,75 | 3,34 | 3,93 | 4,68 | 5,16 | 5,83 | 6,63 | 7,66 | 8,52 | | | | | | | | | |
| | 60,3 | | | 2,35 | 2,92 | 3,51 | 4,17 | 4,83 | 5,16 | 5,83 | 6,63 | 7,66 | 8,52 | | | | | | | | | |
| | 63,5 | | | 2,48 | 3,08 | 3,76 | 4,43 | 5,16 | 5,83 | 6,63 | 7,66 | 8,52 | 9,52 | | | | | | | | | |
| | 70 | | | 2,74 | 3,40 | 4,25 | 4,87 | 5,83 | 6,63 | 7,66 | 8,52 | 9,52 | 10,5 | | | | | | | | | |
| | 76,1 | | | 2,98 | 3,70 | 4,68 | 5,32 | 6,32 | 7,32 | 8,32 | 9,32 | 10,32 | 11,32 | | | | | | | | | |
| | 82,5 | | | 3,49 | 4,03 | 4,98 | 5,61 | 6,32 | 7,32 | 8,32 | 9,32 | 10,32 | 11,32 | | | | | | | | | |
| | 101,6 | | | 4,98 | 5,61 | 6,32 | 7,32 | 8,32 | 9,32 | 10,32 | 11,32 | 12,32 | 13,32 | | | | | | | | | |
| | 114,3 | | | | | | | | | | | | | | | | | | | | | |
| | 139,7 | | | | | | | | | | | | | | | | | | | | | |
| | 168,3 | | | | | | | | | | | | | | | | | | | | | |
| | 219,1 | | | | | | | | | | | | | | | | | | | | | |
| | 273 | | | | | | | | | | | | | | | | | | | | | |
| | 323,9 | | | | | | | | | | | | | | | | | | | | | |
| | 355,6 | | | | | | | | | | | | | | | | | | | | | |
| | 406,4 | | | | | | | | | | | | | | | | | | | | | |

ASTM A EN 10216-5 ASTM A EN 10217-7

| BORU DİS ÇAPLARI (mm) OUTSIDE DIAMETER | | PASLANMAZ DIĞIŞLI BORU NORM ÖLÇÜ VE BİRİM AĞIRLIK/Dimensions and weight of welded stainless steel pipes according | | | | | | | | | | | | | | | | | | |
|---|------|---|-------|-------|-------|-------|------|------|------|------|-----|---|-----|---|-----|-----|-----|---|-----|--|
| 1 | 2 | 3 | 1 | 1,2 | 1,6 | 2 | 2,3 | 2,6 | 2,9 | 3,2 | 3,6 | 4 | 4,5 | 5 | 5,6 | 6,3 | 7,1 | 8 | 8,8 | |
| | 6 | | 0,125 | | | | | | | | | | | | | | | | | |
| | 8 | | 0,176 | | | | | | | | | | | | | | | | | |
| | 10 | | 0,225 | 0,264 | | | | | | | | | | | | | | | | |
| 10,2 | | | 0,230 | 0,270 | | | | | | | | | | | | | | | | |
| 13,5 | | | 0,275 | 0,313 | 0,369 | | | | | | | | | | | | | | | |
| | 14 | | 0,326 | | | | | | | | | | | | | | | | | |
| 17,2 | | | 0,376 | 0,445 | | | | | | | | | | | | | | | | |
| | 18 | | 0,425 | 0,535 | 0,657 | 0,801 | | | | | | | | | | | | | | |
| | 19 | | 0,451 | 0,564 | 0,697 | 0,851 | | | | | | | | | | | | | | |
| | 20 | | 0,476 | 0,564 | 0,737 | 0,901 | | | | | | | | | | | | | | |
| 21,3 | | | 0,509 | | 0,789 | 0,966 | | | | | | | | | | | | | | |
| | 22 | | 0,526 | | 0,815 | 0,937 | 1,15 | | | | | | | | | | | | | |
| | 25 | | 0,601 | 0,715 | 0,937 | 1,15 | 1,46 | | | | | | | | | | | | | |
| 26,9 | | 25,4 | 0,649 | 0,727 | 0,953 | 1,17 | 1,48 | | | | | | | | | | | | | |
| | 30 | | | 0,920 | 1,14 | 1,40 | 1,79 | | | | | | | | | | | | | |
| 31,8 | | | | 0,925 | 1,21 | 1,49 | 1,90 | | | | | | | | | | | | | |
| 32 | | | | | 1,50 | 1,50 | 1,90 | | | | | | | | | | | | | |
| 33,7 | | | 0,818 | 0,976 | 1,29 | 1,58 | 1,81 | 2,02 | 2,23 | 2,45 | | | | | | | | | | |
| | 35 | | | 1,02 | 1,46 | 1,81 | 2,30 | | | 2,79 | | | | | | | | | | |
| | 38 | | | 1,11 | 1,54 | 2,02 | 2,44 | | | 3,14 | | | | | | | | | | |
| 42,4 | | | | 1,17 | 1,63 | 2,13 | 2,59 | | | 3,49 | | | | | | | | | | |
| | 40 | | | | 1,63 | 2,13 | 2,73 | 3,02 | | | | | | | | | | | | |
| 48,3 | | | | 1,87 | 1,87 | 2,31 | 2,97 | | | 3,61 | | | | | | | | | | |
| | 51 | | 1,25 | 1,49 | 1,98 | 2,46 | 3,15 | | | 3,83 | | | | | | | | | | |
| | 54 | | | | 2,10 | 2,60 | 3,35 | | | | | | | | | | | | | |
| 60,3 | | | | 2,22 | 2,75 | 3,40 | 4,25 | | | 4,87 | | | | | | | | | | |
| | 57 | | | 2,35 | 2,92 | 3,70 | 4,78 | | | 5,32 | | | | | | | | | | |
| 63,5 | | | | 2,48 | 3,08 | 4,03 | 5,11 | | | 5,77 | | | | | | | | | | |
| 70 | | | | 2,74 | 3,40 | 4,35 | 5,61 | | | 6,35 | | | | | | | | | | |
| 76,1 | | | | 2,98 | 3,70 | 4,98 | 6,24 | | | 7,17 | | | | | | | | | | |
| 88,9 | | | | 3,49 | 4,35 | 5,61 | 7,17 | | | 8,51 | | | | | | | | | | |
| | 82,5 | | | 4,98 | 6,09 | 7,27 | 8,90 | | | 9,98 | | | | | | | | | | |
| 114,3 | | | | 4,52 | 5,62 | 6,89 | 8,32 | | | 9,98 | | | | | | | | | | |
| 139,7 | | | | 5,53 | 6,89 | 8,32 | 10,8 | | | 11,0 | | | | | | | | | | |
| 168,3 | | | | 6,68 | 8,32 | 10,8 | 13,2 | | | 14,8 | | | | | | | | | | |
| 219,1 | | | | 10,9 | 13,6 | 16,1 | 19,9 | | | 21,5 | | | | | | | | | | |
| 273 | | | | 13,6 | 16,1 | 19,9 | 24,3 | | | 24,3 | | | | | | | | | | |
| 323,9 | | | | 16,1 | 20,2 | 25,4 | 30,2 | | | 30,2 | | | | | | | | | | |
| 355,6 | | | | 17,7 | 22,7 | 28,2 | 33,9 | | | 33,9 | | | | | | | | | | |
| 406,4 | | | | 20,2 | 25,4 | 30,2 | 35,9 | | | 35,9 | | | | | | | | | | |
| 457 | | | | 22,7 | 28,2 | 33,9 | 39,9 | | | 39,9 | | | | | | | | | | |
| 508 | | | | 25,4 | 30,2 | 35,9 | 42,2 | | | 42,2 | | | | | | | | | | |
| 610 | | | | 30,2 | 35,9 | 42,2 | 49,9 | | | 49,9 | | | | | | | | | | |
| 711 | | | | 35,9 | 42,2 | 49,9 | 58,9 | | | 58,9 | | | | | | | | | | |
| 813 | | | | 42,2 | 49,9 | 58,9 | 68,2 | | | 68,2 | | | | | | | | | | |
| 914 | | | | 49,9 | 58,9 | 68,2 | 79,1 | | | 79,1 | | | | | | | | | | |
| 1016 | | | | 58,9 | 68,2 | 79,1 | 91,2 | | | 91,2 | | | | | | | | | | |

ANSI B 36.19 VE B 36.10 NORMLARININ ÖLÇÜ VE AĞIRLIK TABLOSU

Dimensions and Weight of Pipes According Norm ANSI B 36.19 and 36.10

| Nominal çap (inç) Nominal diameter in inch | Dış çap (mm) Outside diameter in mm. | ANSI B 36.19 | | | | | | | | ANSI B 36.10 | | | | | | | |
|--|--|-----------------------------|---------|------|---------|------------------------------------|---------|-------------|---------|-----------------------------|---------|------|---------|------------------------------------|---------|----------|---------|
| | | Nominal kalınlık ve ağırlık | | | | Nominal thickness and weight / mt. | | | | Nominal kalınlık ve ağırlık | | | | Nominal thickness and weight / mt. | | | |
| | | 5 S | | 10 S | | SCHED. 40 S | | SCHED. 80 S | | 10 | | 20 | | 30 | | Standard | |
| mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. |
| 1/8" | 10,29 | - | - | 1,24 | 0,281 | 1,73 | 0,371 | 2,41 | 0,476 | - | - | - | - | - | - | 1,73 | 0,371 |
| 1/4" | 13,72 | - | - | 1,65 | 0,499 | 2,24 | 0,644 | 3,02 | 0,809 | - | - | - | - | - | - | 2,24 | 0,644 |
| 3/8" | 17,15 | - | - | 1,65 | 0,640 | 2,31 | 0,858 | 3,20 | 1,118 | - | - | - | - | - | - | 2,31 | 0,858 |
| 1/2" | 21,34 | 1,65 | 0,814 | 2,11 | 1,016 | 2,77 | 1,26 | 3,73 | 1,62 | - | - | - | - | - | - | 2,77 | 1,26 |
| 3/4" | 26,67 | 1,65 | 1,034 | 2,11 | 1,298 | 2,87 | 1,68 | 3,91 | 2,19 | - | - | - | - | - | - | 2,87 | 1,68 |
| 1" | 33,40 | 1,65 | 1,312 | 2,77 | 2,125 | 3,38 | 2,50 | 4,55 | 3,23 | - | - | - | - | - | - | 3,38 | 2,50 |
| 1 1/4" | 42,16 | 1,65 | 1,674 | 2,77 | 2,732 | 3,56 | 3,38 | 4,85 | 4,46 | - | - | - | - | - | - | 3,56 | 3,38 |
| 1 1/2" | 48,26 | 1,65 | 1,926 | 2,77 | 3,155 | 3,68 | 4,05 | 5,08 | 5,40 | - | - | - | - | - | - | 3,68 | 4,0 |
| 2" | 60,33 | 1,65 | 2,424 | 2,77 | 3,992 | 3,91 | 5,43 | 5,54 | 7,47 | - | - | - | - | - | - | 3,91 | 5,43 |
| 2 1/2" | 73,03 | 2,11 | 3,747 | 3,05 | 5,345 | 5,16 | 8,62 | 7,01 | 11,40 | - | - | - | - | - | - | 5,16 | 8,62 |
| 3" | 88,90 | 2,11 | 4,585 | 3,05 | 6,357 | 5,49 | 11,28 | 7,62 | 15,25 | - | - | - | - | - | - | 5,49 | 11,28 |
| 3 1/2" | 101,60 | 2,11 | 5,272 | 3,05 | 7,526 | 5,74 | 13,56 | 8,08 | 18,62 | - | - | - | - | - | - | 5,74 | 13,5 |
| 4" | 114,30 | 2,11 | 5,945 | 3,05 | 8,496 | 6,02 | 16,06 | 8,56 | 22,29 | - | - | - | - | - | - | 6,02 | 16,06 |
| 5" | 141,30 | 2,77 | 9,639 | 3,40 | 11,740 | 6,55 | 21,76 | 9,52 | 30,92 | - | - | - | - | - | - | 6,55 | 21,76 |
| 6" | 168,28 | 2,77 | 11,514 | 3,40 | 14,037 | 7,11 | 28,23 | 10,97 | 42,52 | - | - | - | - | - | - | 7,11 | 28,23 |
| 8" | 219,08 | 2,77 | 15,049 | 3,76 | 20,334 | 8,18 | 42,49 | 12,7 | 64,57 | - | - | 6,35 | 33,28 | 7,04 | 36,80 | 8,18 | 42,49 |
| 10" | 273,05 | 3,40 | 23,028 | 4,19 | 28,290 | 9,27 | 60,24 | 12,7 | 81,46 | - | - | 6,35 | 41,70 | 7,8 | 51,00 | 9,27 | 60,2 |
| 12" | 323,85 | 3,96 | 31,806 | 4,57 | 36,633 | 9,52 | 73,76 | 12,7 | 97,36 | - | - | 6,35 | 49,68 | 8,38 | 65,14 | 9,52 | 73,76 |
| 14" | 355,60 | 3,98 | 34,99 | 4,78 | 42,102 | 9,52 | 81,21 | 12,7 | 107,28 | 6,35 | 54,63 | 7,92 | 67,98 | 9,52 | 81,21 | 9,52 | 81,21 |
| 16" | 406,40 | 4,19 | 42,35 | 4,78 | 48,220 | 9,52 | 93,13 | 12,7 | 123,18 | 6,35 | 62,58 | 7,92 | 77,90 | 9,52 | 93,13 | 9,52 | 93,13 |
| 18" | 457,20 | 4,19 | 47,7 | 4,78 | 54,300 | 9,52 | 105,05 | 12,7 | 139,07 | 6,35 | 70,50 | 7,92 | 87,80 | 11,13 | 122,12 | 9,52 | 105,03 |
| 20" | 508,00 | 4,77 | 60,32 | 5,53 | 69,766 | 9,52 | 116,97 | 12,7 | 154,97 | 6,35 | 78,47 | 9,52 | 116,97 | 12,7 | 155,00 | 9,52 | 116,97 |
| 22" | 558,8 | 4,77 | 66,10 | 5,53 | 76,49 | 9,52 | 128,89 | 12,7 | 170,86 | 6,35 | 86,42 | 9,52 | 128,89 | 12,7 | 170,86 | 9,52 | 128,89 |
| 24" | 609,6 | 5,54 | 84,10 | 6,35 | 96,215 | 9,52 | 140,81 | 12,7 | 186,75 | 6,35 | 96,216 | 9,52 | 140,8 | 14,7 | 209,54 | 9,52 | 140,81 |
| 26" | 660,4 | - | - | - | - | 9,52 | 152,73 | 12,7 | 202,65 | 7,92 | 127,58 | 12,7 | 202,65 | - | - | 9,52 | 152,73 |
| 28" | 711,6 | - | - | - | - | 9,52 | 164,65 | 12,7 | 218,54 | 7,92 | 137,52 | 12,7 | 218,54 | 15,88 | 271,94 | 9,52 | 164,8 |
| 30" | 762 | 6,35 | 120,59 | 7,92 | 147,45 | 9,52 | 176,57 | 12,7 | 234,44 | 7,92 | 147,45 | 12,7 | 234,44 | 15,88 | 291,81 | 9,52 | 176,57 |
| 32" | 812,8 | - | - | - | - | 9,52 | 188,5 | 12,7 | 250,33 | 7,92 | 157,39 | 12,7 | 250,33 | 15,88 | 311,67 | 9,52 | 188,5 |
| 34" | 863,6 | - | - | - | - | 9,52 | 200,42 | 12,7 | 266,22 | 7,92 | 167,32 | 12,7 | 266,22 | 15,88 | 331,54 | 9,52 | 200,42 |
| 36" | 914,4 | - | - | - | - | 9,52 | 212,34 | 12,7 | 282,12 | 7,92 | 177,26 | 12,7 | 282,12 | 15,88 | 351,41 | 9,52 | 212,3 |

ANSI B 36.19 VE B 36.10 NORMLARININ ÖLÇÜ VE AĞIRLIK TABLOSU
Dimensions and Weight of Pipes According Norm ANSI B 36.19 and 36.10

| Nominal cap (inc) Nominal diameter in inch | Dış çap (mm) Outside diameter in mm. | ANSI B 36.10 | | | | | | | | | | | | | | | | | |
|---|---|-----------------------------|---------|-------|---------|--------------|---------|-------|---------|------------------------------------|---------|-------|---------|-------|---------|-------|---------|---------------------|---------|
| | | Nominal kalınlık ve ağırlık | | | | | | | | Nominal thickness and weight / mt. | | | | | | | | | |
| | | 40 | | 60 | | Extra Strong | | 80 | | 100 | | 120 | | 140 | | 160 | | Double Extra Strong | |
| mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. | mm. | Kg / m. |
| 1/8" | 10,29 | 1,73 | 0,371 | - | - | 2,41 | 0,476 | 2,41 | 0,476 | - | - | - | - | - | - | - | - | - | - |
| 1/4" | 13,72 | 2,24 | 0,644 | - | - | 3,02 | 0,809 | 3,02 | 0,809 | - | - | - | - | - | - | - | - | - | - |
| 3/8" | 17,15 | 2,31 | 0,858 | - | - | 3,20 | 1,118 | 3,20 | 1,118 | - | - | - | - | - | - | - | - | - | - |
| 1/2" | 21,34 | 2,77 | 1,26 | - | - | 3,73 | 1,62 | 3,73 | 1,62 | - | - | - | - | - | - | 4,78 | 1,95 | 7,47 | 2,54 |
| 3/4" | 26,67 | 2,87 | 1,68 | - | - | 3,91 | 2,19 | 3,91 | 2,19 | - | - | - | - | - | - | 5,56 | 2,89 | 7,82 | 3,63 |
| 1" | 33,40 | 3,38 | 2,50 | - | - | 4,55 | 3,23 | 4,55 | 3,23 | - | - | - | - | - | - | 6,35 | 4,23 | 9,09 | 5,45 |
| 1 1/4" | 42,16 | 3,56 | 3,38 | - | - | 4,85 | 4,46 | 4,85 | 4,46 | - | - | - | - | - | - | 6,35 | 5,60 | 9,70 | 7,75 |
| 1 1/2" | 48,26 | 3,68 | 4,05 | - | - | 5,08 | 5,40 | 5,08 | 5,40 | - | - | - | - | - | - | 7,14 | 7,23 | 10,16 | 9,54 |
| 2" | 60,33 | 3,91 | 5,43 | - | - | 5,54 | 7,47 | 5,54 | 7,47 | - | - | - | - | - | - | 8,74 | 11,10 | 11,07 | 13,44 |
| 2 1/2" | 73,03 | 5,16 | 8,62 | - | - | 7,01 | 11,40 | 7,01 | 11,40 | - | - | - | - | - | - | 9,52 | 14,90 | 14,02 | 20,39 |
| 3" | 88,90 | 5,49 | 11,28 | - | - | 7,62 | 15,25 | 7,62 | 15,25 | - | - | - | - | - | - | 11,13 | 21,30 | 15,24 | 27,65 |
| 3 1/2" | 101,60 | 5,74 | 13,56 | - | - | 8,08 | 18,62 | 8,08 | 18,62 | - | - | - | - | - | - | - | - | - | - |
| 4" | 114,30 | 6,02 | 16,06 | - | - | 8,56 | 22,29 | 8,56 | 22,29 | - | - | 11,13 | 28,25 | - | - | 13,50 | 33,50 | 17,12 | 40,99 |
| 5" | 141,30 | 6,55 | 21,76 | - | - | 9,52 | 30,92 | 9,52 | 30,92 | - | - | 12,70 | 40,20 | - | - | 15,90 | 49,00 | 19,05 | 57,37 |
| 6" | 168,28 | 7,11 | 28,23 | - | - | 10,97 | 42,52 | 10,97 | 42,52 | - | - | 14,30 | 54,20 | - | - | 18,20 | 67,40 | 21,95 | 79,11 |
| 8" | 219,08 | 8,18 | 42,49 | 10,30 | 53,00 | 12,7 | 64,57 | 12,70 | 64,57 | 15,10 | 75,70 | 18,20 | 9,20 | 20,60 | 100,80 | 23,00 | 111,20 | 22,22 | 107,78 |
| 10" | 273,05 | 9,27 | 60,24 | 12,70 | 81,46 | 12,7 | 81,46 | 15,09 | 95,84 | 18,26 | 114,59 | 21,44 | 132,85 | 25,40 | 154,97 | 28,58 | 172,11 | - | - |
| 12" | 323,85 | 10,31 | 79,71 | 14,27 | 108,97 | 12,7 | 97,36 | 17,48 | 131,81 | 21,44 | 159,67 | 25,40 | 186,70 | 28,58 | 207,87 | 33,32 | 238,60 | - | - |
| 14" | 355,60 | 11,13 | 94,31 | 15,09 | 126,51 | 12,7 | 107,28 | 19,05 | 157,90 | 23,83 | 194,64 | 27,79 | 224,36 | 31,75 | 253,32 | 35,71 | 281,49 | - | - |
| 16" | 406,40 | 12,70 | 123,18 | 16,66 | 160,04 | 12,7 | 123,18 | 21,44 | 203,26 | 26,19 | 245,34 | 30,96 | 286,33 | 36,53 | 332,72 | 40,49 | 364,94 | - | - |
| 18" | 457,20 | 14,27 | 155,90 | 19,05 | 205,60 | 12,7 | 139,7 | 23,83 | 254,24 | 29,36 | 309,55 | 34,92 | 363,33 | 39,67 | 408,21 | 45,24 | 459,18 | - | - |
| 20" | 508,00 | 15,09 | 183,14 | 20,62 | 247,79 | 12,7 | 154,97 | 26,19 | 310,91 | 32,54 | 381,20 | 38,10 | 441,06 | 44,45 | 507,63 | 50,01 | 564,24 | - | - |
| 22" | 558,8 | 15,87 | 213,8 | 22,22 | 293,8 | 12,7 | 170,86 | 28,57 | 373,27 | 34,92 | 450,75 | 41,27 | 526,24 | 47,62 | 599,76 | 53,97 | 671,28 | - | - |
| 24" | 609,6 | 17,48 | 254,74 | 24,61 | 354,82 | 12,7 | 186,75 | 30,96 | 441,30 | 38,89 | 546,84 | 46,02 | 639,18 | 52,37 | 719,18 | 59,54 | 800,74 | - | - |
| 26" | 660,4 | - | - | - | - | 12,7 | 202,65 | - | - | - | - | - | - | - | - | - | - | - | - |
| 28" | 711,2 | - | - | - | - | 12,7 | 218,54 | - | - | - | - | - | - | - | - | - | - | - | - |
| 30" | 762 | - | - | - | - | 12,7 | 234,44 | - | - | - | - | - | - | - | - | - | - | - | - |
| 32" | 812,8 | 17,48 | 242,17 | - | - | 12,7 | 250,33 | - | - | - | - | - | - | - | - | - | - | - | - |
| 34" | 863,6 | 17,48 | 364,01 | - | - | 12,7 | 266,22 | - | - | - | - | - | - | - | - | - | - | - | - |
| 36" | 914,4 | 19,05 | 420,21 | - | - | 12,7 | 282,12 | - | - | - | - | - | - | - | - | - | - | - | - |

PASLANMAZ BORULARIN İMALAT NORMLARI

Manufacture norms of stainless steel tubes

| | |
|--------------|---|
| ASTM A 213 | Dikişsiz Ferritik ve Austenitik Isıtıcı, Süper Isıtıcı ve Isı Değiştirgeç Tüp İmalatında Seamless Ferritic and Austenitic Alloy - Steel Boiler, Superheater and Heat - Exchanger Tubes |
| ASTM A 268 | Ferritik Paslanmaz Çelik Malzemeden Genel Amaçlı Dikişli ve Dikişsiz Boru İmalatı Seamless and Welded Ferritic Stainless Steel Tubing for General Service |
| ASTM A 269 | Austenitik Paslanmaz Çelik Malzemeden Genel Amaçlı Dikişsiz ve Dikişli Tüp İmalatı Seamless and Welded Austenitic Stainless Steel Tubing for General Service |
| ASTM A 270 | Austenitik Paslanmaz Çelik Malzemeden Dikişli ve Dikişsiz Gıda Endüstrisine Uygun Boru İmalatı Seamless and Welded Austenitic Stainless Steel Sanitary Tubing |
| ASTM A 271 | Austenitik Paslanmaz Çelik Malzemeden Dikişsiz Rafineri Servis Borusu İmalatı Seamless Austenitic Chromium - Nickel Steel Tubes for Refinery Service |
| ASTM A 312 | Austenitik Paslanmaz Çelik Malzemeden Dikişli ve Dikişsiz Boru İmalatı Seamless and Welded Austenitic Stainless Steel Pipe |
| ASTM A 376 | Austenitik Paslanmaz Çelik Malzemeden Yüksek Sıcaklıkta Kullanılan Dikişsiz Boru İmalatı Seamless Austenitic Steel Pipe for High - Temperature Central - Station Service |
| ASTM A 450 | Karbon, Ferritik Alloy ve Austenitik Alloy Çelik Tüplerin Genel İhtiyaca Göre İmalatı General Requirements for Carbon, Ferritic Alloy and Austenitic Alloy Steel Tubes |
| ASTM A 249 | Austenitik Çelik Malzemeden Dikişli Isı Değiştirgeç ve Kondenser Tüpü İmalatı Welded Austenitic Steel Boiler, Superheater, Heatexchanger, and Condenser Tubes |
| ASTM A 688 | Austenitik Paslanmaz Çelik Malzemeden Dikişli Su Isıtıcı Tüpü İmalatı Welded Austenitic Stainless Steel Feed Water Heater Tubes |
| ASTM A 669 | Ferritik ve Austenitik Dikişsiz Dupleks Paslanmaz Tüp İmalatı Seamless Ferritic / Austenitic Alloy Steel Tubes |
| ASTM A 789 | Ferritik ve Austenitik Paslanmaz Çelik Malzemeden Genel Maksatlı Dikişli ve Dikişsiz Tüp İmalatı Seamless and Welded Ferritic / Austenitic Stainless Steel Tubing for General Service |
| ASTM A 790 | Ferritik ve Austenitik Dikişli ve Dikişsiz Paslanmaz Borular Seamless and Welded Ferritic / Austenitic Stainless Steel Pipes |
| ASTM B 677 | Dikişsiz Boru ve Tüp No: 8904 UNS - No: 8904 Seamless Pipe and Tube |
| ASTM B 673 | Dikişli Boru No: 8904 UNS- No: 8904 Welded Pipe |
| ANSI B 36.19 | Paslanmaz Dikişli ve Dikişsiz Borular SCH Serisi Seamless and Welded Stainless Steel Pipes, Size Standard in Nominal Bore x Schedule (S -schedule) |
| ANSI B 36.10 | Dikişli ve Dikişsiz Borular SCH Serisi Seamless and Welded Pipes, Size - Standard in Nominal Bore x Schedule |

PASLANMAZ BORULARI İMALAT NORMLARI

Manufacture norms of stainless steel tubes

AVRUPA - EUROPE

EN 10217-7

Basınç amaçlı, dikişli paslanmaz çelik borular için teknik teslim şartları (Bölüm 7) Bu norm DIN 17457'ye benzer olup basınç amaçlı dikişli paslanmaz çelik borular için olan diğer bir çok normun yerini alacaktır.

Welded steel tubes for pressure purposes - Technical delivery conditions (Part 7) This standard is similar to DIN 17457 and will replace most of the standards for welded stainless tubes and pipes for pressure purposes

ASTM-DIN-ISO TOLERANCES

ASTM A EN 10216-5 DİKİŞSİZ, ASTM A EN 10217-7 DİKİŞLİ BORU TOLERANSLARI ISO 1127-5252

Tolerances According to ASTM A EN 10216-5 Seamless Pipe. ASTM A EN 10217-7 Welded Pipe ISO 1127

DIŞ ÇAP (OUTSIDE DIAMETER)

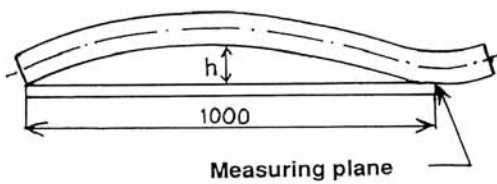
ET KALINLIĞI (WALL THICKNESS)

| Dış çap Outside diameter | Tolerans (OD) Tolerance (OD) | Et kalınlığı Wall thickness | Tolerans (T) Tolerances |
|-----------------------------|---------------------------------|--------------------------------|----------------------------|
| DO | ± 2% | TO | ± 20% |
| D1 | ± 1,5% min. ± 0,75 mm | T1 | ± 15% min. ± 0,6 mm |
| D2 | ± 1% min. ± 0,50 mm | T2 | ± 12,5% min. ± 0,40 mm |
| D3 | ± 0,75% min. ± 0,30 mm | T3 | ± 10% min. ± 0,20 mm |
| D4 | ± 0,50% min. ± 1,10 mm | T4 | ± 7,5% min. ± 0,15 mm |

EĞİLEBİLİRLİK
STRAIGHTNESS

DIŞ ÇAP
OUTSIDE DIAMETER

EĞİLMEDE MÜSADE EDİLEBİLİR SAPMA
ALLOWABLE DEVIATION STRAIGHTNESS



17,2

17,2

2

133

133

2,5

ASTM NORMUNUN TOLERANSLARI

Tolerances According to ASTM / Outside Diameter and Wall Thickness

A 269

| DIŞ ÇAP / OUTSIDE DIAMETER | | | | ET KALINLIĞI WALL THICKNESS | |
|---|-----------------|--------------------------------------|--------|--------------------------------------|--|
| NOMİNAL DIŞ ÇAP NOMINAL OUTSIDE DIAMETER | | EĞİLEBİLİRLİK PERMITTED DEVIATION | | EĞİLEBİLİRLİK PERMITTED DEVIATION | |
| INCHES | (MM) | INCHES | (MM) | % | |
| < 1/2 | (- 12,7) | ± 0,005 (0,13) | | ± 15 | |
| ≥ 1/2 < 1 1/2 | (12,7 - 38,1) | ± 0,005 (0,13) | | ± 10 | |
| ≥ 1 1/2 < 3 1/2 | (38,1 - 88,9) | ± 0,010 (0,25) | | ± 10 | |
| ≥ 3 1/2 < 5 1/2 | (88,9 - 139,7) | ± 0,015 (0,38) | | ± 10 | |
| ≥ 5 1/2 < 8 | (139,7 - 203,2) | ± 0,030 (0,76) | | ± 10 | |

A 450 - A 249

| DIŞ ÇAP / OUTSIDE DIAMETER | | | | ET KALINLIĞI WALL THICKNESS | |
|---|------------------|--------------------------------------|-------------------------------|--------------------------------|--------------|
| NOMİNAL DIŞ ÇAP NOMINAL OUTSIDE DIAMETER | | EĞİLEBİLİRLİK PERMITTED DEVIATION | | PERMITTED DEVIATION % | |
| INCHES | (MM) | (min) UPPER INCHES (MM) | (max) LOWER INCHES (MM) | Nom. wall A249 | Min. wall |
| < 1 | (- 25,4) | 0,004 (0,10) | 0,004 (0,10) | | |
| ≥ 1 ≤ 1/2 | (25,4 - 38,1) | 0,006 (0,15) | 0,006 (0,15) | | |
| > 1 1/2 < 2" | (38,1 - 50,8) | 0,008 (0,20) | 0,008 (0,20) | | |
| ≥ 2 < 2 1/2 | (50,8 - 63,5) | 0,010 (0,25) | 0,010 (0,25) | ± 10 | ± 18/- 0 |
| ≥ 2 1/2 < 3 | (63,5 - 76,1) | 0,012 (0,30) | 0,012 (0,30) | | |
| ≥ 3 ≤ 4 | (76,1 - 101,6) | 0,015 (0,38) | 0,015 (0,38) | | |
| > 4 ≤ 7 1/2 | (101,6 - 190,5) | 0,015 (0,38) | 0,025 (0,64) | | |
| > 7 1/2 ≤ 9 | (190,5 - 228,6) | 0,015 (0,38) | 0,045 (1,14) | | |

A 530 - A 778 - A 312

| DIŞ ÇAP / OUTSIDE DIAMETER | | | | ET KALINLIĞI WALL THICKNESS | |
|---|--------------------|------------------------------|-------------------------------|--------------------------------------|--|
| NOMİNAL DIŞ ÇAP NOMINAL OUTSIDE DIAMETER | | PERMITTED DEVIATION | | EĞİLEBİLİRLİK PERMITTED DEVIATION | |
| NPS | (MM) | (min) UPPER INCHES (MM) | (max) LOWER INCHES (MM) | | |
| 1 / 8" ≤ 1 1/2" | (10,29 - 48,26) | 0,015 (0,4) | 0,031 (0,8) | | |
| > 1 1/2" ≤ 4" | (48,26 - 114,30) | 0,031 (0,8) | 0,031 (0,8) | | |
| > 4" ≤ 8" | (114,30 - 219,08) | 0,062 (1,6) | 0,031 (0,8) | + unspecified | |
| > 8" ≤ 18" | (219,08 - 457,2) | 0,093 (2,4) | 0,031 (0,8) | - 12,5% | |
| > 18" ≤ 26" | (457,2 - 660,4) | 0,125 (3,2) | 0,031 (0,8) | | |
| > 26" ≤ 34" | (660,4 - 863,6) | 0,156 (4,0) | 0,031 (0,8) | | |
| > 34" ≤ 48" | (863,6 - 1219,2) | 0,187 (4,8) | 0,031 (0,8) | | |