

# Pipes (Galvanised, Steel & Carbon)

## PIPE - S.A.N.S 62



| Dimensions (in millimetres) |              |                        |       | Masses (kilograms/metre)      |       |
|-----------------------------|--------------|------------------------|-------|-------------------------------|-------|
| Nominal Bore                | Approx. O.D. | Nominal Wall Thickness |       | Coated Tubes- Scrd & Socketed |       |
|                             |              | Medium                 | Heavy | Medium                        | Heavy |
| 6                           | 10.2         | 2.00                   | 2.65  | 0.410                         | 0.496 |
| 8                           | 13.5         | 2.35                   | 2.90  | 0.654                         | 0.773 |
| 10                          | 17.2         | 2.35                   | 2.90  | 0.858                         | 1.03  |
| 15                          | 21.3         | 2.30                   | 2.80  | 1.10                          | 1.30  |
| 20                          | 26.9         | 2.30                   | 2.80  | 1.42                          | 1.69  |
| 25                          | 33.7         | 2.80                   | 3.50  | 2.19                          | 2.67  |
| 32                          | 42.4         | 2.80                   | 3.50  | 2.80                          | 3.43  |
| 40                          | 48.3         | 2.80                   | 3.50  | 3.19                          | 3.92  |
| 50                          | 60.3         | 3.30                   | 4.00  | 4.57                          | 5.49  |
| 65                          | 76.1         | 3.30                   | 4.00  | 5.85                          | 7.04  |
| 80                          | 88.9         | 3.50                   | 4.30  | 7.49                          | 8.89  |
| 100                         | 114.3        | 3.90                   | 4.80  | 10.82                         | 12.91 |
| 125                         | 139.7        | 4.30                   | 4.80  | 14.31                         | 15.92 |
| 150                         | 165.1        | 4.30                   | 4.80  | 17.11                         | 19.04 |

Standard Lengths: Medium 6.0m

Heavy 6.0m

Notes: 1. For approximate masses of GALVANISED tubes add the following percentages to masses indicated above:

(a) Medium Tube + 5 and 3/4%

(b) Heavy Tube + 5%

2. S.A.N.S. 62 is equivalent to B.S.1387

## RECOMMENDED WORKING PRESSURES



Pipes tested to 4800 kPa - hydraulic

| Pipe size | Max. Working pressure in kPa/Maks<br>Taper/parallel joint |       | Steam, air and gas service (260°C max.) |       |
|-----------|-----------------------------------------------------------|-------|-----------------------------------------|-------|
|           | Water Service Ambient temp.                               |       |                                         |       |
| mm        | Medium                                                    | Heavy | Medium                                  | Heavy |
| 6         | 2100                                                      | 2400  | 1050                                    | 1050  |
| 8         | 2100                                                      | 2400  | 1050                                    | 1050  |
| 10        | 2100                                                      | 2400  | 1050                                    | 1050  |
| 15        | 2100                                                      | 2400  | 1050                                    | 1050  |
| 20        | 2100                                                      | 2400  | 1050                                    | 1050  |
| 25        | 2100                                                      | 2400  | 1050                                    | 1050  |
| 32        | 1700                                                      | 2100  | 900                                     | 900   |
| 40        | 1700                                                      | 2100  | 900                                     | 900   |
| 50        | 1400                                                      | 1700  | -                                       | -     |
| 65        | 1400                                                      | 1700  | -                                       | -     |
| 80        | 1400                                                      | 1700  | -                                       | -     |
| 100       | 1050                                                      | 1400  | -                                       | -     |
| 125       | 1050                                                      | 1400  | -                                       | -     |
| 150       | 850                                                       | 1050  | -                                       | -     |

NB: These pipes can be used for higher pressures than those above, or for special working conditions with suitable types of joint. The efficiency of taper/parallel screwed joints is highly dependent on the degree of care taken in assembly and jointing compound used. Reference to steam service applies to saturated steam only.

# PIPE - S.A.N.S 719



Mass Mass of Steel Pipe in kilograms per metre

| Dimensions          |                     | Wall Thickness in Millimeters |       |       |       |       |       |
|---------------------|---------------------|-------------------------------|-------|-------|-------|-------|-------|
| Nominal Diameter mm | Outside Diameter mm | 4.5                           | 5.0   | 6.0   | 8.0   | 10.0  | 12.0  |
| 200                 | 219.1               | 24.9                          | 27.7  | 33.1  | 43.6  | 54.2  | 64.6  |
| 250                 | 273.0               | 31.2                          | 34.6  | 41.4  | 54.7  | 68.0  | 81.5  |
| 300                 | 323.9               | 37.1                          | 41.3  | 49.3  | 65.2  | 81.3  | 97.5  |
| 350                 | 355.6               | 40.7                          | 45.4  | 54.2  | 71.7  | 89.5  | 108.0 |
| 400                 | 406.4               | 46.6                          | 52.0  | 62.1  | 82.2  | 103.0 | 123.0 |
| 500                 | 508.0               | 58.5                          | 65.1  | 78.0  | 103.0 | 129.0 | 155.0 |
| 600                 | 609.6               | 70.2                          | 78.3  | 93.6  | 124.0 | 155.0 | 186.0 |
| 700                 | 711.2               | 82.0                          | 91.5  | 110.0 | 145.0 | 182.0 | 219.0 |
| 800                 | 812.8               |                               | 105.0 | 125.0 | 166.0 | 208.0 | 250.0 |
| 900                 | 914.4               |                               | 118.0 | 140.0 | 187.0 | 233.0 | 282.0 |
| 1000                | 1 016.0             |                               | 131.0 | 156.0 | 208.0 | 260.0 | 315.0 |

Standard Lengths: 6.096m and 9.144 m

NOTES: 1. Pipe outside diameters are to B.S. 534/1966; I.S.O./R336; B.S. 4504/1969; I.S.O./R2084.

2. The pipe outside diameters suit the metricated flanges of B.S. 4504/1969 and I.S.O./R2084.

## Steel to S.A.N.S. 719



Test Pressure in kPa

| Nominal Bore mm | Outside Diameter mm | Wall Thickness (mm) |      |      |      |       |       |       |       |
|-----------------|---------------------|---------------------|------|------|------|-------|-------|-------|-------|
|                 |                     | 4.0                 | 4.5  | 5.0  | 6.0  | 8.0   | 10.0  | 12.0  | 14.0  |
| 200             | 219,1               | 6600                | 7430 | 8250 | 9900 | 13200 | 16500 | 19800 | 23100 |
| 250             | 273,0               | 5300                | 5960 | 6620 | 7950 | 10590 | 13240 | 15890 | 18540 |
| 300             | 323,9               | 4460                | 5020 | 5580 | 6700 | 8930  | 11160 | 13390 | 15630 |
| 350             | 355,6               | 4070                | 4580 | 5080 | 6100 | 8130  | 10170 | 12200 | 14230 |
| 400             | 406,4               | 3560                | 4000 | 4450 | 5340 | 7120  | 8900  | 10670 | 12450 |
| 450             | 457,2               | 3160                | 3560 | 3950 | 4740 | 6330  | 7910  | 9490  | 11070 |
| 500             | 508,0               | 2850                | 3200 | 3560 | 4270 | 5690  | 7120  | 8540  | 9960  |
| 600             | 609,6               | 2370                | 2670 | 2970 | 3560 | 4740  | 5930  | 7120  | 8300  |
| 700             | 711,2               | 2030                | 2290 | 2540 | 3010 | 4070  | 5080  | 6100  | 7120  |
| 800             | 812,8               | 1780                | 2000 | 2220 | 2670 | 3560  | 4450  | 5340  | 6230  |
| 900             | 914,4               | 1580                | 1780 | 1980 | 2370 | 3160  | 3950  | 4740  | 5540  |
| 1000            | 1016,0              | 1420                | 1600 | 1780 | 2140 | 2850  | 3560  | 4270  | 4980  |

Yield stress of steel - 300 MPa.

Test pressures above are based on stressing steel to 75% of minimum specified yield stress and are applied only to plain ended pipes.

# PIPE

A.S.A. PIPE SCHEDULES | DIAMETERS | WALL THICKNESSES | WEIGHTS



Piping to ASTM A106 B + ANSI B36.19 + B36.10 + Inches and Metric

| Inches<br>Nominal<br>pipe size | Metric O.D.<br>mm | Schedule      |                |                |                 | STD<br>AND<br>40 S | Schedule        |                 | XS<br>and<br>80 S | Schedule        |                 |                 |                 |                 | XXS |
|--------------------------------|-------------------|---------------|----------------|----------------|-----------------|--------------------|-----------------|-----------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|
|                                |                   | 10 S          | 10             | 20             | 30              |                    | 40              | 60              |                   | 80              | 100             | 120             | 140             | 160             |     |
| 1/8"                           | 10.3              | 1.24<br>0.28  | -<br>-         | -<br>-         | -<br>-          | 1.73<br>0.36       | -<br>-          | -<br>-          | 2.41<br>0.46      | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 1/4"                           | 13.71             | 1.65<br>0.49  | -<br>-         | -<br>-         | -<br>-          | 2.24<br>0.63       | -<br>-          | -<br>-          | 3.02<br>0.80      | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 3/8"                           | 17.14             | 1.65<br>0.63  | -<br>-         | -<br>-         | -<br>-          | 2.31<br>0.85       | -<br>-          | -<br>-          | 3.2<br>1.10       | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 1/2"                           | 21.34             | 2.11<br>1.00  | -<br>-         | -<br>-         | -<br>-          | 2.77<br>1.27       | -<br>-          | -<br>-          | 3.73<br>1.62      | -<br>-          | -<br>-          | -<br>-          | 4.78<br>1.94    | 7.47<br>2.55    |     |
| 3/4"                           | 26.67             | 2.11<br>1.28  | -<br>-         | -<br>-         | -<br>-          | 2.87<br>1.68       | -<br>-          | -<br>-          | 3.91<br>2.19      | -<br>-          | -<br>-          | -<br>-          | 5.56<br>2.9     | 7.82<br>3.63    |     |
| 1"                             | 33.4              | 2.77<br>2.08  | -<br>-         | -<br>-         | -<br>-          | 3.38<br>2.5        | -<br>-          | -<br>-          | 4.55<br>3.23      | -<br>-          | -<br>-          | -<br>-          | 6.35<br>4.18    | 9.09<br>5.45    |     |
| 1 1/4"                         | 42.16             | 2.77<br>2.69  | -<br>-         | -<br>-         | -<br>-          | 3.56<br>3.38       | -<br>-          | -<br>-          | 4.85<br>4.46      | -<br>-          | -<br>-          | -<br>-          | 6.35<br>5.58    | 9.7<br>7.76     |     |
| 1 1/2"                         | 48.26             | 2.77<br>3.12  | -<br>-         | -<br>-         | -<br>-          | 3.68<br>4.05       | -<br>-          | -<br>-          | 5.08<br>5.41      | -<br>-          | -<br>-          | -<br>-          | 7.14<br>7.22    | 10.16<br>9.55   |     |
| 2"                             | 60.32             | 2.77<br>3.94  | -<br>-         | -<br>-         | -<br>-          | 3.91<br>5.44       | -<br>-          | -<br>-          | 5.54<br>7.49      | -<br>-          | -<br>-          | -<br>-          | 8.74<br>11.08   | 11.07<br>13.35  |     |
| 2 1/2"                         | 73.02             | 3.05<br>5.26  | -<br>-         | -<br>-         | -<br>-          | 5.16<br>8.68       | -<br>-          | -<br>-          | 7.01<br>11.42     | -<br>-          | -<br>-          | -<br>-          | 9.52<br>14.88   | 14.02<br>20.41  |     |
| 3"                             | 88.90             | 3.05<br>6.45  | -<br>-         | -<br>-         | -<br>-          | 5.49<br>11.29      | -<br>-          | -<br>-          | 7.62<br>15.27     | -<br>-          | -<br>-          | -<br>-          | 11.13<br>20.98  | 15.24<br>27.67  |     |
| 3 1/2"                         | 101.60            | 3.05<br>7.4   | -<br>-         | -<br>-         | -<br>-          | 5.74<br>13.37      | 5.74<br>13.57   | -<br>-          | 8.08<br>18.63     | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 4"                             | 114.30            | 3.05<br>8.34  | -<br>-         | -<br>-         | -<br>-          | 6.02<br>16.07      | -<br>-          | -<br>-          | 8.56<br>22.31     | -<br>-          | 11.13<br>28.25  | -<br>-          | 13.49<br>33.48  | 17.12<br>41.02  |     |
| 5"                             | 141.30            | 3.40<br>11.56 | -<br>-         | -<br>-         | -<br>-          | 6.55<br>21.78      | -<br>-          | -<br>-          | 9.52<br>30.95     | -<br>-          | 12.70<br>40.24  | -<br>-          | 15.88<br>49.11  | 19.05<br>57.42  |     |
| 6"                             | 168.30            | 3.40<br>13.82 | -<br>-         | -<br>-         | -<br>-          | 7.11<br>28.26      | -<br>-          | -<br>-          | 10.97<br>42.56    | -<br>-          | 14.47<br>54.20  | -<br>-          | 18.26<br>67.22  | 21.95<br>79.18  |     |
| 8"                             | 219.10            | 3.76<br>19.94 | -<br>-         | 6.35<br>33.03  | 7.04<br>36.72   | 8.18<br>42.53      | -<br>-          | 10.31<br>52.88  | 12.70<br>64.63    | 15.09<br>75.80  | 18.26<br>90.32  | 20.62<br>101.04 | 23.01<br>111.32 | 22.22<br>107.87 |     |
| 10"                            | 273.00            | 4.19<br>27.83 | -<br>-         | 6.35<br>41.76  | 7.8<br>51.00    | 9.27<br>60.29      | 12.7<br>81.46   | 12.70<br>81.46  | 15.09<br>95.95    | 18.26<br>114.59 | 21.44<br>132.74 | 25.40<br>154.94 | 28.58<br>172.14 | 25.40<br>154.94 |     |
| 12"                            | 323.85            | 4.57<br>36.00 | -<br>-         | 6.35<br>49.81  | 8.38<br>65.07   | 9.52<br>73.82      | 10.31<br>79.67  | 12.70<br>108.97 | 17.47<br>97.36    | 21.44<br>131.70 | 25.40<br>159.52 | 28.58<br>186.77 | 33.34<br>206.96 | 25.40<br>186.77 |     |
| 14"                            | 355.60            | 4.78<br>41.18 | 6.35<br>54.63  | 7.92<br>67.95  | 9.52<br>81.28   | 9.52<br>81.28      | 11.13<br>94.31  | 15.09<br>126.49 | 12.70<br>107.28   | 19.05<br>157.94 | 23.82<br>194.82 | 27.79<br>224.42 | 31.75<br>253.14 | 35.71<br>281.38 |     |
| 16"                            | 406.40            | 4.78<br>47.33 | 6.35<br>62.58  | 7.92<br>77.88  | 9.52<br>93.21   | 9.52<br>93.21      | 12.70<br>123.18 | 16.64<br>159.98 | 12.70<br>123.18   | 21.44<br>203.16 | 26.19<br>245.32 | 30.96<br>286.44 | 36.52<br>332.62 | 40.49<br>364.85 |     |
| 18"                            | 457.20            | 4.78<br>53.18 | 6.35<br>70.53  | 7.92<br>87.81  | 11.13<br>122.12 | 9.52<br>105.14     | 14.27<br>155.90 | 19.05<br>205.62 | 12.70<br>139.07   | 23.82<br>254.19 | 29.36<br>309.44 | 34.92<br>363.19 | 39.69<br>408.01 | 45.24<br>459.18 |     |
| 20"                            | 508.00            | 5.54<br>68.50 | 6.35<br>78.46  | 9.52<br>117.07 | 12.7<br>154.97  | 9.52<br>117.07     | 15.09<br>183.12 | 20.62<br>247.79 | 12.70<br>154.97   | 26.19<br>310.90 | 32.54<br>381.04 | 38.10<br>440.93 | 44.45<br>587.54 | 50.01<br>564.14 |     |
| 22"                            | 558.80            | -<br>-        | 6.35<br>86.49  | 9.52<br>129.01 | 12.7<br>171.01  | 9.52<br>129.01     | -<br>-          | 22.22<br>294.06 | 12.70<br>171.01   | 28.60<br>373.58 | 34.92<br>451.14 | 41.28<br>526.70 | 47.62<br>600.27 | 53.98<br>671.85 |     |
| 24"                            | 609.60            | 6.35<br>94.37 | 6.35<br>94.37  | 9.52<br>140.94 | 14.27<br>209.54 | 9.52<br>140.94     | 17.48<br>254.74 | 24.61<br>354.64 | 12.70<br>186.75   | 30.96<br>441.1  | 38.89<br>546.92 | 46.02<br>639.18 | 52.3<br>718.94  | 59.54<br>806.61 |     |
| 26"                            | 660.40            | -<br>-        | 7.92<br>127.58 | 12.7<br>202.65 | -<br>-          | 9.52<br>152.87     | -<br>-          | -<br>-          | 12.70<br>202.65   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 28"                            | 711.20            | -<br>-        | 7.92<br>137.50 | 12.7<br>218.51 | 15.88<br>271.9  | 9.52<br>164.63     | -<br>-          | -<br>-          | 12.70<br>218.51   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 30"                            | 762.00            | -<br>-        | 7.92<br>147.33 | 12.7<br>234.44 | 15.88<br>291.81 | 9.52<br>176.73     | -<br>-          | -<br>-          | 12.70<br>234.44   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 32"                            | 812.80            | -<br>-        | 7.92<br>156.58 | 12.7<br>250.33 | 15.88<br>311.67 | 9.52<br>188.66     | 17.48<br>352.28 | -<br>-          | 12.70<br>250.33   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 34"                            | 863.60            | -<br>-        | 7.92<br>166.82 | 12.7<br>266.35 | 15.88<br>331.54 | 9.52<br>200.59     | 17.48<br>363.91 | -<br>-          | 12.70<br>266.35   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 36"                            | 914.40            | -<br>-        | 7.92<br>177.12 | 12.7<br>282.12 | 15.88<br>351.41 | 9.52<br>212.52     | 19.05<br>420.17 | -<br>-          | 12.70<br>282.12   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 38"                            | 965.2             | -<br>-        | -<br>-         | -<br>-         | -<br>-          | 9.52<br>224.42     | -<br>-          | -<br>-          | 12.70<br>298.23   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 40"                            | 1,016.00          | -<br>-        | -<br>-         | -<br>-         | -<br>-          | 9.52<br>236.35     | -<br>-          | -<br>-          | 12.70<br>314.14   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 42"                            | 1066.80           | -<br>-        | -<br>-         | -<br>-         | -<br>-          | 9.52<br>248.34     | -<br>-          | -<br>-          | 12.70<br>330.00   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |
| 44"                            | 1,117.6           | -<br>-        | -<br>-         | -<br>-         | -<br>-          | 9.52<br>260.21     | -<br>-          | -<br>-          | 12.70<br>345.95   | -<br>-          | -<br>-          | -<br>-          | -<br>-          | -<br>-          |     |

Note: bold-faced = wall thickness lean-faced = weight kg/m

# PIPE

## ALLOWABLE WORKING PRESSURES FOR PETROLEUM REFINERY



(These values also apply to ASTM A106, Grade B Seamless Pipe)

| Inches<br>Nominal<br>pipe size | WT* or Sch. No |        | Wall<br>Thickness | Allowable working pressures in kPa For Temperatures (in<br>Deg. F.) not to exceed |       |       |       |       |
|--------------------------------|----------------|--------|-------------------|-----------------------------------------------------------------------------------|-------|-------|-------|-------|
|                                | WT*            | Sch No |                   | -20 to 100                                                                        | 300   | 500   | 650   | 750   |
| 1/2 "                          | ST             | 40     | 0.109             | 15582                                                                             | 14134 | 12755 | 11721 | 10135 |
| 3/4 "                          | ST             | 40     | 0.113             | 13376                                                                             | 12135 | 10962 | 10066 | 8687  |
|                                | XS             | 80     | 0.154             | 23856                                                                             | 21649 | 19512 | 17857 | 15444 |
| 1 "                            | ST             | 40     | 0.133             | 14548                                                                             | 13169 | 11928 | 10894 | 9446  |
|                                | XS             | 80     | 0.179             | 23925                                                                             | 21718 | 19581 | 17995 | 15513 |
|                                |                | 160    | 0.250             | 39438                                                                             | 35852 | 32267 | 29578 | 25579 |
|                                |                |        | 0.385             | 65775                                                                             | 59708 | 53779 | 49366 | 42609 |
|                                | ST             | 40     | 0.140             | 12479                                                                             | 11376 | 10204 | 9377  | 8136  |
|                                | XS             | 80     | 0.191             | 20684                                                                             | 18753 | 16892 | 15513 | 13375 |
| 1 1/4 "                        |                | 160    | 0.250             | 30543                                                                             | 27717 | 24959 | 22890 | 19788 |
|                                | XXS            |        | 0.382             | 54744                                                                             | 49711 | 44747 | 41092 | 35439 |
| 1 1/2 "                        | ST             | 40     | 0.145             | 11538                                                                             | 10480 | 9446  | 8687  | 7515  |
|                                | XS             | 80     | 0.200             | 19167                                                                             | 17443 | 15720 | 14410 | 12410 |
|                                |                | 160    | 0.231             | 31026                                                                             | 28130 | 25372 | 23304 | 20063 |
|                                |                |        | 0.400             | 49849                                                                             | 45229 | 40748 | 37438 | 32336 |
|                                | ST             | 40     | 0.154             | 10135                                                                             | 9239  | 8342  | 7653  | 6619  |
|                                | XS             | 80     | 0.218             | 17168                                                                             | 15582 | 14065 | 12893 | 11169 |
| 2 "                            |                | 160    | 0.343             | 31716                                                                             | 28820 | 25993 | 23787 | 20546 |
|                                | XXS            |        | 0.436             | 43368                                                                             | 39369 | 35439 | 32543 | 28061 |
| 2 1/2 "                        | ST             | 40     | 0.203             | 12755                                                                             | 11583 | 10411 | 9584  | 8274  |
|                                | XS             | 80     | 0.276             | 19443                                                                             | 17650 | 15927 | 14617 | 12617 |
|                                |                | 160    | 0.375             | 28958                                                                             | 26269 | 23649 | 21718 | 18753 |
|                                |                |        | 0.552             | 47229                                                                             | 42885 | 38610 | 35439 | 30612 |
|                                | ST             | 40     | 0.216             | 11307                                                                             | 10273 | 9308  | 8480  | 7377  |
|                                | XS             | 80     | 0.300             | 17650                                                                             | 15996 | 14410 | 13238 | 11445 |
| 3 "                            |                | 160    | 0.438             | 28475                                                                             | 25855 | 23235 | 21373 | 18409 |
|                                | XXS            |        | 0.636             | 41989                                                                             | 38128 | 34336 | 31509 | 27234 |
| 3 1/2 "                        | ST             | 40     | 0.226             | 10549                                                                             | 9584  | 8618  | 7929  | 6826  |
|                                | XS             | 80     | 0.318             | 16547                                                                             | 15030 | 13514 | 12410 | 10687 |
|                                |                |        | 0.636             | 38886                                                                             | 35301 | 31784 | 29164 | 25166 |
| 4 "                            | ST             | 40     | 0.237             | 9928                                                                              | 9032  | 8136  | 7446  | 6481  |
|                                | XS             | 80     | 0.337             | 15720                                                                             | 14272 | 12893 | 11790 | 10204 |
|                                |                | 160    | 0.531             | 27441                                                                             | 24959 | 22447 | 20615 | 17788 |
|                                |                |        | 0.674             | 36611                                                                             | 33232 | 29923 | 27510 | 23718 |
|                                | ST             | 40     | 0.258             | 8963                                                                              | 8136  | 7308  | 6757  | 5791  |
|                                | XS             | 80     | 0.375             | 14410                                                                             | 13100 | 11790 | 10825 | 9308  |
| 5 "                            |                | 160    | 0.625             | 26544                                                                             | 24131 | 21718 | 19926 | 17237 |
|                                | XXS            |        | 0.750             | 32957                                                                             | 29923 | 26958 | 24752 | 21373 |
| 6 "                            | ST             | 40     | 0.280             | 8342                                                                              | 7584  | 6826  | 6274  | 5447  |
|                                | XS             | 80     | 0.432             | 14272                                                                             | 12962 | 11652 | 10687 | 9239  |
|                                |                | 160    | 0.718             | 25924                                                                             | 23511 | 21167 | 19443 | 16823 |
|                                |                |        | 0.864             | 32129                                                                             | 29164 | 26269 | 24131 | 20822 |
|                                | ST             | 40     | 0.322             | 7584                                                                              | 6895  | 6205  | 5723  | 4964  |
|                                | XS             | 80     | 0.500             | 12893                                                                             | 11721 | 10549 | 9652  | 8342  |
| 8 "                            |                |        | 0.875             | 24545                                                                             | 22270 | 20063 | 18409 | 15927 |
|                                | XXS            | 160    | 0.906             | 25510                                                                             | 23166 | 20891 | 19167 | 16547 |
| 10 "                           | ST             | 40     | 0.365             | 7101                                                                              | 6412  | 5791  | 5309  | 4619  |
|                                | XS             | 60     | 0.500             | 10273                                                                             | 9308  | 8411  | 7722  | 6688  |
|                                |                | 160    | 1.125             | 25786                                                                             | 23442 | 21098 | 19374 | 16685 |

# PIPE

## ALLOWABLE WORKING PRESSURES CONTINUED



| Inches Nominal<br>pipe size | WT* or Sch. No |        | Wall<br>Thickness | Allowable working pressures in kPa For Temperatures (in<br>Deg. F.) not to exceed |       |       |       |       |
|-----------------------------|----------------|--------|-------------------|-----------------------------------------------------------------------------------|-------|-------|-------|-------|
|                             | WT*            | Sch No |                   | -20 to 100                                                                        | 300   | 500   | 650   | 750   |
| 12"                         | ST             | 160    | 0.375             | 6136                                                                              | 5585  | 5033  | 4619  | 3999  |
|                             | XS             |        | 0.500             | 8618                                                                              | 7860  | 7032  | 6481  | 5585  |
|                             |                |        | 0.131             | 25510                                                                             | 23167 | 20891 | 19167 | 16547 |
| 14"                         | ST             | 10     | 0.250             | 3351                                                                              | 3047  | 2744  | 2516  | 2172  |
|                             | XS             | 30     | 0.375             | 5585                                                                              | 5102  | 4619  | 4206  | 3654  |
|                             |                |        | 0.500             | 7860                                                                              | 7101  | 6412  | 5860  | 5102  |
| 16"                         | ST             | 10     | 0.250             | 2937                                                                              | 2668  | 2406  | 2206  | 1903  |
|                             | XS             | 30     | 0.375             | 4895                                                                              | 4481  | 3999  | 3654  | 3158  |
|                             |                | 40     | 0.500             | 6826                                                                              | 6205  | 5585  | 5171  | 4413  |
| 18"                         | ST             | 10     | 0.250             | 2606                                                                              | 2372  | 2137  | 1958  | 1689  |
|                             | XS             |        | 0.375             | 4344                                                                              | 3930  | 3585  | 3240  | 2799  |
|                             |                |        | 0.500             | 6067                                                                              | 5516  | 4964  | 4550  | 3930  |
| 20"                         | ST             | 10     | 0.250             | 2344                                                                              | 2130  | 1917  | 1758  | 1524  |
|                             | XS             | 20     | 0.375             | 3930                                                                              | 3585  | 3171  | 2909  | 2510  |
|                             |                | 30     | 0.500             | 5447                                                                              | 4964  | 4481  | 4137  | 3585  |
| 22"                         | ST XS          |        | 0.250             | 2123                                                                              | 1930  | 1737  | 1593  | 1379  |
|                             |                |        | 0.375             | 3516                                                                              | 3192  | 2875  | 2641  | 2282  |
|                             |                |        | 0.500             | 4964                                                                              | 4481  | 4068  | 3723  | 3199  |
| 24"                         | ST             | 10     | 0.250             | 1944                                                                              | 1765  | 1593  | 1462  | 1262  |
|                             | XS             | 20     | 0.375             | 3227                                                                              | 2930  | 2641  | 2420  | 2096  |
|                             |                |        | 0.500             | 4550                                                                              | 4137  | 3723  | 3385  | 2923  |
| 26"                         | ST             |        | 0.375             | 2978                                                                              | 2710  | 2441  | 2234  | 1930  |
|                             | XS             |        | 0.500             | 4206                                                                              | 3792  | 3406  | 3123  | 2703  |
| 30"                         | ST             | 20     | 0.375             | 2579                                                                              | 2344  | 2110  | 1937  | 1675  |
|                             | XS             |        | 0.500             | 3654                                                                              | 3268  | 2944  | 2703  | 2330  |
| 34"                         | ST             |        | 0.375             | 2275                                                                              | 2068  | 1861  | 1710  | 1475  |
|                             | XS             |        | 0.500             | 3171                                                                              | 2882  | 2599  | 2379  | 2055  |
| 36"                         | ST             |        | 0.375             | 2137                                                                              | 1944  | 1751  | 1606  | 1386  |
|                             | XS             |        | 0.500             | 2992                                                                              | 2723  | 2448  | 2248  | 1944  |
| 42"                         | ST             |        | 0.375             | 1834                                                                              | 1668  | 1503  | 1379  | 1193  |
|                             | XS             |        | 0.500             | 2565                                                                              | 2330  | 2103  | 1924  | 1662  |

Above values in kPa to conform with South African metric system. All dimensions are in inches.

\*LW - Light Weight (same thickness as 10S to 12" size inclusive) ST - Standard Wall

XS - Extra Strong Wall

XXS - Double Extra Strong Wall Numbers are Schedule Numbers.

The above tabular values are rounded off to the next higher unit of 10 for pressures 500 p.s.i. And higher. Interpolation is permissible for intermediate temperatures.

The allowable working pressures were calculated by the following formula given in the Code for Pressure Piping, ASA B31.3-1959, par, 304 1.2,

$$P = \frac{2 S t E}{D}$$

where

P = internal design pressure, psig

S = applicable allowable stress, psi

D = outside diameter of pipe, inches

E = longitudinal weld joint factor = 1,0

t = t<sub>min</sub> - C = design thickness, inches

t<sub>min</sub> = minimum thickness for the pipe selected considering manufacturer's tolerance = 12 2/2 % less than the thickness shown in the table.

C = mechanical, corrosion and erosion allowance in

inches = 0.05" in above calculations.

γ = a coefficient = 0.4 for ferritic steels to 900 F

The allowable working stresses were obtained from the Code for Pressure Piping, ASA B31.3-1959, Table 302.3 1A.

Plant process piping: It is recommended that the allowable working pressures listed above be used also for process piping in plants other than oil refineries except where such piping is expressly covered in the ASME Boiler and Pressure Vessel Code or other sections of the Code for Pressure Piping. Interpretations of Code for Pressure Piping, Case No. 49, states that chemical process piping may be designed in accordance with the requirements of ASA B31.3, Petroleum Refinery Piping.