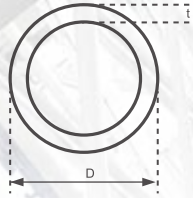




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จังหวัดระยอง 21120 Tel. 66(0)3301-2436-8



# CARBON STEEL PIPE

เหล็กงานโครงสร้าง

AS 1163

| GRADES       | CHEMICAL COMPOSITION (CAST OR PRODUCT ANALYSIS) % MAX |       |       |       |       |      |       | MECHANICAL PROPERTIES |                  |                          |                           |
|--------------|---|-------|-------|-------|-------|------|-------|-----------------------|------------------|--------------------------|---------------------------|
|              | C   | Si    | Mn    | P     | S     | Al   | CE    | Yield Strength        | Tensile Strength | Circular Hollow Sections | Rectangle Hollow Sections |
| C250, C250L0 | 0.120   | 0.050 | 0.500 | 0.030 | 0.030 | 0.10 | 0.250 | 250                   | 320              | 22                       | 18                        |
| C350, C350L0 | 0.200   | 0.450 | 1.600 | 0.030 | 0.030 | 0.10 | 0.430 | 350                   | 430              | 20                       | 16                        |
| C450, C450L0 | 0.200   | 0.450 | 1.700 | 0.030 | 0.030 | 0.10 | 0.430 | 450                   | 500              | 16                       | 14                        |

## C250

| Nominal Dimension |        | Outside Diameter | Thick-ness | Mass per unit length | Cross Sectional Area | Geo-metrical moment of inertia  | Modulus of section              | Radius of gyration |
|-------------------|--------|------------------|------------|----------------------|----------------------|---------------------------------|---------------------------------|--------------------|
| mm                | in     | mm               | mm         | kg/m                 | mm <sup>2</sup>      | 10 <sup>6</sup> mm <sup>4</sup> | 10 <sup>3</sup> mm <sup>3</sup> | mm                 |
| 15                | 1/2"   | 21.30            | 2.60       | 1.20                 | 153                  | 0.007                           | 0.639                           | 6.68               |
|                   |        | 21.30            | 3.20       | 1.43                 | 182                  | 0.008                           | 0.722                           | 6.50               |
| 20                | 3/4"   | 26.90            | 2.60       | 1.56                 | 198                  | 0.015                           | 1.100                           | 8.64               |
|                   |        | 26.90            | 3.20       | 1.87                 | 238                  | 0.017                           | 1.270                           | 8.46               |
| 25                | 1"     | 33.70            | 3.20       | 2.41                 | 307                  | 0.036                           | 2.140                           | 10.80              |
|                   |        | 33.70            | 4.00       | 2.93                 | 373                  | 0.042                           | 2.490                           | 10.60              |
| 32                | 1 1/4" | 42.40            | 3.20       | 3.09                 | 394                  | 0.076                           | 3.590                           | 13.90              |
|                   |        | 42.40            | 4.00       | 3.79                 | 483                  | 0.090                           | 4.240                           | 13.60              |
| 40                | 1 1/2" | 48.30            | 3.20       | 3.56                 | 453                  | 0.116                           | 4.800                           | 16.00              |
|                   |        | 48.30            | 4.00       | 4.37                 | 557                  | 0.138                           | 5.700                           | 15.70              |
|                   |        | 48.30            | 5.40       | 5.71                 | 728                  | 0.170                           | 7.040                           | 15.30              |
| 50                | 2"     | 60.30            | 3.60       | 5.03                 | 641                  | 0.259                           | 8.580                           | 20.10              |
|                   |        | 60.30            | 4.50       | 6.19                 | 789                  | 0.309                           | 10.2                            | 19.80              |
|                   |        | 60.30            | 5.40       | 7.31                 | 931                  | 0.354                           | 11.8                            | 19.50              |
| 65                | 2 1/2" | 76.10            | 3.60       | 6.44                 | 820                  | 0.540                           | 14.21                           | 25.70              |
|                   |        | 76.10            | 4.50       | 7.95                 | 1010                 | 0.651                           | 17.10                           | 25.40              |
|                   |        | 76.10            | 5.90       | 10.20                | 1300                 | 0.807                           | 21.20                           | 24.90              |
| 80                | 3"     | 88.90            | 4.00       | 8.38                 | 1070                 | 0.963                           | 21.70                           | 30.00              |
|                   |        | 88.90            | 5.00       | 10.30                | 1320                 | 1.160                           | 26.20                           | 29.70              |
|                   |        | 88.90            | 5.90       | 12.10                | 1540                 | 1.330                           | 30.00                           | 29.40              |
| 90                | 3 1/2" | 101.60           | 4.00       | 9.63                 | 1230                 | 1.460                           | 28.80                           | 34.50              |
|                   |        | 101.60           | 5.00       | 11.90                | 1520                 | 1.770                           | 34.90                           | 34.20              |
| 100               | 4"     | 114.30           | 4.50       | 12.20                | 1550                 | 2.340                           | 41.00                           | 38.90              |
|                   |        | 114.30           | 5.40       | 14.50                | 1850                 | 2.750                           | 48.00                           | 38.50              |
| 125               | 5"     | 139.70           | 5.00       | 16.60                | 2120                 | 4.810                           | 68.80                           | 47.70              |
|                   |        | 139.70           | 5.40       | 17.90                | 2280                 | 5.140                           | 73.70                           | 47.50              |
| 150               | 6"     | 165.10           | 5.00       | 19.70                | 2510                 | 8.070                           | 97.70                           | 56.60              |
|                   |        | 165.10           | 5.40       | 21.30                | 2710                 | 8.650                           | 105.00                          | 56.50              |

### Dimension Tolerances

Outside Diameter: ±1% with a minimum of ± 0.5 mm. and a maximum of ± 10 mm.

Thickness : ±10%

Weight : -4%

## C350

| Nominal Dimension |        | Outside Diameter | Thick-ness | Mass per unit length | Cross Sectional Area | Geo-metrical moment of inertia  | Modulus of section              | Radius of gyration |
|-------------------|--------|------------------|------------|----------------------|----------------------|---------------------------------|---------------------------------|--------------------|
| mm                | in     | mm               | mm         | kg/m                 | mm <sup>2</sup>      | 10 <sup>6</sup> mm <sup>4</sup> | 10 <sup>3</sup> mm <sup>3</sup> | mm                 |
| 15                | 1/2"   | 21.30            | 2.00       | 0.95                 | 121                  | 0.006                           | 0.536                           | 6.86               |
|                   |        | 26.90            | 2.00       | 1.23                 | 156                  | 0.012                           | 0.907                           | 8.83               |
| 20                | 3/4"   | 26.90            | 2.30       | 1.40                 | 178                  | 0.014                           | 1.01                            | 8.7                |
|                   |        | 25               | 1"         | 33.70                | 2.00                 | 1.56                            | 199                             | 0.025              |
| 25                | 1"     | 33.70            | 2.60       | 1.99                 | 254                  | 0.031                           | 1.84                            | 11.0               |
|                   |        | 32               | 1 1/4"     | 42.40                | 2.00                 | 1.99                            | 254                             | 0.052              |
| 32                | 1 1/4" | 42.40            | 2.60       | 2.55                 | 325                  | 0.065                           | 3.05                            | 14.1               |
|                   |        | 40               | 1 1/2"     | 48.30                | 2.30                 | 2.61                            | 332                             | 0.088              |
| 40                | 1 1/2" | 48.30            | 2.90       | 3.25                 | 414                  | 0.107                           | 4.43                            | 16.1               |
|                   |        | 50               | 2"         | 60.30                | 2.30                 | 3.29                            | 419                             | 0.177              |
| 50                | 2"     | 60.30            | 2.90       | 4.11                 | 523                  | 0.216                           | 7.16                            | 20.3               |
|                   |        | 65               | 2 1/2"     | 76.10                | 2.30                 | 4.19                            | 533                             | 0.363              |
| 65                | 2 1/2" | 76.10            | 3.20       | 5.75                 | 733                  | 0.488                           | 12.8                            | 25.8               |
|                   |        | 80               | 3"         | 88.90                | 2.60                 | 5.53                            | 705                             | 0.657              |
| 80                | 3"     | 88.90            | 3.20       | 6.76                 | 862                  | 0.792                           | 17.8                            | 30.3               |
|                   |        | 88.90            | 4.80       | 9.96                 | 1270                 | 1.12                            | 25.3                            | 29.8               |
|                   |        | 88.90            | 5.50       | 11.30                | 1440                 | 1.26                            | 28.3                            | 29.6               |
| 90                | 3 1/2" | 101.60           | 2.60       | 6.35                 | 809                  | 0.991                           | 19.5                            | 35.0               |
|                   |        | 101.60           | 3.20       | 7.77                 | 989                  | 1.20                            | 23.6                            | 34.8               |
| 100               | 4"     | 114.30           | 3.20       | 8.77                 | 1120                 | 1.72                            | 30.2                            | 39.3               |
|                   |        | 114.30           | 3.60       | 9.83                 | 1250                 | 1.92                            | 33.6                            | 39.2               |
|                   |        | 114.30           | 4.80       | 13.00                | 1650                 | 2.48                            | 43.4                            | 38.8               |
|                   |        | 114.30           | 6.00       | 16.00                | 2040                 | 3.00                            | 52.5                            | 38.3               |
| 125               | 5"     | 139.70           | 3.00       | 10.10                | 1290                 | 3.01                            | 43.1                            | 48.3               |
|                   |        | 139.70           | 3.50       | 11.80                | 1500                 | 3.47                            | 49.7                            | 48.2               |
| 150               | 6"     | 165.10           | 3.00       | 12.00                | 1530                 | 5.02                            | 60.8                            | 57.3               |
|                   |        | 165.10           | 3.50       | 13.90                | 1780                 | 5.80                            | 70.30                           | 57.1               |
|                   |        | 168.30           | 4.80       | 19.40                | 2470                 | 8.25                            | 98                              | 57.8               |
|                   |        | 168.30           | 6.40       | 25.60                | 3260                 | 10.7                            | 127                             | 57.3               |
| 200               | 8"     | 168.30           | 7.10       | 28.20                | 3600                 | 11.7                            | 139                             | 57                 |
|                   |        | 219.10           | 4.80       | 25.40                | 3230                 | 18.6                            | 169                             | 75.8               |
|                   |        | 219.10           | 6.40       | 33.60                | 4280                 | 24.2                            | 221                             | 75.2               |
|                   |        | 219.10           | 8.20       | 42.60                | 5430                 | 30.3                            | 276                             | 74.6               |
| 250               | 10"    | 273.10           | 4.80       | 31.80                | 4050                 | 36.4                            | 346                             | 94.9               |
|                   |        | 273.10           | 6.40       | 42.10                | 5360                 | 47.7                            | 349                             | 94.3               |
|                   |        | 273.10           | 9.30       | 60.50                | 7710                 | 67.1                            | 492                             | 93.3               |
| 300               | 12"    | 323.90           | 6.40       | 50.10                | 6380                 | 80.5                            | 497                             | 112                |
|                   |        | 323.90           | 9.50       | 73.70                | 9380                 | 116                             | 717                             | 111                |
| 350               | 14"    | 355.60           | 6.40       | 55.10                | 7020                 | 107                             | 602                             | 123                |
|                   |        | 355.60           | 9.50       | 81.10                | 10300                | 155                             | 871                             | 122                |
| 400               | 16"    | 406.40           | 6.40       | 63.10                | 8040                 | 161                             | 792                             | 141                |
|                   |        | 406.40           | 9.50       | 93.00                | 11800                | 233                             | 1150                            | 140                |