# Low-Carbon Steel

## Chemical Composition

### CHEMICAL ANALYSIS (HEAT ANALYSIS) EN 16120-2

| Type of steel | | Heat analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Designation | | | | | | | | | | | |
| Symbolic | Numerical | % C | % Si | % Mn | Max. % P | Max. % S | Max. % Cr | Max. % Ni | Max. % Mo | Max. Cu | Max. % Al |
| C4D | 1.0300 | ≤ 0.06 | ≤ 0.30 | 0.30 - 0.60 | 0.035 | 0.035 | 0.20 | 0.25 | 0.05 | 0.30 | 0.01 |
| C7D | 1.0313 | 0.05 - 0.09 | ≤ 0.30 | 0.30 - 0.60 | 0.035 | 0.035 | 0.20 | 0.25 | 0.05 | 0.30 | 0.01 |
| C9D | 1.0304 | ≤ 0.10 | ≤ 0.30 | ≤ 0.60 | 0.035 | 0.035 | 0.25 | 0.25 | 0.08 | 0.30 | - |
| C15D | 1.0413 | 0.12 - 0.17 | ≤ 0.30 | 0.30 - 0.60 | 0.035 | 0.035 | 0.20 | 0.25 | 0.05 | 0.30 | 0.01 |

## Equivalents

| Designation | | US | JAPAN | CHINA |
|---|---|---|---|---|
| Symbolic | Numerical | AISI/SAE | JIS | GB |
| C4D | 1.0300 | | | |
| C7D | 1.0313 | 1008 | | |
| C9D | 1.0304 | | | |
| C15D | 1.0413 | | | |

## Mechanical properties

### WITHOUT COATING:

| Material | Range | Approx. Rm (N/mm$^2$) |
|---|---|---|
| Annealed | - | 330 - 400 |
| N/A | - | under agreement |
| Hard Drawn (Grey) | 0.8 -1.5 | 750-1100 |
| | 1.51 - 3.00 | 650-950 |
| | 3.01 - 4.50 | 600-850 |
| | >4.51 | 500-700 |

### WITH COATING:

| Material | Range | Approx. Rm (N/mm$^2$) |
|---|---|---|
| Annealed Galvanised | - | 400 - 450 |
| Hard Galvanised (Grey) | - | 700 - 850 |

## Finishes

**We can supply the following types of coatings:**

Galvanised - Reinforced galvanised - ZA - Reinforced ZA

### COATING DENSITY EN 10244

| | Coating density EN 10244 | | |
|---|---|---|---|
| | A | B | C |
| Diameter $d$ mm | g/m$^2$ | g/m$^2$ | g/m$^2$ |
| 0.15 ≤ d < 0.20 | - | 15 | - |
| 0.20 ≤ d < 0.25 | 30 | 20 | 20 |
| 0.25 ≤ d < 0.32 | 45 | 30 | 25 |
| 0.32 ≤ d < 0.40 | 60 | 30 | 25 |
| 0.40 ≤ d < 0.50 | 85 | 40 | 30 |
| 0.50 ≤ d < 0.60 | 100 | 50 | 35 |
| 0.60 ≤ d < 0.70 | 115 | 60 | 40 |
| 0.70 ≤ d < 0.80 | 130 | 60 | 45 |
| 0.80 ≤ d < 0.90 | 145 | 70 | 50 |
| 0.90 ≤ d < 1.00 | 155 | 70 | 55 |
| 1.00 ≤ d < 1.20 | 165 | 80 | 60 |
| 1.20 ≤ d < 1.40 | 180 | 90 | 65 |
| 1.40 ≤ d < 1.65 | 195 | 100 | 70 |
| 1.65 ≤ d < 1.85 | 205 | 100 | 75 |
| 1.85 ≤ d < 2.15 | 215 | 115 | 80 |
| 2.15 ≤ d < 2.50 | 230 | 125 | 85 |
| 2.50 ≤ d < 2.80 | 245 | 125 | 95 |
| 2.80 ≤ d < 3.20 | 255 | 135 | 100 |
| 3.20 ≤ d < 3.80 | 265 | 135 | 105 |

| | Coating density EN 10244 | | |
|---|---|---|---|
| | A | B | C |
| Diameter $d$ mm | g/m$^2$ | g/m$^2$ | g/m$^2$ |
| 3.80 ≤ d < 4.40 | 275 | 135 | 110 |
| 4.40 ≤ d < 5.20 | 280 | 150 | 110 |
| 5.20 ≤ d < 8.20 | 290 | - | 110 |
| 8.20 ≤ d < 10.00 | 300 | - | 110 |

Guidance information.

Note: Can be supplied in copper plating

# Tolerances

## TOLERANCES DIN 177

### Nominal diameter tolerances

| Nominal diameter d mm | Grey, Galvanised, Electro-zinc plated, Z/A |
|---|---|
| 0.10 ≤ d < 0.25 | ± 0.01 |
| 0.25 ≤ d < 0.40 | ± 0.015 |
| 0.40 ≤ d < 0.63 | ± 0.02 |
| 0.63 ≤ d < 1.00 | ± 0.03 |
| 1.00 ≤ d < 1.60 | ± 0.04 |
| 1.60 ≤ d < 2.50 | ± 0.06 |
| 2.50 ≤ d < 4.00 | ± 0.08 |
| 4.00 ≤ d < 6.30 | ± 0.10 |
| 6.30 ≤ d < 10.00 | ± 0.15 |
| 10.00 ≤ d < 16.00 | ± 0.20 |
| 16.00 ≤ d ≤ 20.00 | ± 0.25 |

Note: Can be supplied in copper plating

## WHEN SUPPLIED IN RODS. STRAIGHTENED WIRE:

| Nominal diameter d mm | Length tolerance mm. | |
|---|---|---|
| | Minimum length | Maximum length |
| 0.65 ≤ d < 0.80 | 50 | 2000 |
| 0.80 ≤ d < 2.01 | 30 | 2000 |
| 2.01 ≤ d < 3.01 | 30 | 4000 |
| 3.01 ≤ d < 4.35 | 30 | 4000 |
| 4.35 ≤ d < 6.01 | 30 | 4350 |
| 6.01 ≤ d < 10.50 | 250 | 4350 |

Approximate data for information purposes

## STANDARD LENGTH TOLERANCES

| NOMINAL LENGTH | TOLERANCE |
|---|---|
| L < = 1000 mm. | +/- 1 mm. |
| 1000 < L < = 4000 | - 0mm. / +3 mm. |