Seamless Steel Tubes for precision applications

EN10305-4: Seamless cold drawn tubes for hydraulic, grease/lubrication and pneumatic power systems

NBK Phosphated and Oiled High Quality Bendable and Flareable Cold Drawn Seamless Carbon Steel

For hydraulic applications, steel tubes are commonly used with a phosphate external coating which also provides corrosion resistance.

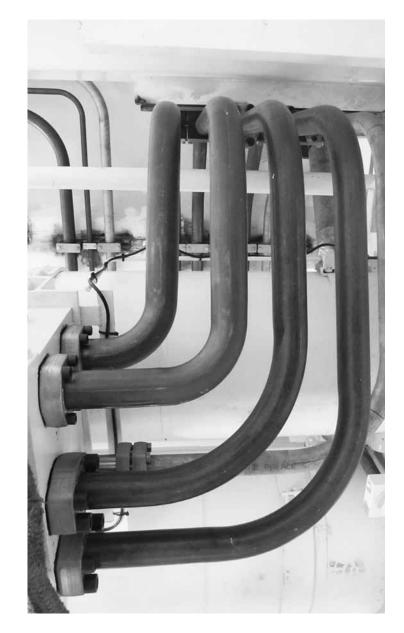
Other more corrosion resistant materials such as 304, 316 and Duplex Stainless Steels are also available for use with flared and retained ring systems.

- European Origin of Material
- E235+N (ST 37.4 NBK)
- E355+N (ST 52.4 NBK)
- Phosphated Internally and Externally
- Oiled Internally and Externally
- 6,000 mm (6 m) (-0, +50 mm)
- Ends Plugged with Plastic Caps
- Certification on EN 10204 3.1
- Continuous Marking along the length including Heat Number

NOTES:

The only material acceptable for use with Tube-Mac[®] 37° Flare Systems is EN10305-4 (DIN2391c NBK)

The allowable working pressure of the system may be less than the allowable working pressure of the tube



CHEMICAL COMPOSITION % OF E355 + N (1.0580) ST52.4

| C | Si | Mn | Р | S |
|----------|----------|---------|-----------|-----------|
| max 0.22 | max 0.55 | max 1.6 | max 0.045 | max 0.045 |

CHEMICAL COMPOSITION % OF E235 + N (1.0308) ST37.4

| С | Si | Mn | Р | S | |
|----------|----------|---------|-----------|-----------|--|
| max 0.17 | max 0.35 | max 1.2 | max 0.045 | max 0.045 | |

Ordering Information

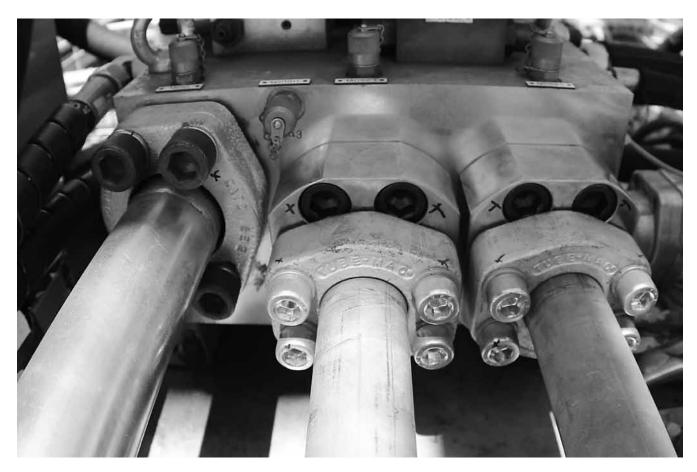
E355+N ST 52.4

| Part Number | Description | Bore Diameter (mm) | Weight (kg/m) | Working Pressure (bar)* |
|------------------|---|--------------------------|------------------|-------------------------------|
| T030.0X04.0XMSPN | 30.0mm OD x 4.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 22 | 2.57 | 424 |
| T038.0X04.0XMSPN | 38.0mm OD x 4.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 30 | 3.36 | 327 |
| T050.0X05.0XMSPN | 50.0mm OD x 5.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 40 | 5.56 | 315 |
| T060.0X05.0XMSPN | 60.0mm OD x 5.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 50 | 6.79 | 259 |
| T060.0X08.0XMSPN | 60.0mm OD x 8.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 46 | 10.27 | 445 |
| T066.0X08.5XMSPN | 66.0mm OD x 8.5mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 49 | 12.07 | 429 |
| T080.0X10.0XMSPN | 80.0mm OD x 10.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 60 | 17.28 | 418 |

E235+N ST 37.4

| Part Number | Description | Bore Diameter (mm) | Weight (kg/m) | Working Pressure (bar)* |
|------------------|---|--------------------------|------------------|-------------------------------|
| T050.0X03.0XLSPN | 50.0mm OD x 03.0mm WT Hydraulic Tube Seamless Steel E235+N EN10305-4 ST37.4 NBK Phosphated & Oiled | 44 | 4.38 | 115 |
| T060.0X03.0XLSPN | 60.0mm OD x 03.0mm WT Hydraulic Tube Seamless Steel E235+N EN10305-4 ST37.4 NBK Phosphated & Oiled | 54 | 4.22 | 95 |

* Working pressures are based on a minimum bending radius of 3D according to DNV



Stainless Steel Tube

Prochem leads the field in the supply of high quality hydraulic tube for offshore and onshore applications.

THEORETICAL WORKING PRESSURE FOR SEAMLESS TUBE TP316/316L

316 (Seamless) -253 to 38°C

| | | Wall Thickness | | | | | | | |
|-------|--------|----------------|--------|--------|---------|--------|---------|--------|--------|
| Size | | inch | 0.028 | 0.036 | 0.048 | 0.064 | 0.083 | 0.109 | 0.128 |
| mm | inch | mm | 0.71 | 0.91 | 1.22 | 1.63 | 2.11 | 2.77 | 3.25 |
| 3.18 | 1/8" | psi | 8,579 | 12,083 | 19,185 | | | | |
| | | kPa | 59,110 | 83,254 | 132,188 | | | | |
| 4.76 | 3/16" | psi | 5,883 | 7,153 | 10,389 | | | | |
| | | kPa | 40,534 | 49,282 | 71,581 | | | | |
| 6.35 | 1/4" | psi | 4,311 | 5,682 | 7,199 | 10,464 | 15,363 | | |
| | | kPa | 29,700 | 39,150 | 49,603 | 72,097 | 105,848 | | |
| 7.94 | 5/16" | psi | 3,401 | 4,460 | 6,129 | 7,836 | 11,060 | | |
| | | kPa | 23,436 | 30,730 | 42,229 | 53,990 | 76,205 | | |
| 9.53 | 3/8" | psi | | 3,671 | 5,017 | 6,274 | 8,679 | | |
| | | kPa | | 25,290 | 34,566 | 43,230 | 59,797 | | |
| 12.7 | 1/2" | psi | | 2,711 | 3,681 | 5,031 | 6,726 | 8,539 | |
| | | kPa | | 18,678 | 25,362 | 34,667 | 46,343 | 58,834 | |
| 15.88 | 5/8" | psi | | 2,149 | 2,907 | 3,953 | 5,249 | 6,474 | |
| | | kPa | | 14,806 | 20,029 | 27,233 | 36,166 | 44,604 | |
| 19.05 | 3/4" | psi | | 1,780 | 2,402 | 3,255 | 4,304 | 5,809 | 5,887 |
| | | kPa | | 12,264 | 16,549 | 22,424 | 29,654 | 40,023 | 40,562 |
| 25.4 | 1" | psi | | | 1,781 | 2,403 | 3,161 | 4,235 | 4,741 |
| | | kPa | | | 12,269 | 16,555 | 21,780 | 29,181 | 32,665 |
| 31.75 | 1-1/4" | psi | | | | 1,906 | 2,500 | 3,335 | 3,726 |
| | | kPa | | | | 13,131 | 17,224 | 22,980 | 25,673 |
| 38.1 | 1-1/2" | psi | | | | 1,574 | 2,060 | 2,741 | 3,058 |
| | | kPa | | | | 10,844 | 14,196 | 18,886 | 21,072 |
| 50.8 | 2" | psi | | | | 1,173 | 1,532 | 2,032 | 2,263 |
| | | kPa | | | | 8,083 | 10,556 | 13,997 | 15,593 |

TUBE WORKING PRESSURE NOTES:

Tube working pressures have been calculated in accordance with ASME B31.3

Where Thickness < Diameter/6, the formula 304.1.2 3a has been used. Where Thickness ≥ Diameter/6, the formula K304.1.2 35c has been used. For TP316

| S = 20,000 psi | Y = 0.4 | W = 1 | E = 1 | c0 has been neglected |
|----------------|---------|-------|-------|-----------------------|
|----------------|---------|-------|-------|-----------------------|

Tube Outside Diameter and Wall Thickness Tolerances have been considered when calculating the working pressures.

Numbers in standard text have been calculated based on ASTM A269/213 tolerances

Numbers in bold italic text have been calculated based on ASTM A269 tolerances

The Allowable Working Pressures calculated are a guide only. As there are variables that will alter the Allowable Working Pressure of the tube, it is the ultimate responsibility of the customer to verify that the tube is suitable for the application.

This table does not advise suitability for use with compression fittings. The purchaser must refer to the compression fitting manufacturers tubing data charts for size and wall thickness suitability.