

Metric Round Honed Tubing Specifications

Condition and Grade

Tubes up to 250mm in diameter are skived and roller burnished and are produced from cold drawn steel tubes, seamless DIN 2391.C steel, grade St52 or welded DIN 2393. Steel Grade St52 stress relieved condition (BK+S)
 Tubes greater than 250mm in diameter are honed steel and are produced from hot rolled according to DIN 2448/1629 and the steel grade is St52.

Straightness of Cylinder Tubes

The straightness is better than 0.5mm/1000mm.
 I.D. Surface Roughness
 All our cylinder tubes have an inside diameter tolerance of H8. The surface smoothness of the inside of the tubes average RMS 12 or better. (Nominal value Ra um less than or equal to 0.20 um for skived and roller burnished and is 0.40 um for honed tubes.)
 Formula for Wall Thickness in Millimeters
 The formula for wall thickness required for a cylinder tube subject to internal hydraulic pressure is as follows:

$$0.05 * I * P * F$$

Wall Thickness in mm = $\frac{\quad}{Y}$

Chemical Analysis compared to AISI 1018 steel					
Steel Grade	C%	Mn%	Si%	P% Max	S% Max
St52	0.20 Max	1.50 Max	0.050 Max	0.025 Max	0.035 Max
AISI 1018	0.15/0.20	0.60/0.90	0.15/0.30	0.040 Max	0.050 Max

Strength – Yield and Tensile

Our cylinder tubes made from DIN 2391 seamless or DIN 2393 welded steel grade St52 BK+S, the yield point for wall thickness is 490MPa (71,050 psi) minimum. The Ultimate Tensile Strength (UTS) is a minimum 600 MPa (87,000 psi). Tubes greater than 250mm in diameter are produced from DIN 2448 hot rolled tubes in steel grade St52 and the minimum yield strength is 345 MPa (50,022 psi) and a minimum UTS of 500 MPa (72,495 psi).

I = Inside Diameter

P = Pressure in Bar

F = Safety Factor (Should be greater than or equal to 2)

Y = Yield Point

Inside Diameter Tolerance

The tubes are ready to use with inside diameter tolerance of ISO H8. Tubes greater than 250mm in diameter are honed steel and are hot rolled according to DIN 2448/1629 and the steel grade is St52.

To convert bar into psi multiply by 144.98

To convert psi into bar multiply by 0.0069

Hole Above	Size in Millimeters Up to and Including	ISO 286-2 Minus Zero (-0.0000)	Capital H 8 for Holes
6	10	+0.022mm	(+ 0.00086")
10	18	+0.027mm	(+ 0.0010")
18	30	+0.033mm	(+ 0.00129")
30	50	+0.039mm	(+ 0.00153")
50	80	+0.046mm	(+ 0.00181")
80	120	+0.054mm	(+ 0.00213")
120	180	+0.063mm	(+ 0.00248")
180	250	+0.072mm	(+ 0.00283")
250	315	+0.081mm	(+ 0.00319")
315	400	+0.089mm	(+ 0.00350")