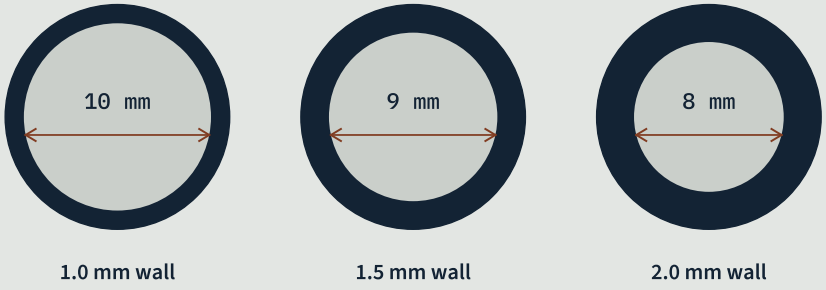
TUBING SELECTION

How to read a 316 tubing pressure rating chart

A 12 mm instrument line is specified for 210 bar at 20 °C. Three wall thicknesses are available. One falls below the required pressure. The two remaining options leave different bores for the fluid.

Tubing Supply AS | 23 November 2026



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12 mm OD

Three nominal cross-sections

Nominal geometry at one scale. BMT table 2, p. 9.

CATALOGUE LOOKUP

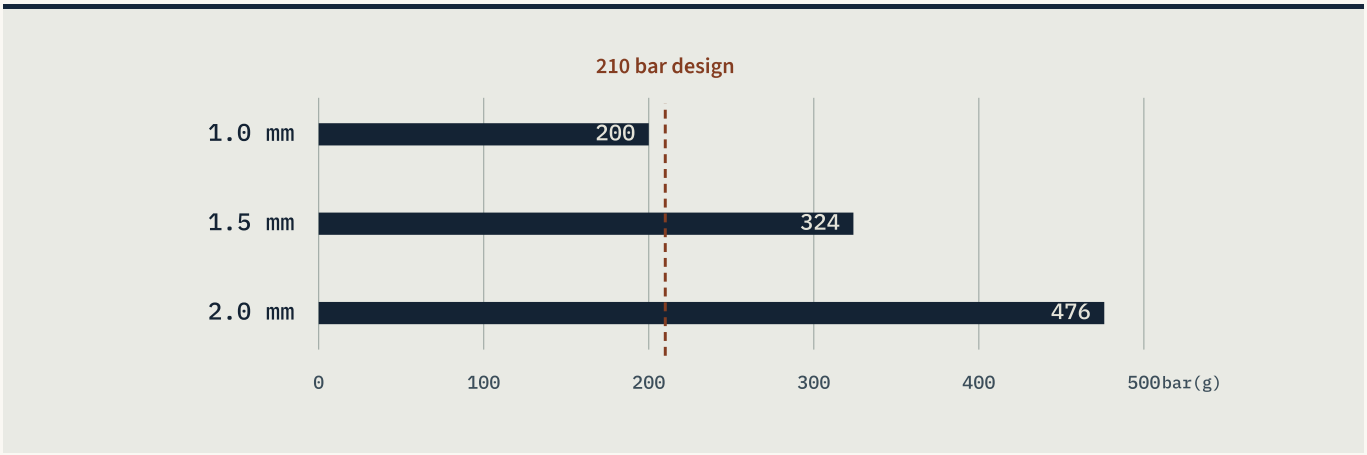
12 mm

Read the row for the tube outside diameter and the column for wall thickness. BMT's metric stainless tube table gives working pressure in psig. Check the stated material, temperature and application conditions before you apply that number to a line.

TUBE TABLE AND UNITS

One outside diameter, three published ratings

BMT table 2 covers the fully annealed, seamless stainless tubing described in its heading, including 316 and 316L. The table states a stress basis for −28.9 to 37.8 °C and uses ASTM A269 dimensional tolerances. The example is for liquid at 20 °C. A number read from the tube table does not establish the rating of the attached valve or port.



Published psig converted to bar gauge. The vertical line marks the example design pressure. BMT source.

The bore is OD minus twice the nominal wall. The pressure figures are published cells. The conversion uses 1 psi ≈ 0.06895 bar. BMT bases the table on minimum permitted wall and maximum permitted OD under ASTM A269. The table makes no allowance for material lost to corrosion or erosion.

Extract from the 12 mm OD row

Wall	Nominal bore	BMT working pressure	Approx. bar(g)
1.0 mm	10.0 mm	2,900 psig	200
1.5 mm	9.0 mm	4,700 psig	324
2.0 mm	8.0 mm	6,900 psig	476

BMT stainless tubing table, p. 9

WORKED SELECTION

Which wall passes the first check?

For the 210 bar liquid duty, the 1.0 mm wall falls short. Both thicker walls clear this single catalogue check. Moving from a 9 mm bore to 8 mm reduces nominal flow area by about 21%. At a fixed flow, velocity rises. Include that change when assessing line loss and instrument response.

If the medium changes to gas

BMT restricts gas-service selection to shaded cells in the original table. Read the original shaded chart and its tube surface and hardness instructions before carrying a liquid selection into gas service.

If the line will run hotter

At 204 °C BMT table 1 lists a 0.96 factor for 316 stainless tube. For 12 × 1.5 mm, 4,700 × 0.96 = 4,512 psig, about 311 bar gauge. This is a tube-only example. Check the fitting, valve and port separately at that temperature.

Can an empty cell be filled by interpolation?

An empty cell gives no BMT rating for that combination. Use the governing design basis and documented data for the actual material, size and assembly. Keep the wall, material condition, temperature and end connections visible on the specification.

Effect of changing the wall from 1.5 to 2.0 mm

Nominal bore	Flow area	Velocity at equal flow
9 → 8 mm	−21%	+27%

Technical references

BMT SUPERLOK · R38, stainless tube chart, table 2
BMT SUPERLOK · Gas service and tube requirements, pp. 6–8
Tubing Supply · Seamless straight tubing

Explore seamless straight tubing