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NZTM-Q26C Stainless Steel Tube Bursting & Working Pressures

The following are typical values calculated based on Barlow's formula and are not a guarantee of maximum or minimum values.

The Barlow's formula

$P = 2\ \sigma\ t / (d_o\ SF)$

where:
- P = max. working pressure (psi)
- σ = material strength (psi)
- t = wall thickness (in)
- d_o = outside diameter (in)
- SF = safety factor (in general 1.5 to 10)

YS = Yield strength = 170 MPa , TS = Tensile strength = 485 MPa

Note-1 : 1 MPa ≈ 145 psi or 1 psi = 0.006895 MPa

1 Pascal (Pa) = 1 N/m^2 , 1 bar = 10^5 N/m^2

Note-2 : Safety factor = 1.60

Note-3: Yield strength and Safety factor used in working pressure

Note-4: Tensile / Ultimate strength used in bursting pressure

Wall thickness (mm)

	mm →	0.90		1.20		1.50		1.60		2.00	
	inch →	0.035		0.047		0.059		0.063		0.079	
OD (inch)	Tube diameter (OD) (mm)	Bursting pressure (psi)	Working pressure (psi)	Bursting pressure (psi)	Working pressure (psi)	Bursting pressure (psi)	Working pressure (psi)	Bursting pressure (psi)	Working pressure (psi)	Bursting pressure (psi)	Working pressure (psi)
3/8 "	**9.53**	13,283	**2,910**	17,710	**3,880**	22,138	**4,850**	23,614	**5,173**		
1/2 "	**12.7**	9,967	**2,184**	13,290	**2,911**	16,612	**3,639**	17,720	**3,882**		
5/8 "	**15.9**	7,971	**1,746**	10,628	**2,328**	13,286	**2,911**	14,171	**3,105**		
3/4 "	**19.0**	6,662	**1,460**	8,883	**1,946**	11,104	**2,433**	11,844	**2,595**		
7/8 "	**22.2**	5,702	**1,249**	7,603	**1,666**	9,503	**2,082**	10,137	**2,221**		
1 "	**25.4**	4,984	**1,092**	6,645	**1,456**	8,306	**1,820**	8,860	**1,941**	11,075	**2,426**
1 1/8 "	**28.6**	4,426	**970**	5,901	**1,293**	7,377	**1,616**	7,869	**1,724**	9,836	**2,155**
1 1/4 "	**31.8**	3,981	**872**	5,308	**1,163**	6,634	**1,453**	7,077	**1,550**	8,846	**1,938**
1 3/8 "	**34.9**	3,627	**795**	4,836	**1,059**	6,045	**1,324**	6,448	**1,413**	8,060	**1,766**
1 1/2 "	**38.0**	3,331	**730**	4,442	**973**	5,552	**1,216**	5,922	**1,297**	7,403	**1,622**
1 5/8 "	**41.3**	3,065	**671**	4,087	**895**	5,108	**1,119**	5,449	**1,194**	6,811	**1,492**
1 3/4 "	**44.5**	2,845	**623**	3,793	**831**	4,741	**1,039**	5,057	**1,108**	6,321	**1,385**
2 "	**50.8**	2,492	**546**	3,322	**728**	4,153	**910**	4,430	**970**	5,537	**1,213**
2 1/2 "	**63.5**			2,658	**582**	3,322	**728**	3,544	**776**	4,430	**970**
3 "	**76.2**			2,215	**485**	2,769	**607**	2,953	**647**	3,692	**809**
4 "	**101.6**					2,077	**455**	2,215	**485**	2,769	**607**
5 "	**127.0**					1,661	**364**	1,772	**388**	2,215	**485**
6 "	**152.4**					1,384	**303**	1,477	**323**	1,846	**404**

Yield Strength (min) = 170 MPa Tensile / Ultimate Strength (min) = 485 Mpa

Above theoretical bursting and working pressures cover temperatures between 20 ^{0}F (- 7 ^{0} C) and 100 ^{0}F (38 ^{0}C)

For elevated temperatures please multiply by the following factors:

	300 ^{0}F (149 ^{0}C)	500 ^{0}F (260 ^{0}C)	1000 ^{0}F (538 ^{0}C)
Type 304 S/S	**0.828**	**0.774**	**0.665**
Type 316 S/S	**0.900**	**0.853**	**0.746**

Conversion

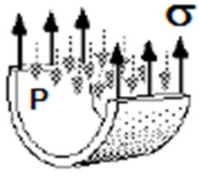
*Above chart is in **p**ounds per **s**quare **i**nch (psi).*

To convert psi into kPa → multiply psi by 6.895

To convert psi into bar → multiply psi by 0.06895

To convert bar into psi → multiply bar by 14.5

This chart does not cover additional stresses that may be imposed upon the tube.



P = Pressure

σ = Hoop stress < Yield Strength

P x d_o x L = σ x t x L x 2

P = 2 σ x t / d_o