

1 Only RED font cells are meant for Input.									
2	PMS Line Class ID =		washing	Select / Input Special Requirements, if any =		Low Temperature Process			
3	ASME Flange Rating =		PN 320	hot water washing					
4	Fluid / Service =		hot water washing						
5	Material Specification =		A312 Gr TP304		Material Type: Austenitic steels (TP304, 310, 316, 321, 347)				
6	Quality Factor, E =		1.00		Pipe Manufacturing Type =		Seamless Pipe or Tube		
7	Design Pressure =		200.00 barg		= 2900.75 psig		Please input pressure value in barg.		
8	Design Temperature =		75.0°C		= 167.0°F		Please input temperature value in °C.		
9	Allow. Stress @ 75°C =		20.000 ksi		= 137.90 MPa		Please check from Table A-1 of ASME B31.3 Latest Ed		
10	Corrosion Allowance =		0.00 mm		= 0.00 inch		Mill Tolerance =		12.5% Please input
11	Y Coefficient @ 75°C =		0.4		Valid for t<D/6		Please check from ASME B31.3 Table 304.1.1.		
12	Ratio of (P/SE) =		0.145		Check Passed.				
13	t <sub>pressure</sub> =		(P x D) / [2 x {(S.E) + (P.Y)}]		= (2,900.8 x D) / [2 x {(20,000.0 x 1.00) + (2,900.8 x 0.				
14			(Valid for t<D/6)		= 0.0685423764 x D inch				
15	Where,		(As per para. 304.1.2 of of ASME B31.3 2002 Edition)						
16	D = Outside diameter of pipe in inch and also derived in mm;		Refer ASME B36.10M-1996						
17	P = Internal design gage pressure in psi and also derived in bar;								
18	t <sub>min</sub> = Minimum required thickness, including mechanical, corrosion and erosion allowances;								
19	t <sub>pressure</sub> = Pressure design thickness, as calculated in accordance with para. 304.1.2, for internal pressure;								
20	S = Allowable stress value from Table A-1 of ASME B31.3;								
21	E = Quality factor from Table A-1A or A-1B of ASME B31.3;								
22	Y = Coefficient from Table 304.1.1 of ASME B31.3, valid for t<D/6;								
23	T = The minimum wall thickness for the pipe selected or purchased, considering manufacturer's minus								
24	tolerance shall be NOT less than t min. For t min, refer Column "A" and for T, refer Column "B".								
25	(All nomenclatures, definitions and parameters are generally in accordance with ASME B31.3 2002 Edition.)								
26	Selected								
27	Pipe NPS	Pipe OD	t <sub>pressure</sub>	t <sub>min</sub>	Sch /	Nominal	Min. Thk.	Max.Allow.	Ratio
28	inch (mm)	D (mm)	(mm)	(mm)	Thk. (inch)	Thk. (mm)	T (mm)	P (barg)	(D/t)
29				Column "A"		T <sub>nom</sub>	Column "B"		Check (>6)
30	½" (15)	21.34	1.46	1.46	Sch.40S	2.77	2.42	344.4	8.8
31	¾" (20)	26.67	1.83	1.83	Sch.40S	2.87	2.51	280.9	10.6
32	1" (25)	33.40	2.29	2.29	Sch.40S	3.38	2.96	262.7	11.3
33	1¼" (32)	42.16	2.89	2.89	Sch.40S	3.56	3.11	216.3	13.6
34	1½" (40)	48.26	3.31	3.31	Sch.40S	3.68	3.22	194.6	15.0
35	2" (50)	60.33	4.13	4.13	Sch.40S	3.91	3.42	163.9	17.6
36	2½" (65)	73.03	5.01	5.01	Sch.40S	5.16	4.51	179.3	16.2
37	3" (80)	88.90	6.09	6.09	Sch.40S	5.49	4.80	155.7	18.5
38	3½" (90)	101.60	6.96	6.96	Sch.80S	8.08	7.07	203.2	14.4
39	4" (100)	114.30	7.83	7.83	Sch.80S	8.56	7.49	190.7	15.3
40	5" (125)	141.30	9.69	9.69	Sch.80S	9.53	8.33	170.7	17.0
41	6" (150)	168.28	11.53	11.53	Sch.80S	10.97	9.60	164.9	17.5
42	8" (200)	219.08	15.02	15.02	Sch.100	15.09	13.20	174.6	16.6
43	10" (250)	273.05	18.72	18.72	Sch.100	18.26	15.98	169.3	17.1
44	12" (300)	323.85	22.20	22.20	Sch.100	21.44	18.76	167.5	17.3
45	14" (350)	355.60	24.37	24.37	Sch.100	23.83	20.85	169.6	17.1
46	16" (400)	406.40	27.86	27.86	Sch.100	26.19	22.91	162.8	17.7
47	18" (450)	457.20	31.34	31.34	Sch.100	29.36	25.69	162.3	17.8
48	20" (500)	508.00	34.82	34.82	Sch.100	32.54	28.47	161.8	17.8
49	22" (550)	558.80	38.30	38.30	Sch.100	34.93	30.56	157.7	18.3
50	24" (600)	609.60	41.78	41.78	Sch.100	38.89	34.03	161.1	17.9
51	Notes: 1. The user shall arrive at the worst case P-T condition, based on maximum (P/SE) ratio.								
52	2. The user shall be responsible to check the allowable stress value for the material & temp.								
53	3. The user shall be responsible to check the applicable Y Coefficient value for the material & temp.								
PTC & Branch Calc_ASME B31.3_Upto NPS 24 Version: 1.11					JOB NUMBER XXXX		CALCULATION NUMBER XXXX - washing - PTC - 001		
XXXX					REV.	CALC. BY	DATE	CHKD. BY	DATE
CLIENT: XXXX					3				
PROJECT: XXXX					2				
LOCATION: XXXX					1				

SUBJECT:	Internal Pressure Thk. Calc. Sheet	0	Name	07-May-03	Name	07-May-03
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[illegible]

