

National Pipeline Supplies



Technical Specifications



WATER PRESSURE							
Head in Feet or Metres = Pressure kPa or psi							
Metres	Feet	kPa	psi	Metres	Feet	kPa	psi
0.5	1.64	4.9	0.71	106.7	350	1044	151.5
1	3.28	9.79	1.42	110	360.9	1077	156
1.52	5	14.92	2.16	120	393.7	1175	170.5
2	6.56	19.58	2.84	121.9	400	1193	173
3.05	10	29.8	4.3	130	426.5	1273	185
5	16.4	48.9	7.1	137.2	450	1343	195
6.1	20	59.7	8.7	140	459.3	1370	199
9.14	30	89.5	13	150	492.1	1468	213
10	32.8	97.9	14.2	152.4	500	1492	216.5
12.2	40	119.3	17.3	160	524.9	1566	227
15	49.2	146.8	21.3	167.6	550	1641	238
15.2	50	149.2	21.7	170	557.7	1664	241.5
18.3	60	179	26	180	590.6	1762	256
20	65.6	195.8	28.4	182.9	600	1790	260
24.4	80	238.7	34.6	190	623.4	1860	270
25	82	245	35.5	198.1	650	1939	281
30	98.4	294	42.6	200	656.2	1958	284
30.5	100	298	43.2	210	689	2056	298
35	114.8	343	49.8	213.4	700	2089	303
36.6	120	358	52	220	721.8	2154	312.5
40	131.2	392	57	228.6	750	2238	325
45	147.6	440	64	230	754.6	2251	326.5
45.7	150	448	65	240	787.4	2349	341
50	164	489	71	243.8	800	2387	346
60	196.9	587	85	250	820.2	2447	355
61	200	597	87	259.1	850	2536	368
70	229.7	685	99.5	260	853	2545	369
76.2	250	746	108	270	886	2643	383.5
80	262.5	783	113.5	274.3	900	2685	389.5
90	295.3	883	128	280	919	2741	397.5
91.4	300	895	130	290	951	2839	412
100	328.1	979	142	300	984	2937	426

BAR	kg/cm ²	lb/in ²	ATMOSPHERES	MERCURY 0° C		WATER 15° C	
				m	inch	m	feet
1	1.0204	14.51	0.9869	0.75055	29.55	10.213	33.51
0.98	1	14.22	9.9672	0.7355	28.96	10.009	32.84
0.0689	0.07031	1	0.068	0.15171	2.036	10.7037	2.309
1.072	1.094	15.56	1.058	0.8044	31.67	10.95	35.91
1.0133	1.034	14.706	1	0.76052	29.94	10.35	33.95
1.3324	1.3595	19.34	1.3149	1	39.37	13.61	44.64
0.03384	0.03453	0.3912	0.0334	0.0254	1	0.3456	1.134
0.09991	0.09791	1.421	0.09663	0.07349	2.893	1	3.281
0.02984	0.03045	0.4331	0.02945	0.0224	0.8819	0.3048	1

VOLUMETRIC FLOW RATES						
Litre	Litre	Cubic Metre	Cubic Foot	Cubic Foot	UK Gallon	US Gallon
per second	per minute	per hour	per hour	per minute	per minute	per minute
l/s	l/min	m ³ /hr	ft ³ /hr	ft ³ /min	UK gal/min	US gal/min
1	60	3.6	127.133	2.1189	13.2	15.85
0.017	1	0.06	2.1189	0.0353	0.22	0.264
0.278	16.667	1	35.3147	0.5886	3.666	4.403
0.008	0.472	0.0283	1	0.0167	0.104	0.125
0.472	28.317	1.699	60	1	6.229	7.48
0.076	4.546	0.2728	9.6236	0.1605	1	1.201
0.063	3.785	0.2271	8.0209	0.1337	0.833	1
0.002	0.11	0.0066	0.2339	0.0039	0.024	0.029

VELOCITY			
Metres per second	Feet per Second	Metres per Minute	Feet per Minute
m/s	ft/s	m/min	ft/min
1	3.281	60	196.95
0.305	1	18.288	60
0.017	0.055	1	3.281
0.005	0.017	0.305	1
0.278	0.911	16.667	54.68
0.447	1.467	28.822	88

TORQUE CONVERSIONS		
lbf.inch	0.113	Nm
lbf.ft	1.356	
Kgf.cm	0.098	
Kgf.m	9.807	

TECHNICAL REFERENCES			
Pressure Ready Reference			
1psi = 6.89476 kPa		1kPa = 0.145038 psi	
psi	kPa	psi	kPa
0.1	0.69	70	482.6
0.145	1	72.52	500
0.5	3.45	75	517.1
0.725	5	79.77	550
1	6.89	80	551.6
1.45	10	87.02	600
2	13.79	90	620.5
2.9	20	94.27	650
3	20.68	100	689.5
4	27.58	101.5	700
4.35	30	116	800
5	34.47	125	861.9
5.8	40	130.5	900
6	41.37	145	1000
7	48.26	150	1034
7.25	50	160	1103
8	55.16	174	1200
8.7	60	175	1207
9	62.05	200	1379
10	68.95	203	1400
10.15	70	218	1500
11	75.84	225	1551
11.6	80	250	1724
12	82.74	254	1750
13	89.63	275	1896
13.05	90	290	2000
14	96.53	300	2068
14.5	100	325	2241
14.7	101.325	350	2413
15	103.4	363	2500
17.4	120	375	2586
18.13	125	400	2758
20	137.9	425	2930
21.76	150	435	3000
25	172.3	450	3103
25.38	175	500	3447
29.01	200	508	3500
30	206.8	550	3792
36.26	250	580	4000
40	275.8	600	4137
43.51	300	700	4826
50	344.7	725	5000
50.76	350	800	5516
58.02	400	870	6000
60	413.7	900	6205
65.27	450	1000	6895

IP NUMBER	FIRST DIGIT - SOLIDS	SECOND DIGIT - LIQUIDS
IP00	Not protected from solids.	Not protected from liquids.
IP01	Not protected from solids.	Protected from condensation.
IP02	Not protected from solids.	Protected from water spray less than 15 degrees from vertical.
IP03	Not protected from solids.	Protected from water spray less than 60 degrees from vertical.
IP04	Not protected from solids.	Protected from water spray from any direction.
IP05	Not protected from solids.	Protected from low pressure water jets from any direction.
IP06	Not protected from solids.	Protected from high pressure water jets from any direction.
IP07	Not protected from solids.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP08	Not protected from solids.	Protected from long term immersion up to a specified pressure.
IP10	Protected from touch by hands greater than 50 millimeters.	Not protected from liquids.
IP11	Protected from touch by hands greater than 50 millimeters.	Protected from condensation.
IP12	Protected from touch by hands greater than 50 millimeters.	Protected from water spray less than 15 degrees from vertical.
IP13	Protected from touch by hands greater than 50 millimeters.	Protected from water spray less than 60 degrees from vertical.
IP14	Protected from touch by hands greater than 50 millimeters.	Protected from water spray from any direction.
IP15	Protected from touch by hands greater than 50 millimeters.	Protected from low pressure water jets from any direction.
IP16	Protected from touch by hands greater than 50 millimeters.	Protected from high pressure water jets from any direction.
IP17	Protected from touch by hands greater than 50 millimeters.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP18	Protected from touch by hands greater than 50 millimeters.	Protected from long term immersion up to a specified pressure.
IP20	Protected from touch by fingers and objects greater than 12 millimeters.	Not protected from liquids.
IP21	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from condensation.
IP22	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from water spray less than 15 degrees from vertical.
IP23	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from water spray less than 60 degrees from vertical.
IP24	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from water spray from any direction.
IP25	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from low pressure water jets from any direction.
IP26	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from high pressure water jets from any direction.
IP27	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP28	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from long term immersion up to a specified pressure.
IP30	Protected from tools and wires greater than 2.5 millimeters.	Not protected from liquids.
IP31	Protected from tools and wires greater than 2.5 millimeters.	Protected from condensation.
IP32	Protected from tools and wires greater than 2.5 millimeters.	Protected from water spray less than 15 degrees from vertical.
IP33	Protected from tools and wires greater than 2.5 millimeters.	Protected from water spray less than 60 degrees from vertical.
IP34	Protected from tools and wires greater than 2.5 millimeters.	Protected from water spray from any direction.
IP35	Protected from tools and wires greater than 2.5 millimeters.	Protected from low pressure water jets from any direction.
IP36	Protected from tools and wires greater than 2.5 millimeters.	Protected from high pressure water jets from any direction.
IP37	Protected from tools and wires greater than 2.5 millimeters.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP38	Protected from tools and wires greater than 2.5 millimeters.	Protected from long term immersion up to a specified pressure.
IP40	Protected from tools and small wires greater than 1 millimeter.	Not protected from liquids.
IP41	Protected from tools and small wires greater than 1 millimeter.	Protected from condensation.
IP42	Protected from tools and small wires greater than 1 millimeter.	Protected from water spray less than 15 degrees from vertical.
IP43	Protected from tools and small wires greater than 1 millimeter.	Protected from water spray less than 60 degrees from vertical.
IP44	Protected from tools and small wires greater than 1 millimeter.	Protected from water spray from any direction.
IP45	Protected from tools and small wires greater than 1 millimeter.	Protected from low pressure water jets from any direction.
IP46	Protected from tools and small wires greater than 1 millimeter.	Protected from high pressure water jets from any direction.
IP47	Protected from tools and small wires greater than 1 millimeter.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP48	Protected from tools and small wires greater than 1 millimeter.	Protected from long term immersion up to a specified pressure.
IP50	Protected from limited dust ingress.	Not protected from liquids.
IP51	Protected from limited dust ingress.	Protected from condensation.
IP52	Protected from limited dust ingress.	Protected from water spray less than 15 degrees from vertical.
IP53	Protected from limited dust ingress.	Protected from water spray less than 60 degrees from vertical.
IP54	Protected from limited dust ingress.	Protected from water spray from any direction.
IP55	Protected from limited dust ingress.	Protected from low pressure water jets from any direction.
IP56	Protected from limited dust ingress.	Protected from high pressure water jets from any direction.
IP57	Protected from limited dust ingress.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP58	Protected from limited dust ingress.	Protected from long term immersion up to a specified pressure.
IP60	Protected from total dust ingress.	Not protected from liquids.
IP61	Protected from total dust ingress.	Protected from condensation.
IP62	Protected from total dust ingress.	Protected from water spray less than 15 degrees from vertical.
IP63	Protected from total dust ingress.	Protected from water spray less than 60 degrees from vertical.
IP64	Protected from total dust ingress.	Protected from water spray from any direction.
IP65	Protected from total dust ingress.	Protected from low pressure water jets from any direction.
IP66	Protected from total dust ingress.	Protected from high pressure water jets from any direction.
IP67	Protected from total dust ingress.	Protected from immersion between 15 centimeters and 1 meter in depth.
IP68	Protected from total dust ingress.	Protected from long term immersion up to a specified pressure and depth.
IP69K	Protected from total dust ingress.	Protected from steam-jet cleaning.

PRESSURE CONVERSIONS		
1 BAR	100	kPa
1 PSI	0.6895	kPa
1 kPa	0.145	PSI
1 BAR	14.504	PSI
1 MPa	1000	kPa
1 BAR	0.1	MPa
METRES WATER	9.79	kPa
FEET WATER	2.984	kPa

REFERENCE TABLES

TEMPERATURE			
C°	F°	C°	F°
-40	-40	115	239
-35	-31	120	248
-30	-22	125	257
-25	-13	130	266
-20	-4	135	275
-15	5	140	284
-10	14	145	293
-5	23	150	302
0	32	155	311
5	41	160	320
10	50	165	329
15	59	170	338
20	68	175	347
25	77	180	356
30	86	185	365
35	95	190	374
40	104	195	383
45	113	200	392
50	122	205	401
55	131	210	410
60	140	215	419
65	149	220	428
70	158	225	437
75	167	230	446
80	176	235	455
85	185	240	464
90	194	245	473
95	203	250	482
100	212	255	491
105	221	260	500
110		230	

C = •-(F-32)

F = I(C+32)

Kelvin = C(abs) = OC+273

Rankine = F(abs) = + 460

CHEMICAL ELEMENTS & SPECIFIC GRAVITY

Name	Code	Gravity Level
Aluminium	Al	2.699
Antimony	Sb	6.62
Arsenic	As	5.72
Barium	Ba	3.5
Beryllium	Be	1.848
Bismuth	Bi	9.8
Boron	B	2.34
Bromine	Br	3.12
Cadmium	Cd	8.65
Calcium	Ca	1.55
Carbon	C	2.25
Cerium	Ce	6.77
Cesium	Cs	1.903(0°)
Chlorine	Cl	3.214x10
Chromium	Cr	7.19
Cobalt	Co	8.85
Copper	Cu	8.96
Fluorine	F	1.696003
Germanium	Ge	5.323(25°)
Gold	Au	19.32
Hydrogen	H	0.0899x10 ⁻³
Indium	In	7.31
Iodine	I	4.94
Iridium	Ir	22.5
Iron	Fe	7.87
Lead	Pb	11.36
Lithium	Li	0.534
Magnesium	Mg	1.74
Manganese	Mn	7.43
Mercury	Hg	13.546
Molybdenum	Mo	10.22
Nickel	Ni	8.902(25°)
Niobium	Nb	8.57
Nitrogen	N	1.250x10 ⁻³
Oxygen	O	1.429x10 ⁻³
Palladium	Pd	12.02
Phosphorus	P	1.83
Platinum	Pt	21.45
Plutonium	Pu	19.00-19.72
Potassium	K	0.86
Radium	Ba	5
Selenium	Se	4.79
Silicon	Si	2.33(25°)
Silver	Ag	10.49
Sodium	Na	0.9712
Strontium	Sr	2.6
Sulfur	S	2.07
Tantalum	Ta	16.6
Tellurium	To	6.24
Thallium	Tl	11.85
Thorium	Tb	11.66
Tin	Sn	7.2984
Titanium	Ti	4.507
Uranium	U	19.07
Vanadium	V	6.1
Wolfram	W	19.3
Ytterbium	Yb	6.96
Yttrium	Y	4.47
Zinc	Zn	7.133(25°)
Zirconium	Zr	6.489



PIPE SIZING CHART

NB	NPS	ØD
6	1/8	10.3
8	1/4	13.7
10	3/8	17.1
15	1/2	21.3
20	3/4	26.7
25	1	33.4
32	1.1/4	42.2
40	1.1/2	48.3
50	2	60.3
65	2.5	73
65	2.5	*76.1
80	3	88.9
100	4	114.3
125	5	141.3
150	6	*165.1
150	6	168.1
200	8	219.1
250	10	273.1
300	12	323.9
350	14	355.6
400	16	406.4
450	18	457
500	20	508
600	24	610
650	26	660
700	28	711
750	30	762
800	32	813
850	34	864
900	36	914
1050	42	1067

NOTE:

AS 1074 MAX PIPE SIZE 150NB

* AS 1074 OD