PRESSURE CONVERSION

BY FACTOR TO OBTAIN

MULTIPLY GIVEN NUMBER OF

Given	lb./in.²	in.H_2O (at +39.2°F)	cmH_2O (at +4°C)	in. Hg (at +32°F)	mm Hg (Torr) (at 0°C)	dyne/cm² (1μ bar)	newton/m² (PASCAL)	kgm/cm²	bar	atm. (A_n)	lb./ft.²	ft.H_2O (at +39.2°F)
lb./in.2	1.000	2.7680x10¹	7.0308x10¹	2.0360	5.1715x10¹	6.8948x10⁴	6.8948x10³	7.0306x10⁻²	6.8947x10⁻²	6.8045x10⁻²	1.4400x10²	2.3067
in.H_2O (at +39.2°F)	3.6127x10⁻²	1.0000	2.5400	7.3554x10⁻²	1.8683	2.49808x10³	2.4908x10²	2.5399x10⁻³	2.4908x10⁻³	2.4582x10⁻³	5.2022	8.3333x10⁻²
cm H_2O (at +4°C)	1.4223x10⁻²	0.3937	1.0000	2.8958x10⁻²	0.7355	9.8064x10²	9.8064x10¹	9.9997x10⁻⁴	9.8064x10⁻⁴	9.6781x10⁻⁴	2.0481	3.2808x10⁻²
in. Hg (at +32°F)	4.9116x10⁻¹	1.3596x10¹	3.4532x10¹	1.0000	2.5400x10¹	3.3864x10⁴	3.3864x10³	3.4532x10⁻²	3.3864x10⁻²	3.3421x10⁻²	7.0727x10²	1.1330
mm Hg (Torr) (at 0°C)	1.9337x10⁻²	5.3525x10⁻¹	1.3595	3.9370x10⁻²	1.0000	1.3332x10³	1.3332x10²	1.3595x10⁻³	1.3332x10⁻³	1.3158x10⁻³	2.7845	4.4605x10⁻²
dyne/cm² (1μ bar)	1.4504x10⁻⁵	4.0147x10⁻⁴	1.0197x10⁻³	2.9530x10⁻⁵	7.5006x10⁻⁴	1.0000	1.0000x10⁻¹	1.0197x10⁻⁶	1.0000x10⁻⁶	9.8692x10⁻⁷	2.0886x10⁻³	3.3456x10⁻⁵
newton/m² (PASCAL)	1.4504x10⁻⁴	4.0147x10⁻³	1.0197x10⁻²	2.9530x10⁻⁴	7.5006x10⁻³	1.0000x10¹	1.0000	1.0197x10⁻⁵	1.0000x10⁻⁵	9.8692x10⁻⁶	2.0885x10⁻²	3.3456x10⁻⁴
kgm/cm²	1.4224x10¹	3.9371x10²	1.00003x10²	2.8959x10¹	7.3556x10²	9.8060x10⁵	9.8060x10⁴	1.0000	9.8060x10⁻¹	9.678x10⁻¹	2.0482x10³	3.2809x10¹
bar	1.4504x10¹	4.0147x10²	1.0197x10²	2.9530x10¹	7.5006x10²	1.0000x10⁶	1.0000x10⁵	1.0197	1.0000	9.8692x10⁻¹	2.0885x10³	3.3456x10¹
atm. (A_n)	1.4696x10¹	4.0679x10²	1.0333x10²	2.9921x10¹	7.6000x10²	1.0133x10⁶	1.0133x10⁵	1.0332	1.0113	1.0000	2.1162x10³	3.3900x10¹
lb./ft.²	6.9445x10⁻³	1.9223x10⁻¹	4.882x10⁻¹	1.4139x10⁻²	3.591x10⁻¹	4.7880x10¹	4.7880x10⁰	4.8824x10⁻⁴	4.7880x10⁻⁴	4.7254x10⁻⁴	1.0000	1.6019x10⁻²
ft. H_2O (at +39.2°F)	4.3352x10⁻¹	1.2000x10¹	3.0480x10¹	8.826x10⁻¹	2.2419x10¹	2.9890x10⁴	2.9890x10³	3.0479x10⁻²	2.9890x10⁻²	2.9499x10⁻²	6.2427x10¹	1.0000

DECIMAL AND MILLIMETER EQUIVALENTS OF FRACTIONS

Inches		Milli-	Inches		Milli-	Inches		Milli-	Inches		Milli-
Fractions	Decimals	meters	Fractions	Decimals	meters	Fractions	Decimals	meters	Fractions	Decimals	meters
1/64	.015625	.397	17/64	.265625	6.747	33/64	.515625	13.097	49/64	.765625	19.447
1/32	.03125	.794	9/32	.28125	7.144	17/32	.53125	13.494	25/32	.78125	19.844
3/64	.046875	1.191	19/64	.296875	7.541	35/64	.546875	13.891	51/64	.796875	20.241
1/16	.0625	1.588	5/16	.3125	7.938	9/16	.5625	14.288	13/16	.8125	20.638
5/64	.078125	1.984	21/64	.328125	8.334	37/64	.578125	14.684	53/64	.828125	21.034
3/32	.09375	2.381	11/32	.34375	8.731	19/32	.59375	15.081	27/32	.83475	21.431
7/64	.109375	2.778	23/64	.359375	9.128	39/64	.609375	15.478	55/64	.859375	21.828
1/8	.125	3.175	3/8	.375	9.525	5/8	.625	15.875	7/8	.875	22.225
9/64	.140625	3.572	25/64	.390625	9.922	41/64	.640625	16.272	57/64	.890625	22.622
5/32	.15625	3.969	13/32	.40625	10.319	21/32	.65625	16.669	29/32	.90625	23.019
11/64	.171875	4.366	27/64	.421875	10.716	43/64	.671875	17.066	59/64	.921875	23.416
3/16	.1875	4.763	7/16	.4375	11.113	11/16	.6875	17.463	15/16	.9375	23.813
13/64	.203125	5.159	29/64	.453125	11.509	45/64	.703125	17.859	61/64	.953125	24.209
7/32	.21875	5.556	15/32	.46875	11.906	23/32	.71875	18.256	31/32	.96875	24.606
15/64	.23475	5.953	31/64	.484375	12.303	47/64	.734375	18.653	63/64	.984375	25.003
1/4	.250	6.350	1/2	.500	12.700	3/4	.750	19.050	1	1.000	25.400

CONVERSION CHARTS

Units of Length	Multiply units in left column by proper factor below							
	in.	ft.	yd.	mile	mm	cm	m	km
1 inch	1	0.0833	0.0278	-	25.4	2.540	0.0254	-
1 foot	12	1	0.3333	-	304.8	30.48	0.3048	-
1 yard	36	3	1	-	914.4	91.44	0.9144	-
1 mile	-	5280	1760	1	-	-	1609.3	1.609
1 millimeter	0.0394	0.0033	-	-	1	0.100	0.001	-
1 centimeter	0.3937	0.0328	0.0109	-	10	1	0.01	-
1 meter	39.37	3.281	1.094	-	1000	100	1	0.001
1 kilometer	-	3281	1094	0.6214	-	-	1000	1

(1 micron = 0.001 millimeter)

Units of Weight	Multiply units in left column by proper factor below						
	grain	oz.	lb.	ton	gram	kg	metric ton
1 grain	1	-	-	-	0.0648	-	-
1 ounce	437.5	1	0.0625	-	28.35	0.0283	-
1 pound	7000	16	1	0.0005	453.6	0.4536	-
1 ton	-	32,000	2000	1	-	907.2	0.9072
1 gram	15.43	0.0353	-	-	1	0.001	-
1 kilogram	-	35.27	2.205	-	1000	1	0.001
1 metric ton	-	35,274	2205	1.1023	-	1000	1

Units of Density	Multiply units in left column by proper factor below				
	lb./in.^{3}	lb./ft.^{3}	lb./gal.	g/cm^3	g/liter
1 pound/in.^{3}	1	1728	231.0	27.68	27,680
1 pound/ft.^{3}	-	1	0.1337	0.0160	16.019
1 pound/gal.	0.00433	7.481	1	0.1198	119.83
1 gram/cm^3	0.0361	62.43	8.345	1	1000.0
1 gram/liter	-	0.0624	0.00835	0.001	1

Units of Area	Multiply units in left column by proper factor below						
	in.^{2}	ft.^{2}	acre	mile^2	cm^2	m^2	hectare
1 inch^2	1	0.0069	-	-	6.452	-	-
1 foot^2	144	1	-	-	929.0	0.0929	-
1 acre	-	43,560	1	0.0016	-	4047	0.4047
1 mile^2	-	-	640	1	-	-	259.0
1 centimeter^2	0.1550	-	-	-	1	0.0001	-
1 meter^2	1550	10.76	-	-	10,000	1	-
1 hectare	-	-	2.471	-	-	10,000	1

Units of Volume	Multiply units in left column by proper factor below							
	in.^{3}	ft.^{3}	yd.^{3}	cm.^{3}	meter^3	liter	U.S. gal.	Imp. gal.
1 inch^3	1	-	-	16.387	-	0.0164	-	-
1 foot^3	1728	1	0.0370	28,317	0.0283	28.32	7.481	6.229
1 yard^3	46,656	27	1	-	0.7646	764.5	202.0	168.2
1 centimeter^3	0.0610	-	-	1	-	0.0010	-	-
1 meter^3	61,023	35.31	1.308	1,000,000	1	999.97	264.2	220.0
1 liter	61.025	0.0353	-	1000.028	0.0010	1	0.2642	0.2200
1 U.S. gallon	231	0.1337	-	3785.4	-	3.785	1	0.8327
1 Imp. gallon	277.4	0.1605	-	4546.1	-	4.546	1.201	1

CORR TECH INCORPORATED

CONVERSION CHARTS

Units of Pressure	Multiply units in left column by proper factor below						
	lbs./in.²	lb./ft.²	Int. etc.	kg/cm²	mm Hg at 32°F	in. Hg at 32°F	ft. water at 39.2°F
1 pound/in.²	1	144	-	0.0703	51.713	2.0359	2.307
1 pound/ft.²	0.00694	1	-	-	0.3591	0.01414	0.01602
1 in./cm/atmosphere	14.696	2116.2	1	1.0333	760	29.921	33.90
1 kilogram/centimeter²	14.223	2048.1	0.9678	1	735.56	28.958	32.81
1 millimeter-mercury - 1 torr (torricelli)-	0.0193	2.785	-	-	1	0.0394	0.0446
1 inch mercury	0.4912	70.73	0.0334	0.0345	25.400	1	1.133
1 foot water	0.4335	62.42	-	0.0305	22.418	0.8826	1

Units of Energy	Multiply units in left column by proper factor below					
	ft.-lb.	BTU	g. cal.	Joule	kw-hr.	hp-hr.
1 foot-pound	1	0.001285	0.3240	1.3556	-	-
1 BTU	778.2	1	252.16	1054.9	-	-
1 gram calorie	3.0860	0.003966	1	4.1833	-	-
1 Int. Joule	0.7377	0.000948	0.2390	1	-	-
1 Int. kilowatt-hour	2,655,656	3412.8	860,563	-	1	1.3412
1 horsepower-hour	1,980,000	2544.5	641,617	-	0.7456	1

Units of Specific Pressure	Multiply units in left column by proper factor below				
	Absolute Joule/g	Int. Joule/g	cal/g	Int. cal/g	BTU/lb.
1 absolute Joule/gram	1	0.99984	0.23901	0.23885	0.42993
1 Int. Joule/gram	1.000165	1	0.23904	0.23892	0.43000
1 calorie/gram	4.1840	4.1833	1	0.99935	1.7988
1 int. calorie/gram	4.1867	4.1860	1.00065	1	1.8000
1 BTU/lb.	2.3260	2.3256	0.55592	0.55556	1

Units of Power (rates of energy use)	Multiply units in left column by proper factor below							
	hp	watt	kw	BTU/min.	ft.-lb./sec.	ft.-lb./min.	g. cal/sec.	metric hp
1 horsepower	1	75.7	0.7475	42.41	550	33.000	178.2	1.014
1 watt	-	1	0.001	0.0569	0.7376	44.25	0.2390	0.00136
1 kilowatt	1.3410	1000	1	56.88	737.6	44,254	239.0	1.360
1 BTU per minute	-	-	-	1	12.97	778.2	4.203	0.0239
1 metric hp	0.9863	735.5	0.7355	41.83	542.5	32.550	175.7	1

Units of Refrigeration	Multiply units in left column by proper factor below					
	BTU (IT) /min.	BTU (IT) /hr.	kg cal/hr.	ton (U.S.) comm	ton (Brit.) comm	Frigorie/hr.
1 ton (U.S.) comm	200	12,000	3025.9	1	0.8965	3025.9
1 ton (Brit.) comm	223.08	13,385	3375.2	1.1154	1	3375.2
1 frigorie/hr.	0.06609	3.9657	1	0.0003305	0.0002963	1

NOTE: BTU is International Steam Table BTU (IT).
1 frigorie = 1 kg cal. (IT)

CORR TECH INCORPORATED

CONVERSION CHARTS

TemperatureConversion

°F	°C	°F	°C	°F	°C	°F	°C	°F	°C
-459.4	-273	1	-17.2	61	16.1	300	149	900	482
-450	-268	2	-16.7	62	16.7	310	154	910	488
-440	-262	3	-16.1	63	17.2	320	160	920	493
-430	-257	4	-15.6	64	17.8	330	166	930	499
-420	-251	5	-15.0	65	18.3	340	171	940	504
-410	-246	6	-14.4	66	18.9	350	177	950	510
-400	-240	7	-13.9	67	19.4	360	182	960	516
-390	-234	8	-13.3	68	20.0	370	188	970	521
-380	-229	9	-12.8	69	20.6	380	193	980	527
-370	-223	10	-12.2	70	21.1	390	199	990	532
-360	-218	11	-11.7	71	21.7	400	204	1000	538
-350	-212	12	-11.1	72	22.2	410	210	1020	549
-340	-207	13	-10.6	73	22.8	420	215	1040	560
-330	-201	14	-10.0	74	23.3	430	221	1060	571
-320	-196	15	-9.4	75	23.9	440	227	1080	582
-310	-190	16	-8.9	76	24.4	450	232	1100	593
-300	-184	17	-8.3	77	25.0	460	238	1120	604
-290	-179	18	-7.8	78	25.6	470	243	1140	616
-280	-173	19	-7.2	79	26.1	480	249	1160	627
-273	-169	20	-6.7	80	26.7	490	254	1180	638
-270	-168	21	-6.1	81	27.2	500	260	1200	649
-260	-162	22	-5.6	82	27.8	510	266	1220	660
-250	-157	23	-5.0	83	28.3	520	271	1240	671
-240	-151	24	-4.4	84	28.9	530	277	1260	682
-230	-146	25	-3.9	85	29.4	540	282	1280	693
-220	-140	26	-3.3	86	30.0	550	288	1300	704
-210	-134	27	-2.8	87	30.6	560	293	1350	732
-200	-129	28	-2.2	88	31.1	570	299	1400	760
-190	-123	29	-1.7	89	31.7	580	304	1450	788
-180	-118	30	-1.1	90	32.2	590	310	1500	816
-170	-112	31	-0.6	91	32.8	600	316	1550	843
-160	-107	32	0.0	92	33.3	610	321	1600	871
-150	-101	33	0.6	93	33.9	620	327	1650	899
-140	-96	34	1.1	94	34.4	630	332	1700	927
-130	-90	35	1.7	95	35.0	640	338	1750	954
-120	-84	36	2.2	96	35.6	650	343	1800	982
-110	-79	37	2.8	97	36.1	660	349	1850	1010
-100	-73	38	3.3	98	36.7	670	354	1900	1038
-90	-68	39	3.9	99	37.2	680	360	1950	1066
-80	-62	40	4.4	100	37.8	690	366	2000	1093
-70	-57	41	5.0	110	43	700	371	2050	1121
-60	-51	42	5.6	120	49	710	377	2100	1149
-50	-46	43	6.1	130	54	720	382	2150	1177
-40	-40	44	6.7	140	60	730	388	2200	1204
-30	-34	45	7.2	150	66	740	393	2250	1232
-20	-29	46	7.8	160	71	750	399	2300	1260
-10	-23	47	8.3	170	77	760	404	2350	1288
0	-17.8	48	8.9	180	82	770	410	2400	1316
		49	9.4	190	88	780	416	2450	1343
		50	10.0	200	92	790	421	2500	1371
		51	10.6	210	99	800	427	2550	1399
		52	11.1	212	100	810	432	2600	1427
		53	11.7	220	104	820	438	2650	1454
		54	12.2	230	110	830	443	2700	1482
		55	12.8	240	116	840	449	2750	1510
		56	13.3	250	121	850	454	2800	1538
		57	13.9	260	127	860	460	2850	1566
		58	14.4	270	132	870	466	2900	1593
		59	15.0	280	138	880	471	2950	1621
		60	15.6	290	143	890	477	3000	1649

The following formulas may also be used for converting Centigrade or Fahrenheit degrees into the other scales.

Degrees Cent. $°C = \frac{5}{9}(°F - 32)$

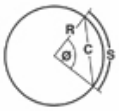
Degrees Fahr. $°F = \frac{9}{5}\ °C + 32$

Degrees Kelvin $°T = °C + 273.2$

Degrees Rankine $°R = °F + 459.7$

FORMULAS

Circle



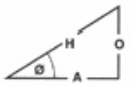
Circumference = $\pi D = 2\pi R$
Area = πR^2
Length of Arc, S = Ø R
Length of Cord, C = 2 R sine (Ø / 2)
Area of Sector = (R S) / 2
Ø = Angle in Radians

Quadratic Equation

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$ax^2 = bx = c = 0$

Trig Functions



sine Ø = O / H
cosine Ø = A / H
tan Ø = O / A

Pressure Rating

$$\frac{2S}{P} = \frac{OD - T}{T} \qquad \frac{2S}{P} = \frac{ID + T}{T}$$

S = Design Stress
T = Minimum Wall thickness
P = Pressure Rating

Pipe Stiffnes

$$PS = 4.47 \times \frac{E}{(SDR - 1)^3}$$

E = Tensile Modulus, psi

Moment of Inertia (pipe)

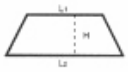
$= (\pi / 64) \times (OD^4 - ID^4)$

Pipe Weight (kg/m)

= (OD – T) x T x 0.003134 x SG
= (ID + T) x T x 0.003134 x SG
OD & ID are average dimensions, mm
T = Average Wall Thickness, mm
SG = Specific Gravity @ 73°F

Trapezoid

$$A = H \times \frac{L_1 + L_2}{2}$$



Triangle

$$A = \frac{W \times H}{2}$$

Circle

$A = 3.142 \times R \times R$
$C = 3.142 \times D$
$R = \frac{D}{2}$
$D = 2 \times R$

Sector of Circle

$$A = \frac{3.142 \times R \times R \times \propto}{360}$$

$L = .01745 \times R \times \propto$

$$\propto = \frac{L}{.01745 \times R}$$

$$R = \frac{L}{.01745 \times \propto}$$

Ellipse

$A = 3.142 \times A \times B$
$C = 3.142 \sqrt{2 (A^2 + B^2)}$

Rectangular Solid

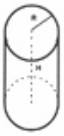
$A = 2 [W \times L + L \times H + H \times W]$
$V = W \times L \times H$

Cone

$A = 3.142 \times R \times S + 3.142 \times R \times R$
$V = 1.047 \times R \times R \times H$

Cylinder

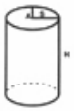
$A = 6.283 \times R \times H + 6.283 \times R \times R$
$V = 3.142 \times R \times R \times H$



Elliptical

$V = 3.142 \times A \times B \times H$

$$A = 6.282 \times \sqrt{\frac{A_2 + B_2}{2}} \times H + 6.283 \times A \times B$$



Sphere

$A = 12.56 \times R \times R$
$V = 4.188 \times R \times R \times R$

For above containers:
Capacity in gallons = $\frac{V}{231}$
when V is in cubic inches.
Capacity in gallons = 7.48 x V
when V is in cubic feet.

Flow Coefficients Conversion Factors

TO / FROM	Cv	Kv	Kv_{100}	f	Av
	MULTIPLY BY				
Cv	1	0.865	14.28	0.84	24×10^{-6}
Kv	1.156	1	16.50	0.96	28×10^{-6}
Kv_{100}	0.07	0.06	1	0.068	1.68×10^{-6}
F	1.2	1.038	17.13	1	29×10^{-5}
Av	41.67×10^3	35.72×10^3	59.52×10^3	34.5×10^3	1

Bending Moment or Torque

To Convert From	To	Multiply By
dyne-centimeter	newton-meter (N•m)	$1.000\ 000 \times 10^{-7}$
kilogram-force-meter	newton-meter (N•m)	9.806 650
ounce-force-inch	newton-meter (N•m)	$7.061\ 552 \times 10^{-3}$
pound-force-inch	newton-meter (N•m)	$1.129\ 848 \times 10^{-1}$
pound-force-foot	newton-meter (N•m)	1.355 818

CORR TECH INCORPORATED

DIMENSIONS, WEIGHTS & PRESSURE RATINGS

FOR PVC AND CPVC PIPE

U.S. UNITS

SCHEDULE (DR) SDR	Nominal pipe size (inches)	Outside dia. (inches)	Max. working pressure (PSI at 73°F)	Min. wall thickness (inches)	Average inside dia. (inches)	Weight of pipe (lbs./ft.) plain end CPVC	PVC
SCHD 80 (DR 4.5)	1/4	.540	1130	.119	.302	-	.10
SCHD 80 (DR 5.4)	3/8	.675	920	.126	.423	-	.14
SCHD 40 (DR 8)	1/2	.840	600	.109	.602	.18	.17
SCHD 80 (DR 6)			850	.147	.526	.23	.21
SDR 21			200	.080	.660		.13
SCHD 40 (DR 10)	3/4	1.050	480	.113	.804	.24	.22
SCHD 80 (DR 7)			690	.154	.722	.31	.28
SDR 21			200	.060	.870		.13
SCHD 40 (DR 10)	1	1.315	450	.133	1.029	.35	.33
SCHD 80 (DR 8)			630	.179	.936	.45	.41
SDR 21			200	.080	1.135		.21
SCHD 40 (DR 12)	1 1/4	1.660	370	.141	1.360	.48	.44
SCHD 80 (DR 9)			520	.191	1.255	.62	.57
SDR 21			200	.080	1.480		.27
SCHD 40 (DR 13)	1 1/2	1.900	330	.145	1.590	.57	.52
SCHD 80 (DR 10)			470	.200	1.476	.76	.69
SDR 21			200	.090	1.700		.35
SDR 26			160	.080	1.720		.32
SCHD 40 (DR 16)	2	2.375	280	.154	2.047	.77	.70
SCHD 80 (DR 11)			400	.218	1.913	1.05	.96
SDR 21			200	.113	2.129		.54
SDR 26			160	.091	2.173		.45
SCHD 40 (DR 14)	2 1/2	2.875	300	.203	2.445	1.21	1.11
SCHD 80 (DR 11)			420	.276	2.290	1.60	1.46
SDR 21			200	.137	2.581		.78
SDR 26			160	.110	2.635		.64
SCHD 40 (DR 16)	3	3.500	260	.216	3.042	1.58	1.45
SCHD 80 (DR 12)			370	.300	2.864	2.14	1.96
SDR 21			200	.167	3.146		1.14
SDR 26			160	.135	3.210		.94
SDR 32.5			125	.108	3.264		.77
SDR 41			100	.085	3.310		.63
SCHD 40 (DR 19)	4	4.500	220	.237	3.998	2.25	2.07
SCHD 80 (DR 13)			320	.337	3.786	3.12	2.87
SDR 21			200	.214	4.046		1.88
SDR 26			160	.173	4.133		1.54
SDR 32.5			125	.138	4.204		1.25
SDR 41			100	.110	4.260		1.02
SCHD 40 (DR 22)	5	5.563	190	.258	5.016	3.06	2.81
SCHD 80 (DR 15)			290	.375	4.768	4.34	4.02
SDR 21			200	.265	5.001		2.88
SDR 26			160	.214	5.107		2.35
SDR 32.5			125	.171	5.199		1.89
SDR 41			100	.136	5.271		1.53
SCHD 40 (DR 24)	6	6.625	180	.280	6.031	3.97	3.65
SCHD 80 (DR 16)			280	.432	5.709	5.96	5.48
SDR 21			200	.315	5.955		4.09
SDR 26			160	.255	6.084		3.33
SDR 32.5			125	.204	6.193		2.69
SDR 41			100	.161	6.281		2.15

METRIC UNITS

Nominal pipe size (mm)	Outside dia. (mm)	Max. working pressure (kPa at 23°C)	Min. wall thickness (mm)	Average inside dia. (mm)	Weight of pipe (kg/m) plain end CPVC	PVC
6	13.7	7 790	3.02	7.67	-	.150
10	17.1	6 340	3.20	10.74	-	.210
12	21.3	4 140	2.76	15.26	.268	.253
		5 860	3.72	13.34	.342	.313
		1 380	2.02	16.74		.193
20	26.70	3 300	2.86	20.46	.357	.327
		4 760	3.90	18.38	.461	.417
		1 380	2.02	22.14		.194
25	33.40	3 100	3.38	26.14	.520	.491
		4 340	4.54	23.78	.670	.610
		1 380	2.02	28.84		.313
32	42.15	2 550	3.56	34.53	.714	.655
		3 590	4.84	31.87	.923	.848
		1 380	2.02	37.59		.402
40	48.25	2 280	3.68	40.37	.848	.774
		3 240	5.08	37.49	1.131	1.026
		1 380	2.28	43.17		.521
		1 100	2.02	43.69		.476
50	60.35	1 930	3.90	52.03	1.146	1.042
		2 760	5.54	48.61	1.563	1.429
		1 380	2.86	54.11		.804
		1 100	2.30	55.23		.670
65	73.00	2 070	5.16	62.08	1.801	1.652
		2 900	7.00	58.16	2.381	2.173
		1 380	3.48	65.54		1.161
		1 100	2.78	66.92		.952
75	88.90	1 790	5.48	77.28	2.351	2.158
		2 550	7.62	72.74	3.185	2.917
		1 380	4.24	79.92		1.697
		1 100	3.42	81.54		1.399
		860	2.74	82.90		1.146
		690	2.16	84.08		.938
100	114.30	1 520	6.02	101.58	3.349	3.081
		2 210	8.56	96.16	4.643	4.271
		1 380	5.44	102.76		2.798
		1 100	4.38	105.00		2.292
		860	3.50	106.78		1.860
		690	2.78	108.22		1.518
125	141.30	1 310	6.54	127.42	4.554	4.182
		2 000	9.52	121.12	6.459	5.982
		1 380	6.72	127.04		4.286
		1 100	5.44	129.74		3.497
		860	4.34	132.08		2.813
		690	3.44	133.90		2.277
150	168.30	1 240	7.10	153.22	5.908	5.432
		1 930	10.96	145.04	8.870	8.155
		1 380	8.02	151.28		6.087
		1 100	6.48	154.56		4.956
		860	5.18	157.32		4.003
		690	4.12	159.56		3.200

CORR TECH INCORPORATED

DIMENSIONS, WEIGHTS & PRESSURE RATINGS

FOR PVC AND CPVC PIPE

U.S. UNITS

Nominal pipe size (inches)	SCHEDULE (DR) SDR	Outside dia. (inches)	Max. working pressure (PSI at 73°F)	Min. wall thickness (inches)	Average inside dia. (inches)	Weight of pipe (lbs./ft.) plain end CPVC	PVC
8	SCHD 40 (DR 27)	8.625	160	.322	7.941	5.98	5.50
	SCHD 80 (DR 17)		250	.500	7.565	9.05	8.32
	SDR 21		200	.411	7.756		6.91
	SDR 26		160	.332	7.921		5.65
	SDR 32.5		125	.266	8.063		4.55
	SDR 41		100	.210	8.180		3.63
10	SCHD 40 (DR 30)	10.750	140	.365	9.976	8.26	7.78
	SCHD 80 (DR 18)		230	.593	9.493	12.85	11.81
	SDR 21		200	.512	9.667		10.73
	SDR 26		160	.413	9.874		8.76
	SDR 32.5		125	.331	10.048		7.08
	SDR 41		100	.262	10.195		5.64
12	SCHD 40 (DR 32)	12.750	130	.406	11.888	11.20	10.30
	SCHD 80 (DR 19)		230	.687	11.294	18.46	16.98
	SDR 21		200	.607	11.465		15.10
	SDR 26		160	.490	11.711		12.35
	SDR 32.5		125	.392	11.919		9.94
	SDR 41		100	.311	12.091		7.94
14	SCHD 40 (DR 32)	14.000	130	.438	13.072		12.18
	SCHD 80 (DR 19)		220	.750	12.412		20.34
	SDR 21		200	.665	12.590		18.18
	SDR 26		160	.538	12.859		14.88
	SDR 32.5		125	.431	13.100		11.83
	SDR 41		100	.342	13.277		9.58
16	SCHD 40 (DR 32)	16.000	130	.500	14.936		15.96
	SCHD 80 (DR 19)		220	.843	14.224		26.03
	SDR 21		200	.760	14.388		23.76
	SDR 26		160	.615	14.696		19.41
	SDR 32.5		125	.492	14.970		15.47
	SDR 41		100	.391	15.172		12.52
18	SCHD 40 (DR 32)	18.000	130	.562	16.809		20.11
	SCHD 80 (DR 19)		220	.937	16.014		32.76
	SDR 21		200	.857	16.182		30.11
	SDR 26		160	.693	16.531		24.62
	SDR 32.5		125	.554	16.825		19.86
	SDR 41		100	.440	17.065		15.92
20	SCHD 40 (DR 34)	20.000	120	.593	18.743		23.62
	SCHD 80 (DR 19)		220	1.031	17.814		40.09
	SDR 21		200	.952	17.982		37.17
	SDR 26		160	.770	18.368		30.37
	SDR 32.5		125	.615	18.696		24.47
	SDR 41		100	.489	18.963		19.61
24	SCHD 40 (DR 35)	24.000	120	.687	22.544		32.87
	SCHD 80 (DR 20)		210	1.218	21.418		56.88
	SDR 21		200	1.143	21.576		53.54
	SDR 26		160	.924	22.041		43.77
	SDR 32.5		125	.740	22.431		35.35
	SDR 41		100	.585	22.760		28.12

METRIC UNITS

Nominal pipe size (mm)	Outside dia. (mm)	Max. working pressure (kPa at 23°C)	Min. wall thickness (mm)	Average inside dia. (mm)	Weight of pipe (kg/m) plain end CPVC	PVC
200	219.05	1 100	8.18	201.71	8.900	8.185
		1 720	12.70	192.13	13.469	12.382
		1 380	10.40	196.99		10.283
		1 100	8.42	201.79		8.408
		860	6.72	204.79		6.771
		690	5.32	207.77		5.402
250	273.05	970	9.26	253.41	12.293	11.578
		1590	15.06	241.13	19.124	17.576
		1380	12.98	245.55		15.968
		1100	10.48	250.81		13.036
		860	8.40	255.23		10.536
		690	6.66	258.95		8.393
300	323.90	900	10.30	302.04	16.668	15.328
		1590	17.44	286.92	27.473	25.269
		1380	15.38	291.28		22.471
		1100	12.44	297.52		18.379
		860	9.96	302.78		14.792
		690	7.90	307.16		11.816
350	355.60	910	11.13	332.03		18.130
		1540	19.05	315.22		30.270
		1380	16.88	319.80		27.065
		1100	13.66	326.62		22.144
		860	10.76	332.78		17.615
		690	8.66	337.24		14.260
400	406.40	910	12.70	379.38		23.75
		1540	21.41	361.29		38.74
		1380	19.30	365.48		35.36
		1100	15.62	373.28		28.89
		860	12.32	380.24		22.99
		690	9.90	385.38		18.63
450	457.20	910	14.27	429.46		29.93
		1540	23.80	406.76		48.75
		1380	21.72	411.14		44.81
		1100	17.60	419.88		36.64
		860	14.06	427.36		29.55
		690	11.14	433.46		23.69
500	508.00	840	15.06	476.07		35.15
		1450	26.19	452.48		59.66
		1380	24.12	456.86		55.32
		1100	19.56	466.54		45.20
		860	15.62	474.88		36.42
		690	12.42	481.66		29.18
600	609.60	840	17.45	572.62		48.92
		1470	30.94	544.02		84.65
		1380	28.96	548.20		79.68
		1100	23.46	559.86		65.14
		860	18.80	569.74		52.61
		690	14.86	578.10		41.84

Pressure ratings in accordance with ASTM D 1785.

ADDITIONAL HELPFUL FORMULAS

Area of outside surface	(sq.ft./linear foot)	= .2618 D
Weight of PVC pipe	(lbs./foot)	= 1.941t (D – t)
Weight of CPVC pipe	(lbs./foot)	= 2.110t (D – t)
Weight of water	(lbs./foot)	= 0.3405 d^2
Moment of inertia	($inches^4$)	= 0.0491 ($D^4 - d^4$)
Section modulus	($inches^3$)	= $\frac{0.0982 (D^4 - d^4)}{D}$

Where: t = mean pipe wall thickness (inches)
D = outside diameter (inches)
d = inside diameter (inches)

NOTES:

1. **PVC and CPVC are not recommended for compressed air or gas service.**
2. For threaded systems, reduce maximum working pressure by 50%.
3. For services exceeding 73°F, see temperature correction chart, page 22.
4. For flanged systems, the maximum working pressure is 150 psi @ 73°F.

CORR TECH INCORPORATED

GLOSSARY OF PIPING TERMS

ABRASION RESISTANCE— The measure of a material's ability to withstand erosion when subjected to rubbing, scraping, wearing, scouring, etc., conditions.

ACETAL PLASTICS—A group of plastics made from resins which have been obtained by heating aldehydes or ketones with alcohols.

ACIDS—Normally a water-soluble compound containing hydrogen and other elements that are capable of reacting with a base to form a salt. They turn blue litmus paper red.

ACRYLONITRILE-BUTADIENE-STYRENE (ABS) PLASTICS—A group of plastics made from polymers with prescribed percentages of acrylonitrile, butadiene, and styrene.

ADHESIVE—A substance capable of holding materials together by surface attachment.

AGING—The effect on materials exposed to an environment for a period of time. Also, the act of exposing materials to an environment for a period of time.

ALKALIES—Compounds capable of neutralizing acids.

ANTIOXIDANT—A substance added to a plastic compound to retard degradation due to contact with air (oxygen).

BEAM LOADING—The process of applying a specified force (load) to a piece of pipe which is supported at two points. It is usually expressed in pounds per the distance between the centers of the supports.

BELLED-END—A term used to describe a pipe end which has been enlarged to have the same inside dimensions as a fitting socket. It acts as a coupling when joining pipe.

BLISTER—An undesirable air or gas filled bubble (bump) on the surface of a plastic part.

BOND—To attach by the use of an adhesive.

BURST STRENGTH—The amount of internal pressure a piece of pipe or a fitting will hold before breaking.

CALENDERING —A process for making thin sheets of plastic or rubber in which a heated plastic or rubber compound is squeezed between heavy rollers.

CELLULOSE ACETATE—A type of resin made from the reaction of acetic acid or acetic anhydride with a cellulose base (cotton and/or wood pulp).

CEMENT (SOLVENT CEMENT)—An adhesive used to bond plastics which is a "solution" of a plastic resin and a volatile solvent.

CHEMICAL RESISTANCE—The ability of a plastic to withstand the effects of chemicals at various concentrations and temperatures.

COLD FLOW—A change in the shape or the dimensions of a plastic part when subjected to a load (weight or pressure) at room temperature.

COMPOUND—The mixture of ingredients, consisting of a plastic resin and specified additives, used to manufacture a plastic part.

CONDENSATION—A chemical reaction involving the combination of molecules with the result being the elimination of a simple molecule, such as water, and the formation of a more complex compound of greater molecular weight.

COPOLYMER—The product formed by the simultaneous polymerization of two or more polymerizeable chemicals (monomers).

CRAZING—Small, fine cracks on or under the surface of a plastic.

CREEP—The dimensional change, beyond the initial elastic elongation caused by the application of a load, over a specified period of time. It is normally expressed in inches per inch per unit of time.

CURE—To change the properties of a polymer to a stable, usable, and final state by the use of chemical agents, heat, or radiation.

DEFLECTION TEMPERATURE (HEAT DISTORTION)— The temperature which will cause a plastic specimen to deflect a certain distance when a specified load is applied.

DEGRADATION—A deleterious change in the chemical structure, physical properties, or appearance of a plastic.

DELAMINATION —The separation of the layers of material in a laminate.

DETERIORATION—A permanent change in the physical properties of a plastic evidenced by impairment of these properties.

DIELECTRIC STRENGTH—The force required to drive an electric current through a specific thickness of a material.

DIFFUSION—The movement of gas or liquid particles or molecules in a body of fluid through or into a medium and away from the main body of fluid.

DIMENSIONAL STABILITY—The capability of a plastic part to maintain its original shape and dimensions under conditions of use.

DRY- BLEND—A dry compound prepared without fluxing or the addition of a solvent.

ELASTICITY—The property of a plastic which allows it to return to its original dimensions after deformation.

ELASTIC LIMIT—The load point at which a material will not return to its original shape and size after the load has been released.

ELASTOMER—A substance which when stretched to approximately twice its length, at room temperature, will quickly return to its original length when the stretching load is relieved.

ELECTRICAL PROPERTIES—The resistance of a plastic to the passage of electricity.

ELONGATION—The percentage of the original length which a material will deform, under tension, without failing.

EMULSION—A dispersion of one insoluble liquid into another insoluble liquid.

GLOSSARY OF PIPING TERMS

ENVIRONMENTAL STRESS CRACKING — Cracks which develop when a plastic part is subjected to incompatible chemicals and put under stress.

ESTER— The compound formed during the reaction between an alcohol and an acid.

ETHYLENE PLASTIC— Plastics based on polymers or copolymers of ethylene and other monomers in which ethylene is the greatest amount by weight.

EXTRUSION— The process used to continuously form a shape by forcing a heated or unheated plastic through a shaping orifice (die).

FILLER— A relatively inert material added to a plastic to modify its strength, permanence, working properties, other qualities, or to lower costs.

FLEXURAL STRENGTH— The measure of a material's ability to withstand a specified deformation under a beam load (bending) at 73°F. Normally expressed in PSI.

FORMING— A process in which the shape of plastic pieces such as sheets, rods, or tubes are changed to a desired configuration.

FORMULATION— The combination of ingredients used to make a finished plastic product. Also see compound.

FUSE— To join plastic parts by softening the material with heat or solvents.

GATE— The constriction in the flow channel between the runner and the mold cavity in an injection mold.

GLASS TRANSITION— The reversible change in an amorphous polymer from (or to) a viscous condition to (or from) a hard and relatively brittle one.

GLASS TRANSITION TEMPERATURE— The approximate midpoint of the temperature range over which the glass transition takes place.

GUSSET— A piece used to give additional size or strength to a plastic part at a particular location.

HARDNESS— The measure of a material's ability to resist indentation.

HEAT RESISTANCE— The ability of a material to withstand the effects of exposure to high temperatures.

HOOP STRESS— The circumferential stress, imposed on a pipe wall when exposed to an internal pressure load. Usually expressed in PSI.

IMPACT STRENGTH— A measure of a plastic part's ability to withstand the effects of dropping and/or striking. There are two commonly used test methods, Notched Izod and Tup. Notched Izod uses a pendulum type machine to strike a notched specimen. Tup testing uses a falling weight (tup) to strike a pipe or fitting specimen.

INJECTION MOLDING— The process used to form a shape by forcing a heated plastic, in a fluid state and under pressure, into the cavity of a closed mold.

ISO EQUATION— The equation which shows the relationship between stress, pressure, and dimensions in pipe.

JOINT— The point where a pipe and fitting or two pieces of pipe are connected together.

KETONES— A group of compounds having two alkyl groups attached to a carbonyl (CO) group.

LIGHT STABILITY— A feature of a plastic which allows it to retain its original color and physical properties when exposed to sun or artificial light.

LIGHT TRANSMISSION— The amount of light which a plastic will allow to pass through.

LONGITUDINAL STRESS— A tensile or compressive force placed upon the long axis of a plastic part.

LUBRICANT— Any substance which reduces the friction between moving solid surfaces.

MODULUS— A term used to describe the load required to cause a specified percentage of elongation. It is usually expressed in PSI or kilos per square centimeter.

MONOMER— A low-molecular-weight substance whose molecules can react with other molecules to form a polymer.

NON-FLAMMABLE— Incapable of supporting combustion.

NON-TOXIC— Non-poisonous.

NYLON PLASTICS— Plastics based on resins composed principally of a long-chain synthetic polymeric amide which has recurring amide groups as an integral part of the main polymer chain.

OLEFIN PLASTICS— A group of plastics based on polymers made by the polymerization or copolymerization of olefins with other monomers, with the olefins being at least 50% of the weight. Polypropylene, polyethylene, and polybutylene are examples.

ORGANIC CHEMICAL— Any chemical which contains carbon.

PHENOLIC PLASTICS- A group of plastics based on resins made by the condensation of phenols with aldehydes.

PLASTIC— A material that contains as an essential ingredient one or more organic polymeric substances of large molecular weight, is solid in its finished state, and, at some stage in its manufacture or in its processing into finished articles, can be shaped by flow.

PLASTICITY— The property of plastics which allows them to be formed, without rupture, continuously and permanently by the application of a force which exceeds the yield value of the material.

PLASTICIZER— A substance incorporated in a plastic to increase its workability, flexibility, or distensibility.

PLASTIC PIPE— A hollow cylinder of a plastic material in which the wall thicknesses are usually small when compared to the diameter and in which the inside and outside walls are essentially concentric.

POLYBUTYLENE PLASTICS— Plastics based on polymers made with butene as essentially the sole monomer.

POLYETHYLENE PLASTICS— Plastics based on polymers made with ethylene as essentially the sole monomer.

GLOSSARY OF PIPING TERMS

POLYMER—A product formed by the chemical reaction of the addition of a large number of small molecules which have the ability to combine and reach high molecular weights.

POLYMERIZATION—A chemical reaction in which the molecules of monomers are linked together to form polymers.

POLYOLEFIN PLASTICS—Plastics based on polymers made with an olefin(s) as essentially the sole monomer(s).

POLYPROPYLENE PLASTICS—Plastics based on polymers made-with propylene as essentially the sole monomer.

POLYSTYRENE—A polymer prepared by the polymerization of styrene as the sole monomer.

POLYVINYL CHLORIDE PLASTICS—Plastics obtained by the polymerization of vinyl chloride. The addition of various ingredients, such as stabilizers, colorants, lubricants, and fillers enhance the processability and performance.

POROSITY—A term describing a plastic part which has many visible voids.

PRESSURE RATING—The maximum pressure at which a plastic part can safely function without failing.

QUICK BURST—A term used to describe the amount of internal pressure required to burst a pipe or fitting when the pressure is built up over a 60-70 second interval of time.

REINFORCED PLASTIC—A plastic with high strength fillers imbedded in the composition, causing some mechanical properties to be superior to those of the base resin.

RESIN—A solid or pseudosolid organic material, often having a high molecular weight, which exhibits a tendency to flow when subjected to stress, usually has a softening or melting range, and usually fractures conchoidally.

RUNNER—The secondary feed channel in an injection mold that runs from the inner end of the sprue to the cavity gate. Also, the solidified piece of plastic which forms in the feed channel when the injection molded part cools.

SAMPLE—A small part or portion of a material or product intended to be representative of the whole.

SCHEDULE—A pipe sizing system for the outside diameter and wall thickness dimensions which was started by the iron pipe industry. Normally, as the diameter increases, the pressure rating decreases for any given schedule of pipe.

SELF-EXTINGUISHING—A term describing a plastic material which stops burning when the source of the burning is removed.

SHRINK MARK—A depression in the surface of a molded plastic part where it has retracted from the mold.

SOFTENING POINT—The temperature at which a plastic changes from rigid to soft.

SOLVENT—A medium into which a substance is dissolved.

SOLVENT CEMENT—An adhesive consisting of a plastic dissolved into a solvent and used to bond plastic surfaces.

SOLVENT CEMENTING—Using a solvent cement to make pipe joint.

SPECIFIC GRAVITY—The ratio of the mass of a material to the mass of an equal volume of water.

SPRUE—The primary feed channel that runs from the outer face of an injection mold to the runner or the gate.

STABILIZER—An ingredient added to a plastic compound to inhibit or retard undesirable changes in the material.

STANDARD DIMENSION RATIO (SDR) PIPE—A type of pipe in which the dimension ratios are constant for any given class. Unlike “schedule” pipe, as the diameter increases the pressure rating remains constant for any given class of pipe.

STIFFNESS FACTOR—A term describing the degree of flexibility in a piece of pipe when subjected to an external load.

STRESS-CRACK—An external or internal crack in a plastic caused by tensile stresses less than its short-time mechanical strength.

SUSTAINED PRESSURE TEST—A test in which a plastic part is subjected to a constant internal pressure load for 1000 hours.

TEAR STRENGTH—A measure of a material’s ability to resist tearing.

TENSILE STRENGTH—The measure of a plastic’s ability to resist a stretching force. It is normally expressed in the PSI required to rupture a test specimen.

THERMAL CONDUCTIVITY—A measure of a plastic’s ability to conduct heat.

THERMAL CONTRACTION—The decrease in length of a plastic part due to a change in temperature.

THERMAL EXPANSION—The increase in length of a plastic part due to a change in temperature.

THERMOPLASTICS—A group of plastics which can repeatedly be softened by heating and hardened by cooling.

THERMOSETTING PLASTICS—A group of plastics which, having been cured by heat, chemicals, or other means, are substantially infusible and insoluble. They are permanently hardened.

VINYL CHLORIDE PLASTICS—Plastics based on polymers or copolymers of vinyl chloride with other monomers, with the vinyl chloride being the greatest amount by weight.

VISCOSITY—A term describing a material’s resistance to flow.

VOLATILE—A property of liquids in which they pass away by evaporating.

WELD LINE (KNIT LINE)—A term used to describe a mark on a molded plastic part formed by the union of two or more streams of plastic flowing together.

YIELD POINT—The point at which a plastic material will not withstand a stretching force. It will continue to elongate with no increase in load after reaching that point.