

FACTS

WATER

One gallon of fresh water	8.333 lbs.
One cubic foot of water	7.48 gallons
One cubic foot of water (at 39.2° F maximum density)	62.428 lbs.
One cubic foot of water (at 212° F—boiling point)	59.83 lbs.
One U.S. Gallon	231 cubic inches

The capacity of a cylinder in gallons is equal to the length in inches multiplied by the square of the diameter in inches x .0034

A water column one foot high exerts a pressure of .4333 pounds per square inch

Doubling the diameter of a pipe increases its capacity four times.

pH	above 7.0	alkaline
	7.0	neutral
	below 7.0	acid

1 Grain per gallon = 17.1 parts per million

Water expands 4.34% heated from 40° to 212°

ELECTRICITY

Amps (3 Phase)	$\frac{KW \times 1000}{Volts \times 1.732}$	1 KW Hour will evaporate 3.5 lbs. of water from and at 212° F
Amps (1 Phase)	$\frac{KW \times 1000}{Volts}$	1 KW Hour = 3412 BTU
		1 BHP = 34.5 lbs. of steam at 212°
GPH =	$\frac{KW \times 3412}{8.33 \times Temp. Rise}$	1 BHP = 33,475 BTU
		1 BHP = 9.8 KW

RECOVERY FORMULA

Formula for recovery in gallons per hour for any deg. F. rise.

Rated Rec. in Gals. Hr. x 100 = Gals. Hr. Desired Deg. F. Rise

% Efficiency	=	$\frac{GPH \times 8.33 \times Temp. Rise}{BTU/Hr. Input}$
BTU Input	=	$\frac{GPH \times 8.33 \times Temp. Rise}{\% Efficiency}$
Rise (°F)	=	$\frac{BTU/hr. Input \times \% Efficiency}{GPH \times 8.33}$

PIPE SIZES

Round Pipe		Round Pipe	
Diameter in Inches	Area in Square Inches	Diameter in Inches	Area in Square Inches
3	7.06	17	226.98
4	12.56	18	254.47
5	19.63	19	283.53
6	28.27	20	314.16
7	38.48	21	346.36
8	50.26	22	380.13
9	63.61	23	415.48
10	78.54	24	452.39
11	95.03	25	490.87
12	113.10	26	530.93
13	132.73	27	572.56
14	153.94	28	615.75
15	176.71	29	660.52
16	201.06	30	706.86

STORAGE TANK CAPACITIES IN GALLONS

LENGTH IN FEET	**TANK DIAMETER—INCHES															
	20	22	24	30	36	42	48	54	60	66	72	78	84	90	96	
1	16	20	24	37	53	72	94	120	145	180	210	250	290	330	375	
2	32	40	48	74	106	144	188	240	290	360	420	500	580	660	750	
3	48	60	72	110	159	216	282	360	435	540	630	750	870	990	1125	
4	66	80	96	147	212	288	376	480	580	720	840	1000	1160	1320	1500	
5	82	100	120	184	265	360	470	600	725	900	1050	1250	1450	1650	1875	
6	98	120	144	220	317	432	564	720	870	1080	1260	1500	1740	1980	2250	
7	114	140	168	257	370	504	658	840	1015	1260	1470	1750	2030	2310	2625	
8	131	160	192	294	423	576	752	960	1160	1440	1680	2000	2320	2640	3000	
9	147	180	216	330	476	648	846	1080	1305	1620	1890	2250	2610	2970	3375	
10	163	200	240	367	529	720	940	1200	1450	1800	2100	2500	2900	3300	3750	
11	180	220	264	404	582	792	1034	1320	1595	1980	2310	2750	3190	3630	4125	
12	196	240	288	440	634	864	1128	1440	1740	2160	2520	3000	3480	3960	4500	
13	212	260	312	477	687	936	1222	1560	1885	2340	2730	3250	3770	4290	4875	
14	228	280	336	514	740	1008	1316	1680	2030	2520	2940	3500	4060	4620	5250	
15	244	300	360	550	793	1080	1410	1800	2175	2700	3150	3750	4350	4950	5625	
16	260	320	384	587	846	1152	1504	1920	2320	2880	3360	4000	4640	5280	6000	

**To determine diameter when only the circumference is known divide that figure by 3.1416 (π).

BTU CONTENT OF FUELS

COAL	BTU'S
1 lb.	10,000-15,000
1 Ton	25 Million (Approx.)

ELECTRICITY	
1 KW	3,412

GAS	
1 lb. of Butane	21,300
1 Gal. of Butane	102,600
1 Cu. Ft. of Butane	3,260
1 Cu. Ft. of Manufactured	530
1 Cu. Ft. of Mixed	850
1 Cu. Ft. of Natural*	1,075
1 lb. of Propane	21,600
1 Gal. of Propane	91,000
1 Cu. Ft. of Propane	2,570

OIL	
1 Gal. #1 Fuel	136,000
1 Gal. #2 Fuel	138,500
1 Gal. #3 Fuel	141,000
1 Gal. #5 Fuel	148,500
1 Gal. #6 Fuel	152,000
1 lb. of Gas = 28" Water Column	
1 lb. of Gas = 16 Oz. * 100 Cu. Ft. = 1 therm	

METRIC CONVERSIONS

Multiply	By	To Obtain
Fahrenheit (F)	5/9 (after subtracting 32)	Celsius (Cel)
Celsius (Cel)	9/5 (then add 32)	Fahrenheit (F)
Ounce (oz.)	28	GRAM (g)
GRAM (g)	.035	Ounce (oz.)
Pound (lb.)	0.45	Kilogram (kgm)
Kilogram (kgm)	2.2	Pound (lb.)
Gallon (gal.)	3.8	LITER (l)
LITER (l)	0.26	Gallon (gal.)
Inch (in.)	2.5	Centimeter (cm)
Centimeter (cm)	4	Inch (in.)