

# SECTION 6

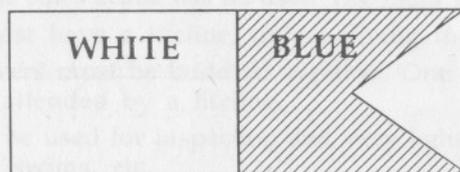
COMMUNICATIONS

CONVERSION FACTORS

MISC. INFORMATION

## COMMUNICATIONS

### DIVERS FLAG FLAG ALPHA



ALPHA	JULIET	SIERRA
BRAVO	KILO	TANGO
CHARLIE	LIMA	UNIFORM
DELTA	MIKE	VICTOR
ECHO	NOVEMBER	WHISKEY
FOXTROT	OSCAR	X RAY
GULF	PAPA	YANKEE
HOTEL	QUEBEC	ZULU
INDIA	ROMEO	

A • —	J • — —	S • • •
B — • • •	K — • —	T —
C — • — •	L • — • •	U • • —
D — • •	M — —	V • • • —
E •	N — •	W • — —
F • • — •	O — — —	X — • • —
G — — •	P • — — •	Y — • — —
H • • • •	Q — — • —	Z — — • •
I • •	R • — •	

### A GUIDE TO UNDERWATER COMS.

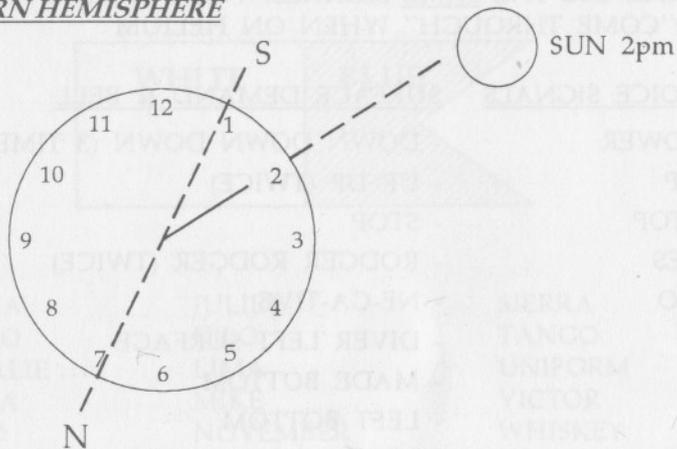
EVERYONE USE THE SAME SIGNALS. VOICE SIGNAL PICKED ARE WHAT "COME THROUGH" WHEN ON HELIUM

<u>VOICE SIGNALS</u>	<u>SURFACE DEMAND &amp; BELL</u>
LOWER	- DOWN DOWN DOWN (3 TIMES)
UP	- UP UP (TWICE)
STOP	- STOP
YES	- RODGER RODGER (TWICE)
NO	- NE-GA-TIVE
	- DIVER LEFT SURFACE
	- MADE BOTTOM
	- LEFT BOTTOM
	- RETURNING TO BELL
	- DIVER LEFT BELL
	- SLACK DIVER
	- TAKE-UP-DIVERS-SLACK

<u>LINE SIGNALS</u>	<u>SURFACE ORIENTATED</u>
1 PULL	- STOP - ATTENTION - MADE BOTTOM
2 PULLS	- UP ON DIVER HOSE OR IF PREVIOUSLY STATED WORKING LINE
3 PULLS	- DOWN ON DIVERS HOSE OR IF PREVIOUSLY STATED WORKING LINE
4 PULLS	- UP ON THE DIVER (ANYTHING WITH <u>FOUR</u> MEANS (FOR ME) DIVER ONLY)
4 PULLS 2 BELLS	- PULL ME IN I'M HEAVY OR JUST NEED PULLING IN
CONTINUOUS PULLING	- "EMERGENCY" NEED NOT BE ANSWERED. IF DIVER LOSES CONSCIOUS DO NOT PULL ALL WAY TO SURFACE, "AWAY S/BY DIVER."
PULL	- A LONG PULL ON LINE
BELL	- SHORT SHARP JERK.

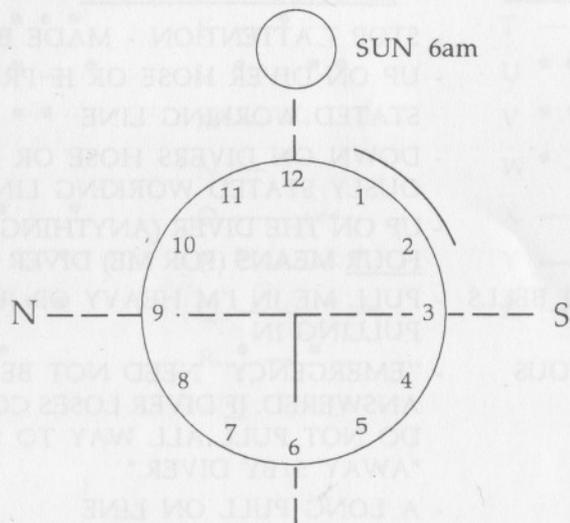
## DIRECTION FINDING USING YOUR WATCH.

### NORTHERN HEMISPHERE



PLACE HR HAND ON THE SUN, BI-SECT. HR HAND AND 12 ANTI-CLOCKWISE. YOU GET N AM AND S PM. AT MIDDAY HR HAND POINTS DUE SOUTH.

### SOUTHERN HEMISPHERE



PLACE 12 ON THE SUN AND BI-SECT 12 AND HR HAND CLOCKWISE AND YOU GET S AM AND N PM AT MIDDAY HR HAND POINT DUE NORTH.

THIS METHOD IS NOT TOO ACCURATE VERY NEAR THE EQUATOR.

## BELL EMERGENCY COMS.

Communication is by knocking on the bell sides.

- |           |  |
|-----------|--|
| 3.3.3     | Opening procedure inside & out.                    |
| 1         | Yes or Agreed                                      |
| 3         | No or Disagreed                                    |
| 2.2       | Repeat Please                                      |
| 2         | Stop   |
| 5         | Have you got a seal                                |
| 6         | Stand by to be pulled up                           |
| 1.2 - 1.2 | Get ready for through water transfer - open hatch. |
| 2.3 - 2.3 | You will NOT release ballast                       |
| 4.4       | Release ballast in 30 min.                         |
| 1.2.3     | Increase your press.                               |
| 3.3.3     | Coms closing procedure inside & out.               |

There should be copies of above inside the bell, attached to the outside of the bell and at the Supervisor's consul.

# Conversion Factors

To convert	Into	Multiply by	To convert	Into	Multiply by
<b>A</b>					
Acres	sq feet	43,560.0	Btu	ergs	$1.0550 \times 10^{10}$
	sq meters	4,047.		foot-lbs	778.3
	sq miles	$1.562 \times 10^{-3}$		gram-calories	252.0
	sq yards	4,840.		horsepower-hrs	$3.931 \times 10^{-4}$
Acres-feet	cu feet	43,560.0		joules	1,054.8
	gallons	$3.259 \times 10^{-6}$		kilogram-calories	0.2520
Amperes/sq cm	amps/sq in.	6.452		kilogram-meters	107.5
	amps/sq meter	$10^4$		kilowatt-hrs	$2.928 \times 10^{-4}$
Amperes/sq in.	amps/sq cm	0.1550	Btu/hr	foot-pounds/sec	0.2162
	amps/sq meter			gram-cal/sec	0.0700
1,550.0				horsepower	$3.929 \times 10^{-4}$
Amperes/sq meter	amps/sq cm	$10^4$		watts	0.2931
	amps/sq in.	$6.452 \times 10^{-4}$	Btu/min	foot-lbs/sec	12.96
Amperes hours	coulombs	3,600.0		horsepower	0.02356
	Faradays	0.03731		kilowatts	0.01757
Ampere-turns	giberts	1.257		watts	17.57
Ampere-turns/cm	amp-turns/in.	2.540	btu/sq ft/min	watts/sq in.	0.1221
	amp-turns/meter	100.0	bushels	cu ft	1,2445
	gilberts/cm	1.257		cu in.	2,150.4
Ampere turns/in.	amp-turns/cm	0.3937		cu meters	0.03524
	amp-turns/meter	39.37		litres	35.24
	gilberts/cm	0.4950		pecks	4.0
Ampere-turns/meter	amp-truns/cm	0.01		pints (dry)	64.0
	amp-turns/in.	0.0254		quarts (dry)	32.0
	gilberts/cm	0.01257	<b>C</b>		
Acres	acres	0.02471	centares(centiares)	sq meters	1.0
Atmospheres	cms of mercury	76.0	Centigrade	Fahrenheit(Co X 9/5) + 32	
	ft of water	33.90	Centigrams	grams	0.01
	(at 4°C)		Centilitres	liters	0.01
	in. of mercury	29.92	Centimeters	feet	$3.281 \times 10^{-2}$
	(at 0°C)			inches	0.3937
	kgs/sq cm	1.0333		kilometers	$10^{-6}$
	kgs/sq meter	10,332.		meters	0.01
	pounds/sq in.	14.70		miles	$6.214 \times 10^{-6}$
	tons/sq ft	1.058		millimeters	10.0
				mils	393.7
				yards	$1.094 \times 10^{-2}$
			centimeter-dynes	cm-grams	$1.020 \times 10^{-3}$
				meter-kgs	$1.020 \times 10^{-6}$
				pound-feet	$7.376 \times 10^{-6}$
			centimeter-grams	cm-dynes	980.7
				meter-kgs	$10^{-5}$
				pound-feet	$7.233 \times 10^{-6}$
			centimeters of mercury	atmospheres	0.01316
barrels (oil)	gallons(oil)	42.0		feet of water	0.4461
bars	atmospheres	0.9869		kgs/sq meter	136.0
	dynes/sq cm	$10^9$		pounds/sq ft	27.85
bars	kgs/sq meter	$1.020 \times 10^4$			
	pounds/sq ft	2,089.			
	pounds/sq in.	14.50			

To convert	Into	Multiply by	To convert	Into	Multiply by
centimeters/sec	pounds/sq in.	0.1934	cu cms	$10^6$	
	feet/min	1.9685	cu feet	35.31	
	feet/sec	0.03281	cu inches	61,023.0	
	kilometers/hr	0.036	cu yards	1.308	
	knots	0.01943	gallons (U.S. liq.)	264.2	
	meters/min	0.6	liters	1,000.0	
	miles/hr	0.02237	pints (U.S. liq.)	2,113.0	
	miles/min	$3.728 \times 10^{-4}$	quarts (U.S. liq.)	1,057	
centimeters/sec/	feet/sec/sec	0.03281	cubic yards	cu cms	$7.646 \times 10^3$
sec	kms/hr/sec	0.036		cu feet	27.0
	meters/sec/sec	0.01		cu inches	46,656.0
	miles/hr/sec	0.02237		cu meters	0.7646
circular mils	sq cms	$5.067 \times 10^{-6}$		gallons (U.S. liq.)	202.0
	sq mils	0.7854		liters	764.6
	sq inches	$7.854 \times 10^{-7}$		pints (U.S. liq.)	1,615.9
coulombs	faradays	$1.036 \times 10^8$		quartz (U.S. liq.)	807.9
coulombs/sq cm	coulombs/sq-in.	64.52	cubic yards/min	cubic ft/sec	0.45
	coulombs/sq meter	$10^4$		gallons/sec	3.367
coulombs/sq in.	coulombs/sq cm	0.1550		liters/sec	12.74
	coulombs/sq meter	1,550.	<b>D</b>		
coulombs/sq meter	coulombs/sq cm	$10^{-4}$	days	hours	24.0
meter	coulombs/sq in.	$6.452 \times 10^{-4}$		minutes	1,440.0
cubic centimeters	cu feet	$3.531 \times 10^{-6}$		seconds	86,400.0
	cu inches	0.06102	deciliters	liters	0.1
	cu meters	$10^6$	decimeters	meters	0.1
	cu yards	$1.308 \times 10^6$	degrees (angle)	minutes	60.0
	gallons (U.S. liq.)	$2.642 \times 10^{-4}$		radians	0.01745
	liters	0.001		seconds	3,600.0
	pints (U.S. liq.)	$2.113 \times 10^{-3}$	degrees (terr. great circle)	miles (naut.)	60.0
	quartz (U.S. liq.)	$1.057 \times 10^{-3}$	degrees/sec	radians/sec	0.01745
cubic feet	bushels (dry)	0.8036		revolutions/min	0.1667
	cu inches	1,728.0		revolutions/sec	$2.778 \times 10^3$
	cu meters	0.02832	dekagrams	grams	10.0
	cu yards	0.03704	dekaliters	liters	10.0
	gallons (U.S. liq.)	7.48052	dekameters	meters	10.0
	liters	28.32	drams	grams	1.7718
	pints (U.S. liq.)	59.84		grains	27.3437
	quartz (U.S. liq.)	29.92	ounces	0.0625	
cubic feet/min	cu cms/sec	472.0	dynes	grams	$1.020 \times 10^3$
	gallons/sec	0.1247		joules/cm	$10^3$
	liters/sec	0.4720		joules/meter	$10^6$
	pounds of water/min	62.43		kilograms	$1.020 \times 10^6$
cubic feet/sec	million gals/day	0.64		poundals	$7.233 \times 10^6$
	gallons/min	448.831		pounds	$2.248 \times 10^6$
cubic inches	cu cms	16.39		bars	$10^6$
	cu feet	$5.787 \times 10^{-4}$			
	cu meters	$1.639 \times 10^{-3}$			
	cu yards	$2.143 \times 10^{-3}$			
	gallons (U.S. liq.)	$4.329 \times 10^{-3}$			
	liters	0.01639			
	mil-feet	$1.061 \times 10^3$			
	pints (U.S. liq.)	0.03			
	quarts (U.S. liq.)	0.01732			
cubic meters	bushels (dry)	28.38			

To convert	Into	Multiply by	To convert	Into	Multiply by
<b>E</b>					
ergs	Btu	$9.480 \times 10^{11}$	feet/100 feet	miles/hr/sec	0.6818
	dyne-centimeters	1.0	foot-pounds	per cent grade	1.0
	foot-pounds	$7.367 \times 10^9$		Btu	$1.286 \times 10^{-3}$
	gram-calories	$0.2389 \times 10^{-7}$		ergs	$1.356 \times 10^7$
	gram-cms	$1.020 \times 10^{-3}$		gram-calories	0.3238
	horsepower-hrs	$3.7250 \times 10^{-14}$		hp-hrs	$5.050 \times 10^{-7}$
	joules	$10^{-7}$		joules	1.356
	kg-calories	$2.389 \times 10^{11}$		kg-calories	$3.24 \times 10^{-4}$
	kg-meters	$1.020 \times 10^9$		kg-meters	0.1383
	kilowatt-hrs	$0.2778 \times 10^{-13}$		kilowatt-hrs	$3.766 \times 10^{-7}$
	watt-hours	$0.2778 \times 10^{-10}$		Btu/min	$1.286 \times 10^{-3}$
	Btu/min	$5.688 \times 10^9$		foot-pounds/sec	0.01667
	ft-lbs/min	$4.427 \times 10^9$		horsepower	$3.030 \times 10^6$
	ft-lbs/sec	$7.3756 \times 10^{10}$		kg-calories/min	$3.24 \times 10^{-4}$
horsepower	$1.341 \times 10^{10}$		kilowatts	$2.260 \times 10^6$	
kg-calories/min	$1.433 \times 10^9$		Btu/hr	4.6263	
kilowatts	$10^{10}$		Btu/min	0.07717	
			horsepower	$1.818 \times 10^{-3}$	
			kg-calories/min	0.01945	
			kilowatts	$1.356 \times 10^{-3}$	
			rods	40.0	
			feet	660.0	

To convert	Into	Multiply by	To convert	Into	Multiply by
<b>F</b>					
farads	microfarads	$10^6$			
faradays	ampere-hours	26.80			
	coulombs	$9.649 \times 10^4$	gallons	cu cms	3,785.0
fathoms	feet	6.0		cu feet	0.1337
feet	centimeters	30.48		cu inches	231.0
	kilometers	$3.048 \times 10^{-4}$		cu meters	$3.785 \times 10^{-3}$
	meters	0.3048		cu yards	$4.951 \times 10^{-3}$
	miles (naut.)	$1.645 \times 10^{-4}$		liters	3.785
	miles (stat.)	$1.894 \times 10^{-4}$		pints	8.0
	millimeters	304.8		quarts	4.0
	mils	$1.2 \times 10^4$	gallons	gallons(U.S. liq.)	1.20095
feet of water	atmospheres	0.02950	(liq. Br. Imp.)		
	in. of mercury	0.8826	gallons (U.S.)	gallons (Imp.)	0.83267
	kgs/sq cm	0.03048	gallons of water	pounds of water	8.3453
	kgs/sq meter	304.8	gallons/min	cu ft/sec	$2.228 \times 10^{-3}$
	pounds/sq ft	62.43		liters/sec	0.06308
	pounds/sq in.	0.4335		cu ft/hr	8.0208
feet/min	cms/sec	0.5080	gausses	lines/sq in.	6.452
	feet/sec	0.01667		webbers/sq cm	$10^{-6}$
	kms/hr	0.01829		webbers/sq in.	$6.452 \times 10^{-6}$
	meters/min	0.3048		webbers/sq meter	$10^{-4}$
	miles/hr	0.01136	gilberts	ampere-turns	0.7958
feet/sec	cms/sec	30.48	gilberts/cm	amp-turns/cm	0.7958
	kms/hr	1.097		amp-turns/in.	2.021
	knots	0.5921		amp-turns/meter	79.58
	meters/min	18.29	gills	liters	0.1183
	miles/hr	0.6818		pints (liq.)	0.25
	miles/min	0.01136	grains (troy)	grains (avdp)	1.0
feet/sec/sec	cms/sec/sec	30.48		grams	0.06480
	kms/hr/sec	1.097		ounces (avdp)	$2.0833 \times 10^{-3}$
	meters/sec/sec	0.3048		pennyweight (troy)	0.01467

To convert	Into	Multiply by	To convert	Into	Multiply by
grains/U.S. gal	parts/million	17.118		kilowatts	0.7457
	pounds/million gal	142.86		watts	745.7
grains/Imp. gal	parts/million	14.286	horsepower (boiler)	Btu/hr	33.479
grams	dynes	980.7		kilowatts	9.803
	grains	15.43	horsepower-hrs	Btu	2,547.
	joules/cm	$9.807 \times 10^{-6}$		ergs	$2.6845 \times 10^{13}$
	joules/meter	$9.807 \times 10^{-3}$		foot-lbs	$1.98 \times 10^9$
	(newtons)			gram-calories	641,190.
	kilograms	0.001		joules	$2.684 \times 10^6$
	milligrams	1000.		kg-calories	641.1
	ounces (avdp)	0.03527		kg-meters	$2.737 \times 10^6$
	ounces (troy)	0.03215	hours	Kilowatt-hrs	0.7457
	poundals	0.07093		days	$4.167 \times 10^{-2}$
	pounds	$2.205 \times 10^{-3}$		minutes	60.0
grams/cm	pounds/inch	$5.600 \times 10^{-3}$		seconds	3,600.0
grams/cu cm	pounds/cu ft	62.43		weeks	$5.952 \times 10^{-3}$
	pounds/cu in.	0.03613			
	pounds/mil-foot	$3.405 \times 10^{-7}$			
grams/liter	grains/gal	58.417			
	pounds/1,000 gal	8.345			
	pounds/cu ft	0.062427			
	parts/million	1,000.0	Inches	centimeters	2.540
grams/sq cm	pounds/sq ft	2.0481		feet	$8.333 \times 10^{-2}$
gram-calories	Btu	$3.9683 \times 10^{-3}$		meters	$2.540 \times 10^{-2}$
	ergs	$4.1868 \times 10^7$		miles	$1.578 \times 10^{-6}$
	foot-pounds	3.0880		millimeters	25.4
	horsepower-hrs	$1.5596 \times 10^{-6}$		mils	1,000.0
	kilowatt-hrs	$1.1630 \times 10^{-6}$		yards	$2.778 \times 10^{-3}$
	watt-hrs	$1.1630 \times 10^{-3}$	inches of mercury	atmospheres	0.03342
gram-calories/sec	Btu/hr	14.286		feet of water	1.133
gram-centimeters	Btu	$9.297 \times 10^{-6}$		kgs/sq cm	0.03453
	ergs	980.7		kgs/sq meter	345.3
	joules	$9.807 \times 10^{-6}$		pounds/sq ft	70.73
	kg-cal	$2.343 \times 10^{-6}$		pounds/sq in.	0.4912
	kg-meters	$10^{-6}$	inches of water	atmospheres	$2.458 \times 10^3$
			(at 40C)	inches of mercury	0.07355
				kgs/sq cm	$2.540 \times 10^3$
				ounces/sq in.	0.5781
				pounds/sq ft	5.204
				pounds/sq in.	0.03613
<b>H</b>					
hectares	acres	2.471			
	sq feet	$1.076 \times 10^{-6}$			
hectograms	grams	100.0			
hectoliters	liters	100.0			
hectometers	meters	100.0			
hectowatts	watts	100.0	joules	Btu	$9.480 \times 10^2$
henries	millihenries	1,000.0		ergs	107
horsepower	Btu/min	42.44		foot-pounds	0.7376
	foot-lbs/min	33,000.		kg-calories	$2.389 \times 10^2$
	foot-lbs/sec	550.0		kg-meters	0.1020
horsepower (metric)	horsepower			watts-hrs	$2.778 \times 10^2$
0.9863			joules/cm	grams	$1.020 \times 10^2$
(542.5 ft lb/sec)	(500 ft lb/sec)			dynes	$10^7$
horsepower	horsepower(metric)	1.014		joules/meter	100.0
(550 ft lb/sec)	(542.5 ft lb/sec)			(newtons)	
horsepower	kg-calories/min	10.68		poundals	723.3
				pounds	22.48



To convert	Into	Multiply by	To convert	Into	Multiply by
<b>O</b>					
ohms	megohms	10 <sup>-6</sup>	ounces	ounces	16.0
ohms	microhms	10 <sup>6</sup>	ounces (troy)	ounces (troy)	14.5833
ounces	drams	16.0	poundals	poundals	32.17
	grains	437.5	pounds (troy)	pounds (troy)	1.21528
	grams	28.349527	tons (short)	tons (short)	0.0005
	pounds	0.0625	grains	grains	5,760.
	ounces (troy)	0.9115	grams	grams	373.24177
	tons (long)	2.790 X 10 <sup>6</sup>	ounces (avdp.)	ounces (avdp.)	13.1657
	tons (metric)	2.835 X 10 <sup>6</sup>	ounces (troy)	ounces (troy)	12.0
ounces (fluid)	cu inches	1.805	pennyweights (troy)	pennyweights (troy)	240.0
	liters	0.02957	pounds (avdp.)	pounds (avdp.)	0.822857
ounces (troy)	grains	480.0	tons (long)	tons (long)	3.6735 X 10 <sup>-4</sup>
	grams	31.103481	tons (metric)	tons (metric)	3.7324 x 10 <sup>-4</sup>
	ounces (avdp.)	1.09714	tons (short)	tons (short)	4.1143 X 10 <sup>-4</sup>
	pennyweights (troy)	20.0	cu feet	cu feet	0.01602
	pounds (troy)	0.08333	cu inches	cu inches	27.68
ounces/sq in.	pounds/sq in.	0.0625	gallons	gallons	0.1198
			cu-ft/sec	cu-ft/sec	2.670 x 10 <sup>-4</sup>
<b>P</b>					
parts/million	grains/U.S. gal	0.0584	cm-dynes	cm-dynes	1.356 X 10 <sup>7</sup>
	grains/lmp. gal	0.07016	cm-grams	cm-grams	13,825.
	pounds/million gal	8.345	meter-kgs	meter-kgs	0.1383
pennyweights (troy)	grains	24.0	grams/cu cm	grams/cu cm	0.01602
	ounces (troy)	0.05	kgs/cu meter	kgs/cu meter	16.02
	grams	1.55517	pounds/cu in.	pounds/cu in.	5.787 X 10 <sup>-4</sup>
	pounds (troy)	4.1667 X 10 <sup>3</sup>	pounds/mil-foot	pounds/mil-foot	5.456 X 10 <sup>-9</sup>
pints (dry)	cu inches	33.60	gms/cu cm	gms/cu cm	27.68
pints (liq.)	cu cms.	473.2	kgs/cu meter	kgs/cu meter	2.768 X 10 <sup>-4</sup>
	cu feet	0.01671	pounds/cu ft	pounds/cu ft	1,728.
	cu inches	28.87	pounds/mil-foot	pounds/mil-foot	9.425 X 10 <sup>-9</sup>
	cu meters	4.732 x 10 <sup>-4</sup>	kgs/meter	kgs/meter	1.488
	cu yards	6.189 x 10 <sup>-4</sup>	gms/cm	gms/cm	178.6
	gallons	0.125	gms/cu cm	gms/cu cm	2.306 x 10 <sup>6</sup>
	liters	0.4732	atmospheres	atmospheres	4.725 X 10 <sup>-4</sup>
	quarts (liq.)	0.5	feet of water	feet of water	0.01602
poundals	dynes	13,826.	inches of mercury	inches of mercury	0.01414
	grams	14.10	kgs/sq meter	kgs/sq meter	4.882
	joules/cm	1.383 X 10 <sup>3</sup>	pounds/sq in.	pounds/sq in.	6.944 x 10 <sup>-3</sup>
	joules/meter (newtons)	0.1383	atmospheres	atmospheres	0.06804
	kilograms	0.01410	feet of water	feet of water	2.307
	pounds	0.03108	inches of mercury	inches of mercury	2.036
pounds	drams	256.	kgs/sq meter	kgs/sq meter	703.1
	dynes	44.4823 X 10 <sup>4</sup>	pounds/sq ft	pounds/sq ft	144.0
	grains	7,000.	<b>Q</b>		
	grams	453.5924	quadrants (angle)	degrees	90.0
	joules/cm	0.04448	minutes	minutes	5,400.0
	joules/meter (newtons)	4.448	radians	radians	1.571
	kilograms	0.4536	seconds	seconds	3.24 X 10 <sup>6</sup>
			quarts (dry)	cu inches	67.20
			quarts (liq.)	cu cms	946.4
				cu feet	0.03342
				cu inches	57.75

To convert	Into	Multiply by	To convert	Into	Multiply by
	cu meters	9.464 X 10 <sup>-4</sup>	sq millimeters	sq millimeters	9.290 X 10 <sup>-9</sup>
	cu yards	1.238 x 10 <sup>-3</sup>	sq yards	sq yards	0.1111
	gallons	0.25	square inches	circular mils	1.273 X 10 <sup>6</sup>
	liters	0.9463	sq cms	sq cms	6.452
			sq feet	sq feet	6.944 x 10 <sup>-3</sup>
			sq millimeters	sq millimeters	645 <sup>2</sup>
			sq mils	sq mils	106
			sq yards	sq yards	7.716 X 10 <sup>-4</sup>
			square kilometers	acres	247.1
radians	degrees	57.30	sq cms	sq cms	1010
	minutes	3,438.	sq ft	sq ft	10.76 X 10 <sup>6</sup>
	quadrants	0.6366	sq inches	sq inches	1.550 X 10 <sup>6</sup>
	seconds	2.063 X 10 <sup>6</sup>	sq meters	sq meters	106
radians/sec	degrees/sec	57.30	sq miles	sq miles	0.3861
	revolutions/min	9.549	sq yards	sq yards	1.196 X 10 <sup>6</sup>
radians/sec	revolutions/sec	0.1592	square meters	acres	2.471 X 10 <sup>-4</sup>
radians/sec/sec	revs/min/min	573.0	sq cms	sq cms	104
	revs/min/secq	9.549	sq feet	sq feet	10.76
	revs/sec/sec	0.1592	sq inches	sq inches	1,550
revolutions	degrees	360.0	sq miles	sq miles	3.861 X 10 <sup>7</sup>
	quadrants	4.0	sq millimeters	sq millimeters	106
	radians	6.283	sq yards	sq yards	1.196
revolutions/min	degrees/sec	6.0	square miles	acres	640.0
	radians/sec	0.1047	sq feet	sq feet	27.88 X 10 <sup>6</sup>
	revs/sec	0.01667	sq kms	sq kms	2.5906
revolutions/min/min	radians/sec/sec	1.745 X 10 <sup>-3</sup>	sq meters	sq meters	2.590 X 10 <sup>6</sup>
	revs/min/sec	0.21607	sq yards	sq yards	3.098 X 10 <sup>6</sup>
	revs/sec/sec	2.778 X 10 <sup>-3</sup>	square millimeters	circular mils	1,973.
revolutions/sec	degrees/sec	360.0	sq cms	sq cms	0.01
	radians/sec	6.283	sq feet	sq feet	1.076 X 10 <sup>6</sup>
	revs/min	60.0	sq inches	sq inches	1.550 X 10 <sup>-3</sup>
revolutions/sec/sec	radians/sec/sec	6.283	square mils	circular mils	1.273
	revs/min/min	3,600.0	sq cms	sq cms	6.452 X 10 <sup>6</sup>
	revs/min/sec	60.0	sq inches	sq inches	10 <sup>6</sup>
rods	feet	16.5	square yards	acres	2.066 X 10 <sup>-4</sup>
			sq cms	sq cms	8,361.
			sq feet	sq feet	9.0
			sq inches	sq inches	1,296.
			sq meters	sq meters	0.8361
			sq miles	sq miles	3.228 X 10 <sup>-7</sup>
			sq millimeters	sq millimeters	8.361 X 10 <sup>6</sup>
<b>S</b>					
seconds (angle)	degrees	2.778 x 10 <sup>-4</sup>	temperature	absolute tempera-	1.0
	minutes	0.01667	(°C) + 273	ture (°C)	
	quadrants	3.087 X 10 <sup>-6</sup>	temperature	temperature (°F)	1.8
	radians	4.848 X 10 <sup>-6</sup>	(°C) + 17.78		
square centimeters	circular mils	1.973 X 10 <sup>5</sup>	temperature	absolute tempera-	1.0
	sq feet	1.076 X 10 <sup>-3</sup>	(°F) + 460	ture (°F)	
	sq inches	0.1550	temperature	temperature (°C)	5/9
	sq meters	0.0001	(°F) - 32		
	sq miles	3.861 X 10 <sup>-11</sup>	tons (long)	kilograms	1,016.
	sq millimeters	100.0		pounds	2,240.
	sq yards	1.196 x 10 <sup>-4</sup>			
square feet	acres	2.296 X 10 <sup>-4</sup>			
	circular mils	1.833 X 10 <sup>6</sup>			
	sq cms	929.0			
	sq inches	144.0			
	sq meters	0.09290			
	sq miles	3.587 x 10 <sup>-9</sup>			

To convert	Into	Multiply by	To convert	Into	Multiply by
tons (metric)	tons (short)	1.120			
	kilograms	1,000.			
	pounds	2,205.			
tons (short)	kilograms	907.1848	yards	centimeters	91.44
	ounces	32,000.		feet	3.0
	ounces (troy)	29,166.66		inches	36.0
	pounds	2,000.		kilometers	9,144 X 10 <sup>4</sup>
	pounds	2,000.		meters	0.9144
	pounds (troy)	2,430.56		miles (naut.)	4.934 X 10 <sup>6</sup>
	tons (long)	0.89287		miles (stat.)	5.682 X 10 <sup>4</sup>
	tons (metric)	0.9076		millimeters	914.4
tons (short)/sq ft	kgs/sq meter	9,765.			
	pounds/sq in.	2,000.			
tons of water/24 hrs	pounds of water/hr	83.333			
	gallons/min	0.16643			
	cu ft/hr	1.3349			

### W

watts	Btu/hr	3.413
	Btu/min	0.05688
	ergs/sec	107
	foot-lbs/min	44.27
	foot-lbs/sec	0.7378
	horsepower	1.341 X 10 <sup>-3</sup>
	horsepower (metric)	1.360 X 10 <sup>-3</sup>
	kg-calories/min	0.01433
	kilowatts	0.001
watt-hours	Btu	3.413
	ergs	3.60 X 10 <sup>10</sup>
	foot-pounds	2,656.
	gram-calories	859.85
	horsepower-hrs	1.341 X 10 <sup>3</sup>
	kilogram-calories	0.8598
	kilogram-meters	367.2
	kilowatt-hrs	0.001
webers	maxwells	108
	kilolines	105
webers/sq in.	gausses	1.550 X 10 <sup>3</sup>
	lines/sq in.	108
	webers/sq cm	0.1550
	webers/sq meter	1,550.
webers/sq meter	gausses	104
	lines/sq in.	6.452 X 10 <sup>4</sup>
	webers/sq cm	10.4
	webers/sq in.	6.452 X 10 <sup>4</sup>

### Degrees Fahrenheit - C = F° - 32 X 0.555

### Degrees Centigrade (° C.) - F = C° X 1.8 + 32

- 459.4 ° 0		1 ° 60		61 ° 290		300 ° 890		900 ° 3000		
C	F	C	F	C	F	C	F	C	F	F
- 273	- 459.4	- 17.2	1	16.1	61	149	300	482	900	1652
- 268	- 450	- 16.7	2	16.7	62	154	310	488	910	1670
- 262	- 440	- 16.1	3	17.2	63	160	320	493	920	1688
- 257	- 430	- 15.6	4	17.8	64	166	330	499	930	1706
- 251	- 420	- 15.0	5	18.3	65	171	340	504	940	1724
- 246	- 410	- 14.4	6	18.9	66	177	350	510	950	1742
- 240	- 400	- 13.9	7	19.4	67	182	360	516	960	1760
- 234	- 390	- 13.3	8	20.0	68	188	370	521	970	1778
- 229	- 380	- 12.8	9	20.6	69	193	380	527	980	1796
- 223	- 370	- 12.2	10	21.1	70	199	390	532	990	1814
- 218	- 360	- 11.7	11	21.7	71	204	400	538	1000	1832
- 212	- 350	- 11.1	12	22.2	72	210	410	549	1020	1868
- 207	- 340	- 10.6	13	22.8	73	216	420	560	1040	1904
- 201	- 330	- 10.0	14	23.3	74	221	430	571	1060	1940
- 196	- 320	- 9.4	15	23.9	75	227	440	582	1080	1976
- 190	- 310	- 8.9	16	24.4	76	232	450	593	1100	2012
- 184	- 300	- 8.3	17	25.0	77	238	460	604	1120	2048
- 179	- 290	- 7.8	18	25.6	78	243	470	616	1140	2084
- 173	- 280	- 7.2	19	26.1	79	249	480	627	1160	2120
- 169	- 273	- 6.7	20	26.7	80	254	490	638	1180	2156
- 168	- 270	- 6.1	21	27.2	81	260	500	649	1200	2192
- 162	- 260	- 5.6	22	27.8	82	266	510	660	1220	2228
- 157	- 250	- 5.0	23	28.3	83	271	520	671	1240	2264
- 151	- 240	- 4.4	24	28.9	84	277	530	682	1260	2300
- 146	- 230	- 3.9	25	29.4	85	282	540	693	1280	2336
- 140	- 220	- 3.3	26	30.0	86	288	550	704	1300	2372
- 134	- 210	- 2.8	27	30.6	87	293	560	715	1320	2408
- 129	- 200	- 2.2	28	31.1	88	299	570	726	1340	2444
- 123	- 180	- 1.7	29	31.7	89	304	580	737	1360	2480
- 112	- 170	- 1.1	30	32.2	90	310	590	748	1380	2516
- 107	- 160	- 0.6	31	32.8	91	316	600	759	1400	2552
- 101	- 150	0	32	33.3	92	321	610	770	1420	2588
- 96	- 140	0.6	33	33.9	93	327	620	781	1440	2624
- 90	- 130	1.1	35	34.4	94	332	630	792	1460	2660
- 84	- 120	1.7	35	35.0	95	338	640	803	1480	2696
- 79	- 110	2.2	36	35.6	96	343	650	814	1500	2732
- 73	- 100	2.8	37	36.1	97	349	660	825	1520	2768
- 68	- 90	3.3	38	36.7	98	354	670	836	1540	2804
- 62	- 80	3.9	39	37.2	99	360	680	847	1560	2840
- 57	- 70	4.4	40	37.8	100	366	690	858	1580	2876
- 51	- 60	5.0	41	43	101	371	700	869	1600	2912
- 46	- 50	5.6	42	49	120	428	770	930	1700	3128
- 40	- 40	6.1	43	54	130	485	840	1000	1800	3344
- 34	- 30	6.7	44	60	140	542	910	1070	1900	3560
- 29	- 20	7.2	45	66	150	600	980	1140	2000	3776
- 23	- 10	7.8	46	71	160	658	1050	1210	2100	3992
- 17.8	- 0	8.3	47	77	170	716	1120	1280	2200	4208
		8.9	48	82	180	774	1190	1350	2300	4424
		9.4	49	88	190	832	1260	1420	2400	4640
		10.0	50	93	200	890	1330	1490	2500	4856
		10.6	51	99	210	948	1400	1560	2600	5072
		11.1	52	100	212	1006	1470	1630	2700	5288
		11.7	53	104	220	1064	1540	1700	2800	5504
		12.2	54	110	230	1122	1610	1770	2900	5720
		12.8	55	116	240	1180	1680	1840	3000	5936
		13.3	56	121	250	1238	1750	1910	3100	6152
		13.9	57	127	260	1296	1820	1980	3200	6368
		14.4	58	132	270	1354	1890	2050	3300	6584
		15.0	59	138	280	1412	1960	2120	3400	6800
		15.6	60	143	290	1470	2030	2190	3500	7016

**Cubic Meters (cu. m.) X or ÷ by 35.31**  
**Cubic Feet (cu. ft.)**

cu. m.	cu. ft.	cu. m.	cu. ft.	cu. m.	cu. ft.
0.028317	1	35.3147	0.96277	34	1200.70
0.05668	2	70.63	0.99109	35	1236.01
0.08495	3	105.94	1.01941	36	1271.33
0.11327	4	141.26	1.04772	37	1306.64
0.14158	5	176.57	1.07604	38	1341.96
0.16990	6	211.89	1.10436	39	1377.27
0.19822	7	247.20	1.13267	40	1412.59
0.22654	8	282.52	1.16099	41	1447.90
0.25485	9	317.83	1.18931	42	1483.22
0.28317	10	353.15	1.21762	43	1518.53
0.31149	11	388.46	1.24594	44	1553.84
0.33980	12	423.78	1.27426	45	1589.16
0.36812	13	459.09	1.30258	46	1624.47
0.39644	14	494.40	1.33089	47	1659.79
0.42475	15	529.72	1.35921	48	1695.10
0.45307	16	565.03	1.38753	49	1730.42
0.48139	17	600.35	1.41584	50	1765.73
0.50970	18	635.66	1.44416	51	1801.05
0.53802	19	670.98	1.47248	52	1836.36
0.56634	20	706.29	1.50079	53	1871.68
0.59465	21	741.60	1.52910	54	1906.99
0.62297	22	776.92	1.55743	55	1942.30
0.65129	23	812.24	1.58574	56	1977.62
0.67960	24	847.55	1.61406	57	2012.94
0.70792	25	882.87	1.64238	58	2048.25
0.73624	26	918.18	1.67069	59	2083.56
0.76456	27	953.50	1.69901	60	2118.88
0.79287	28	988.80	1.72733	61	2154.19
0.82119	29	1024.13	1.75565	62	2189.51
0.84951	30	1059.44	1.78396	63	2224.82
0.87782	31	1094.75	1.81228	64	2260.14
0.90614	32	1130.07	1.84060	65	2295.45
0.93446	33	1165.38	1.86890	66	2330.77
			1.89723	67	2366.08
			1.92555	68	2401.40
			1.95386	69	2436.70
			1.98218	70	2472.03
			2.01050	71	2507.34
			2.03881	72	2542.66
			2.06713	73	2577.97
			2.09545	74	2613.28
			2.12376	75	2648.60
			2.15208	76	2683.90
			2.18040	77	2719.23
			2.20872	78	2754.54
			2.23703	79	2789.86
			2.26535	80	2825.17
			2.29367	81	2860.49
			2.32198	82	2895.80
			2.35030	83	2931.12
			2.37862	84	2966.43
			2.40693	85	3001.75
			2.43525	86	3037.06
			2.46357	87	3072.38
			2.49188	88	3107.69
			2.52020	89	3143.00
			2.54852	90	3178.32
			2.57683	91	
			2.60515	92	3248.95
			2.63347	93	3284.26
			2.66178	94	3319.58
			2.69010	95	3354.89
			2.71842	96	
			2.74674	97	3425.52
			2.77505	98	3460.84
			2.80337	99	3496.15

**Meters (m.) - Feet (ft.) X or ÷ 3.2808**

m.	ft.	m.	ft.	m.	ft.
0.3048	1	3.28084	10.3632	34	111.549
0.6096	2	6.562	10.6680	35	114.829
0.9144	3	9.843	10.9728	36	118.110
1.2192	4	13.123	11.2776	37	121.390
1.5240	5	16.404	11.5824	38	124.672
1.8288	6	19.685	11.8872	39	127.953
2.1336	7	22.966	12.1920	40	131.234
2.4384	8	26.247	12.4968	41	134.514
2.7432	9	29.528	12.8016	42	137.795
3.0480	10	32.808	13.1064	43	141.076
3.3528	11	36.089	13.4112	44	144.357
3.6576	12	39.370	13.7160	45	147.638
3.9624	13	42.650	14.0208	46	150.919
4.2672	14	45.932	14.3256	47	154.199
4.5720	15	49.213	14.6304	48	157.480
4.8768	16	52.493	14.9352	49	160.760
5.1816	17	55.774	15.2400	50	164.042
5.4864	18	59.055	15.5448	51	167.323
5.7912	19	62.336	15.8496	52	170.604
6.0960	20	65.617	16.1544	53	173.884
6.4008	21	68.898	16.4592	54	177.165
6.7056	22	72.178	16.7640	55	180.446
7.0104	23	75.459	17.0688	56	183.727
7.3152	24	78.740	17.3736	57	187.008
7.6200	25	82.020	17.6784	58	190.289
7.9248	26	85.302	17.9832	59	193.570
8.2296	27	88.583	18.2880	60	196.850
8.5344	28	91.863	18.5928	61	200.131
8.8392	29	95.144	18.8976	62	203.412
9.1440	30	98.425	19.2024	63	206.693
9.4488	31	101.706	19.5072	64	209.974
9.7536	32	104.987	19.8120	65	213.255
10.0584	33	108.268	20.1168	66	216.535
			20.4216	67	219.816
			20.7264	68	223.097
			21.0312	69	226.378
			21.3360	70	229.659
			21.6408	71	232.940
			21.9456	72	236.220
			22.2504	73	239.501
			22.5552	74	242.782
			22.8600	75	246.063
			23.1648	76	249.344
			23.4696	77	252.625
			23.7744	78	255.906
			24.0792	79	259.186
			24.3840	80	262.467
			24.6888	81	265.748
			24.9936	82	269.029
			25.2984	83	272.310
			25.6032	84	275.590
			25.9080	85	278.871
			26.2128	86	282.152
			26.5176	87	285.433
			26.8224	88	288.714
			27.1272	89	291.995
			27.4320	90	295.276
			27.7368	91	298.557
			28.0416	92	301.837
			28.3464	93	305.116
			28.6512	94	
			28.9560	95	311.680
			29.2608	96	314.960
			29.5656	97	318.241
			29.8704	98	321.522
			30.1752	99	

**Kilograms per Square Centimeters (kg./sq. cm.)**

**Pounds per Square Inch (lb./sq. in.)**

kg/sq. cm	lb./sq. in.	kg/sq. cm	lb./sq. in.	kg/sq. cm	lb./sq. in.
0.0703	1	2.3904	34	4.7106	67
0.1406	2	2.4607	35	4.7809	68
0.2109	3	2.8310	36	4.8512	69
0.2812	4	2.6014	37	4.9215	70
0.3515	5	2.6717	38	4.9918	71
0.4218	6	2.5420	39	5.0620	72
0.4921	7	2.8123	40	5.1324	73
0.5625	8	2.8826	41	5.2027	74
0.6328	9	2.9529	42	5.2730	75
0.7031	10	3.0232	43	5.3433	76
0.7734	11	3.0935	44	5.4136	77
0.8437	12	3.1638	45	5.4839	78
0.9140	13	3.2341	46	5.5543	79
0.9843	14	3.3044	47	5.6246	80
1.0546	15	3.3747	48	5.6949	81
1.1249	16	3.4450	49	5.7652	82
1.1952	17	3.5153	50	5.8355	83
1.2655	18	3.5857	51	5.9058	84
1.3358	19	3.6560	52	5.9760	85
1.4061	20	3.7263	53	6.0464	86
1.4764	21	3.7966	54	6.1167	87
1.5467	22	3.8669	55	6.1870	88
1.6170	23	3.9372	56	6.2573	89
1.6874	24	4.0075	57	6.3276	90
1.7577	25	4.0778	58	6.3979	91
1.8280	26	4.1481	59	6.4682	92
1.8983	27	4.2184	60	6.5385	93
1.9686	28	4.2887	61	6.6089	94
2.0389	29	4.3590	62	6.6792	95
2.1092	30	4.4293	63	6.7495	96
2.1795	31	4.4996	64	6.8198	97
2.2498	32	4.5699	65	6.8901	98
2.3201	33	4.6403	66	6.9604	99

**Table of Conversion  
Inch-Millimeters**

Inch	0	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16
0	0.0	1.6	3.2	4.8	6.4	7.9	9.5	11.1	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8
1	25.4	27.0	28.6	30.2	31.8	33.3	34.9	36.5	38.1	39.7	41.3	42.9	44.5	46.0	47.6	49.2
2	50.8	52.4	54.0	55.6	57.2	58.7	60.3	61.9	63.5	65.1	66.7	68.3	69.9	71.4	73.0	74.6
3	76.2	77.8	79.4	81.0	82.6	84.1	85.7	87.3	88.9	90.5	92.1	93.7	95.3	96.8	98.4	100.0
4	101.6	103.2	104.8	106.4	108.0	109.5	111.1	112.7	114.3	115.9	117.5	119.1	120.7	122.2	123.8	125.4
5	127.0	128.6	130.2	131.8	133.4	134.9	136.5	138.1	139.7	141.3	142.9	144.5	146.1	147.6	149.2	150.8
6	152.4	154.0	155.6	157.2	158.8	160.3	161.9	163.5	165.1	166.7	168.3	169.9	171.5	173.0	174.6	176.2
7	177.8	179.4	181.0	182.6	184.2	185.7	187.3	188.9	190.5	192.1	193.7	195.3	196.9	198.4	200.0	201.6
8	203.2	204.8	206.4	208.0	209.6	211.1	212.7	214.3	215.9	217.5	219.1	220.7	222.3	223.8	225.4	227.0
9	228.6	230.2	231.8	233.4	235.0	236.5	238.1	239.7	241.3	242.9	244.5	246.1	247.7	249.2	250.8	252.4
10	254.0	255.6	257.2	258.8	260.4	261.9	263.5	265.1	266.7	268.3	269.9	271.5	273.1	274.6	276.2	277.8
11	279.4	281.0	282.6	284.2	285.8	287.3	288.9	290.5	292.1	293.7	295.3	296.9	298.5	300.0	301.6	303.2
12	304.8	306.4	308.0	309.6	311.2	312.7	314.3	315.9	317.5	319.1	320.7	322.3	323.9	325.4	327.0	328.6
13	330.2	331.8	333.4	335.0	336.6	338.1	339.7	341.3	342.9	344.5	346.1	347.7	349.3	350.8	352.4	354.0
14	355.6	357.2	358.8	360.4	362.0	363.5	365.1	366.7	368.3	369.9	371.5	373.1	374.7	376.2	377.8	379.4
15	381.0	382.6	384.2	385.8	387.4	388.9	390.5	392.1	393.7	395.3	396.9	398.5	400.1	401.6	403.2	404.8
16	406.4	408.0	409.6	411.2	412.8	414.3	415.9	417.5	419.1	420.7	422.3	423.9	425.5	427.0	428.6	430.2
17	431.8	433.4	435.0	436.6	438.2	439.7	441.3	442.9	444.5	446.1	447.7	449.3	450.9	452.4	454.0	455.6
18	457.2	458.8	460.4	462.0	463.6	465.1	466.7	468.3	469.9	471.5	473.1	474.7	476.3	477.8	479.4	481.0
19	482.6	484.2	485.8	487.4	489.0	490.5	492.1	493.7	495.3	496.9	498.5	500.1	501.7	503.2	504.8	506.4
20	508.0	509.6	511.2	512.8	514.4	515.9	517.5	519.1	520.7	522.3	523.9	525.5	527.1	528.6	530.2	531.8
21	533.4	535.0	536.6	538.2	539.8	541.3	542.9	544.5	546.1	547.7	549.3	550.9	552.5	554.0	555.6	557.2
22	558.8	560.4	562.0	563.6	565.2	566.7	568.3	569.9	571.5	573.1	574.7	576.3	577.9	579.4	581.0	582.6
23	584.2	585.8	587.4	589.0	590.6	592.1	593.7	595.3	596.9	598.5	600.1	601.7	603.3	604.8	606.4	608.0
24	609.6	611.2	612.8	614.4	616.0	617.5	619.1	620.7	622.3	623.9	625.5	627.1	628.7	630.2	631.8	633.4
25	635.0	636.6	638.2	639.8	641.4	642.9	644.5	646.1	647.7	649.3	650.9	652.5	654.1	655.6	657.2	658.8
26	660.4	662.0	663.6	665.2	666.8	668.3	669.9	671.5	673.1	674.7	676.3	677.9	679.5	681.0	682.6	684.2
27	685.8	687.4	689.0	690.6	692.2	693.7	695.3	696.9	698.5	700.1	701.7	703.3	704.9	706.4	708.0	709.6
28	711.2	712.8	714.4	716.0	717.6	719.1	720.7	722.3	723.9	725.5	727.1	728.7	730.3	731.8	733.4	735.0
29	736.6	738.2	739.8	741.4	743.0	744.5	746.1	747.7	749.3	750.9	752.5	754.1	755.7	757.2	758.8	760.4
30	762.0	763.6	765.2	766.8	768.4	769.9	771.5	773.1	774.7	776.3	777.9	779.5	781.1	782.6	784.2	785.8
31	787.4	789.0	790.6	792.2	793.8	795.3	796.9	798.5	800.1	801.7	803.3	804.9	806.5	808.0	809.6	811.2
32	812.8	814.4	816.0	817.6	819.2	820.7	822.3	823.9	825.5	827.1	828.7	830.3	831.9	833.4	835.0	836.6
33	838.2	839.8	841.4	843.0	844.6	846.1	847.7	849.3	850.9	852.5	854.1	855.7	857.3	858.8	860.4	862.0
34	863.6	865.2	866.8	868.4	870.0	871.5	873.1	874.7	876.3	877.9	879.5	881.1	882.7	884.2	885.8	887.4
35	889.0	890.6	892.2	893.8	895.4	896.9	898.5	900.1	901.7	903.3	904.9	906.5	908.1	909.6	911.2	912.8
36	914.4	916.0	917.6	919.2	920.8	922.3	923.9	925.5	927.1	928.7	930.3	931.9	933.5	935.0	936.6	938.2
37	939.8	941.4	943.0	944.6	946.2	947.7	949.3	950.9	952.5	954.1	955.7	957.3	958.9	960.4	962.0	963.6
38	965.2	966.8	968.4	970.0	971.6	973.1	974.7	976.3	977.9	979.5	981.1	982.7	984.3	985.8	987.4	989.0
39	990.6	992.2	993.8	995.4	997.0	998.5	1000.1	1001.7	1003.3	1004.9	1006.5	1008.1	1009.7	1011.2	1012.8	1014.4
40	1016.0	1017.6	1019.2	1020.8	1022.4	1023.9	1025.5	1027.1	1028.7	1030.3	1031.9	1033.5	1035.1	1036.6	1038.2	1039.8
41	1041.4	1043.0	1044.6	1046.2	1047.8	1049.3	1050.9	1052.5	1054.1	1055.7	1057.3	1058.9	1060.5	1062.0	1063.6	1065.2
42	1066.8	1068.4	1070.0	1071.6	1073.2	1074.7	1076.3	1077.9	1079.5	1081.1	1082.7	1084.3	1085.9	1087.4	1089.0	1090.6
43	1092.2	1093.8	1095.4	1097.0	1098.6	1100.1	1101.7	1103.3	1104.9	1106.5	1108.1	1109.7	1111.3	1112.8	1114.4	1116.0
44	1117.6	1119.2	1120.8	1122.4	1124.0	1125.5	1127.1	1128.7	1130.3	1131.9	1133.5	1135.1	1136.7	1138.2	1139.8	1141.4
45	1143.0	1144.6	1146.2	1147.8	1149.4	1150.9	1152.5	1154.1	1155.7	1157.3	1158.9	1160.5	1162.1	1163.6	1165.2	1166.8
46	1168.4	1170.0	1171.6	1173.2	1174.8	1176.3	1177.9	1179.5	1181.1	1182.7	1184.3	1185.9	1187.5	1189.0	1190.6	1192.2
47	1193.8	1195.4	1197.0	1198.6	1200.2	1201.7	1203.3	1204.9	1206.5	1208.1	1209.7	1211.3	1212.9	1214.4	1216.0	1217.6
48	1219.2	1220.8	1222.4	1224.0	1225.6	1227.1	1228.7	1230.3	1231.9	1233.5	1235.1	1236.7	1238.3	1239.8	1241.4	1243.0
49	1244.6	1246.2	1247.8	1249.4	1251.0	1252.5	1254.1	1255.7	1257.3	1258.9	1260.5	1262.1	1263.7	1265.2	1266.8	1268.4
50	1270.0	1271.6	1273.2	1274.8	1276.4	1277.9	1279.5	1281.1	1282.7	1284.3	1285.9	1287.5	1289.1	1290.6	1292.2	1293.8



Liters (l.) - Imperial Gallons (imp. gall.)

liters	imp. gall.	liters	imp. gall.	liters	imp. gall.			
4.5459631	1	0.219975	154.563	34	7.4792	304.580	67	14.7383
9.092	2	0.4400	159.109	35	7.6990	309.125	68	14.9583
13.638	3	0.6599	163.655	36	7.9191	313.670	69	15.1783
18.184	4	0.8799	168.201	37	8.1391	318.217	70	15.3983
22.730	5	1.0999	172.747	38	8.3590	322.763	71	15.6182
27.276	6	1.3199	177.293	39	8.5790	327.309	72	15.8382
31.822	7	1.5398	181.839	40	8.7990	331.309	73	16.0581
36.368	8	1.7598	186.384	41	9.0190	336.401	74	16.2782
40.914	9	1.9798	190.930	42	9.2390	340.947	75	16.4980
45.460	10	2.1998	195.476	43	9.4589	345.493	76	16.7181
50.006	11	2.4197	200.022	44	9.6789	350.039	77	16.9380
54.552	12	2.6397	204.568	45	9.8989	354.585	78	17.1580
59.098	13	2.8597	209.114	46	10.1189	359.130	79	17.3780
63.643	14	3.0797	213.660	47	10.3388	363.677	80	17.5980
68.189	15	3.2996	218.206	48	10.5588	368.223	81	17.8180
72.735	16	3.5196	222.752	49	10.7788	372.769	82	18.0380
77.280	17	3.7396	227.298	50	10.9988	377.315	83	18.2579
81.827	18	3.9596	231.844	51	11.2187	381.861	84	18.4779
86.373	19	4.1795	236.390	52	11.4387	386.407	85	18.6979
90.919	20	4.3995	240.936	53	11.6587	390.953	86	18.9179
95.465	21	4.6195	245.482	54	11.8787	395.499	87	19.1379
100.010	22	4.8395	250.028	55	12.0986	400.045	88	19.3578
104.557	23	5.0594	254.574	56	12.3186	404.591	89	19.5778
109.103	24	5.2794	259.120	57	12.5386	409.137	90	19.7978
113.649	25	5.4994	263.666	58	12.7586	413.683	91	20.0178
118.195	26	5.7195	268.212	59	12.9785	418.229	92	20.2377
122.741	27	5.9393	272.758	60	13.1985	422.775	93	20.4577
127.287	28	6.1593	277.304	61	13.4185	427.320	94	20.6777
131.833	29	6.3793	281.850	62	13.6385	431.865	95	20.8977
136.379	30	6.5993	286.396	63	13.8584	436.412	96	21.1176
140.925	31	6.8192	290.942	64	14.0784	440.958	97	21.3376
145.471	32	7.0392	295.488	65	14.2984	445.504	98	21.5576
150.017	33	7.2592	300.034	66	14.5184	450.050	99	21.7776

Grams (g.) - Ounces (ozs.)

grams	ozs.	grams	ozs.	grams	ozs.			
28.3495	1	0.03527	963.8830	34	1.19918	1899.4165	67	2.36309
56.6990	2	0.07054	992.2325	35	1.23445	1927.7660	68	2.39836
85.0485	3	0.10580	1020.5820	36	1.26972	1956.1155	69	2.43363
113.3980	4	0.14108	1048.9315	37	1.30499	1984.4650	70	2.46890
141.7475	5	0.17635	1077.2810	38	1.34026	2012.8145	71	2.50417
170.0970	6	0.21162	1105.6305	39	1.37553	2041.1640	72	2.53944
198.4465	7	0.24689	1133.9800	40	1.41080	2069.5135	73	2.57470
226.7960	8	0.28216	1162.3295	41	1.44607	2097.8630	74	2.60998
255.1455	9	0.31743	1190.6790	42	1.48134	2126.2125	75	2.64525
283.4950	10	0.35270	1219.0285	43	1.51660	2154.5620	76	2.68052
311.8445	11	0.38797	1247.3780	44	1.55188	2182.9115	77	2.71579
340.1940	12	0.42324	1275.7275	45	1.58715	2211.2610	78	2.75106
368.5435	13	0.45850	1304.0770	46	1.62242	2239.6105	79	2.78633
396.8930	14	0.49378	1332.4265	47	1.65769	2267.9600	80	2.82160
425.2425	15	0.52905	1360.7760	48	1.69296	2296.3095	81	2.85687
453.5920	16	0.56432	1389.1255	49	1.72823	2324.6590	82	2.89214
481.9415	17	0.59959	1417.4750	50	1.76350	2353.0085	83	2.92740
510.2910	18	0.63486	1445.8245	51	1.79877	2381.3580	84	2.96268
538.6405	19	0.67013	1474.1740	52	1.83404	2409.7075	85	2.99795
566.9900	20	0.70540	1502.5235	53	1.86930	2438.0570	86	3.03322
595.3395	21	0.74067	1530.8730	54	1.90458	2466.4065	87	3.06849
623.6890	22	0.77594	1559.2225	55	1.93985	2494.7560	88	3.10376
652.0385	23	0.81121	1587.5720	56	1.97512	2523.1055	89	3.13903
680.3880	24	0.84648	1615.9215	57	2.01039	2551.4550	90	3.17430
708.7375	25	0.88175	1644.2710	58	2.04566	2579.8045	91	3.20957
737.0870	26	0.91702	1672.6205	59	2.08093	2608.1540	92	3.24484
765.4365	27	0.95229	1700.9700	60	2.11620	2636.5035	93	3.28010
793.7860	28	0.98756	1729.3195	61	2.15147	2664.8530	94	3.31538
822.1355	29	1.02283	1757.6690	62	2.18674	2693.2025	95	3.35065
850.4850	30	1.05810	1786.0185	63	2.22200	2721.5520	96	3.38592
878.8345	31	1.09337	1814.3680	64	2.25728	2749.9015	97	3.42119
907.1840	32	1.12864	1842.7175	65	2.29255	2778.2510	98	3.45646
935.5335	33	1.16390	1871.0670	66	2.32782	2806.6005	99	3.49173

**Kilogram-Calories - (kg. -cal.) -  
British Thermal Units (B. Th. U.)**

B.Th. U.	kg-cal.	B.Th. U.	kg-cal.	B.Th. U.	kg-cal.
3.96832	1	0.251996	134.923	34	8.568
7.937	2	0.504	138.890	35	8.820
11.905	3	0.756	142.860	36	9.072
15.873	4	1.008	146.828	37	9.324
19.842	5	1.260	150.796	38	9.576
23.810	6	1.512	154.764	39	9.828
27.778	7	1.764	158.733	40	10.080
31.747	8	2.016	162.701	41	10.332
35.715	9	2.268	166.669	42	10.584
39.683	10	2.520	170.638	43	10.836
43.652	11	2.772	174.606	44	11.088
47.620	12	3.024	178.574	45	11.340
51.588	13	3.276	182.543	46	11.592
55.556	14	3.528	186.510	47	11.844
59.525	15	3.780	190.479	48	12.096
63.493	16	4.032	194.448	49	12.348
67.460	17	4.284	198.416	50	12.600
71.430	18	4.536	202.384	51	12.852
75.398	19	4.788	206.353	52	13.104
79.366	20	5.040	210.321	53	13.356
83.335	21	5.292	214.289	54	13.608
87.303	22	5.544	218.258	55	13.860
91.270	23	5.796	222.226	56	14.112
95.240	24	6.048	226.194	57	14.364
99.208	25	6.300	230.163	58	14.616
103.176	26	6.552	234.131	59	14.868
107.145	27	6.804	238.099	60	15.120
111.113	28	7.056	242.068	61	15.372
115.081	29	7.308	246.036	62	15.624
119.050	30	7.560	250.004	63	15.876
123.018	31	7.812	253.973	64	16.128
126.986	32	8.064	257.94	65	16.380
130.955	33	8.316	261.909	66	16.632
265.877	67	16.884	265.877	67	16.884
269.846	68	17.136	269.846	68	17.136
273.814	69	17.388	273.814	69	17.388
277.782	70	17.640	277.782	70	17.640
281.750	71	17.892	281.750	71	17.892
825.719	72	18.144	825.719	72	18.144
289.687	73	18.396	289.687	73	18.396
293.656	74	18.648	293.656	74	18.648
297.624	75	18.900	297.624	75	18.900
301.592	76	19.152	301.592	76	19.152
305.561	77	19.404	305.561	77	19.404
309.529	78	19.656	309.529	78	19.656
313.497	79	19.908	313.497	79	19.908
317.466	80	20.160	317.466	80	20.160
321.434	81	20.412	321.434	81	20.412
325.402	82	20.664	325.402	82	20.664
329.370	83	20.915	329.370	83	20.915
333.339	84	21.168	333.339	84	21.168
337.307	85	21.420	337.307	85	21.420
341.276	86	21.672	341.276	86	21.672
345.244	87	21.924	345.244	87	21.924
349.212	88	22.176	349.212	88	22.176
353.180	89	22.428	353.180	89	22.428
357.149	90	22.680	357.149	90	22.680
361.117	91	22.932	361.117	91	22.932
365.085	92	23.184	365.085	92	23.184
369.054	93	23.436	369.054	93	23.436
373.022	94	23.688	373.022	94	23.688
376.990	95	23.940	376.990	95	23.940
380.959	96	24.192	380.959	96	24.192
384.927	97	24.444	384.927	97	24.444
388.895	98	24.696	388.895	98	24.696
392.864	99	24.948	392.864	99	24.948

**Horsepower (P.H.) - Cavalli Vapore (C.V.)**

H.P.	C.V.	H.P.	C.V.	H.P.	C.V.
0.98632	1	1.01387	33.5348	34	34.4716
1.9726	2	2.0277	34.5212	35	35.4854
2.9590	3	3.0416	35.5075	36	36.4993
3.9453	4	4.0555	36.4938	37	37.5132
4.9316	5	5.0694	37.4800	38	38.5271
5.9179	6	6.0832	38.4664	39	39.5409
6.9042	7	7.0970	39.4528	40	40.5548
7.8906	8	8.1110	40.4390	41	41.5687
8.8769	9	9.1248	41.4254	42	42.5825
9.8632	10	10.1387	42.4117	43	43.5964
10.8495	11	11.1526	43.3980	44	44.6103
11.8358	12	12.1664	44.3844	45	45.6240
12.8222	13	13.1803	45.3707	46	46.6380
13.8085	14	14.1942	46.3570	47	47.6519
14.7948	15	15.2080	47.3433	48	48.6658
15.7811	16	16.2219	48.3296	49	49.6799
16.7674	17	17.2358	49.3160	50	50.6935
17.7538	18	18.2497	50.3023	51	51.7074
18.7401	19	19.2635	51.2886	52	52.7212
19.7264	20	20.2774	52.2750	53	53.7351
20.7127	21	21.2913	53.2613	54	54.7490
21.6990	22	22.3050	54.2476	55	55.7628
22.6853	23	23.3190	55.2339	56	56.7767
23.6716	24	24.3329	56.2202	57	57.7906
24.6580	25	25.3467	57.2066	58	58.8045
25.6443	26	26.3606	58.1929	59	59.8183
26.6306	27	27.3745	59.1792	60	60.8322
27.6169	28	28.3884	60.1655	61	61.8460
28.6032	29	29.4022	61.1518	62	62.8599
29.5896	30	30.4161	62.1382	63	63.8738
30.5759	31	31.4300	63.1245	64	64.8877
31.5622	32	32.4438	64.1108	65	65.9015
32.5485	33	33.4577	65.0971	66	66.9154
66.0834	67	67.9293	66.0834	67	67.9293
67.0698	68	68.9432	67.0698	68	68.9432
68.0561	69	69.9570	68.0561	69	69.9570
69.0424	70	70.9709	69.0424	70	70.9709
70.0287	71	71.9848	70.0287	71	71.9848
71.0150	72	72.9986	71.0150	72	72.9986
72.0014	73	74.0125	72.0014	73	74.0125
72.9877	74	75.0264	72.9877	74	75.0264
73.9740	75	76.0402	73.9740	75	76.0402
74.9603	76	77.0541	74.9603	76	77.0541
75.9466	77	78.0680	75.9466	77	78.0680
76.9330	78	79.0819	76.9330	78	79.0819
77.9193	79	80.0957	77.9193	79	80.0957
78.9056	80	81.1096	78.9056	80	81.1096
79.8919	81	82.1235	79.8919	81	82.1235
80.8782	82	83.1373	80.8782	82	83.1373
81.8646	83	84.1512	81.8646	83	84.1512
82.8509	84	85.1651	82.8509	84	85.1651
83.8372	85	86.1789	83.8372	85	86.1789
84.8235	86	87.1928	84.8235	86	87.1928
85.8098	87	88.2067	85.8098	87	88.2067
86.7962	88	89.2206	86.7962	88	89.2206
87.7825	89	90.2344	87.7825	89	90.2344
88.7688	90	91.2483	88.7688	90	91.2483
89.7550	91	92.2622	89.7550	91	92.2622
90.7414	92	93.2760	90.7414	92	93.2760
91.7278	93	94.2899	91.7278	93	94.2899
92.7140	94	95.3038	92.7140	94	95.3038
93.7004	95	96.3176	93.7004	95	96.3176
94.6867	96	97.3315	94.6867	96	97.3315
95.6730	97	98.3454	95.6730	97	98.3454
96.6594	98	99.3593	96.6594	98	99.3593
97.6457	99	100.3731	97.6457	99	100.3731

# Liquid-gaseous oxygen, nitrogen, argon, normal-hydrogen, equilibrium-hydrogen and equilibrium conversion data

	Pounds	Tons	SCF Gas	Gallons Liquid	Cu.Ft. Liquid	Liters Liquid			
1 POUND	1.0	0.0005	Oxygen	12.08	0.1050	0.3973			
			Nitrogen	13.80	0.1481	0.5612			
			Argon	9.671	0.08600	0.3255			
1 TON	2,000.0	1.0	Oxygen	24,160.	209.9	794.6			
			Nitrogen	27,605.	296.5	1,122.3			
			Argon	19,342.	172.0	651.1			
1 SCF GAS	0.08281 0.07245 0.1034	0.00004141 0.00003623 0.00005170	1.0	Oxygen	0.008691	0.001162			
				Nitrogen	0.01074	0.001436			
				Argon	0.008893	0.001189			
1 GAL. LIQUID	9.527 6.745 11.63	0.004764 0.003373 0.005814	115.1 93.11 112.5	1.0	0.133680	3.78533			
							Oxygen	71.27	0.03564
							Nitrogen	50.46	0.02523
1 CU.FT. LIQUID	71.27 50.46 86.98	0.03564 0.02523 0.04349	860.6 696.5 841.2	7.48052	1.0	28.3162			
							Oxygen	71.27	0.03564
							Nitrogen	50.46	0.02523
1 LITER LIQUID	2.517 1.782 3.072	0.001259 0.0008910 0.001536	30.38 24.60 29.71	0.264178	0.0353154	1.0			
							Oxygen	2.517	0.001259
							Nitrogen	1.782	0.0008910
1 POUND	1.0	0.0005	Normal-Hydrogen	192.0	1.686	6.381			
			Equilibrium-Hydr.	192.0	1.693	6.409			
			Helium	96.71	0.9593	3.631			
1 TON	2,000.0	1.0	Normal-Hydrogen	383,950.	3,379.	12,762.			
			Equilibrium-Hydr.	383,950.	3,386.	12,819.			
			Helium	193,424.	1,919.	7,262.			
1 SCF GAS	0.005209 0.005209 0.01034	0.000002605 0.000002605 0.000005170	1.0	Normal-Hydrogen	0.008781	0.001176			
				Equilibrium-Hydr.	0.008820	0.001179			
				Helium	0.009919	0.001326			
1 GAL. LIQUID	0.5919 0.5906 1.042	0.0002960 0.0002953 0.0005212	113.6 113.4 100.8	1.0	0.133680	3.78533			
							Normal-Hydrogen	0.5919	0.0002960
							Equilibrium-Hydr.	0.5906	0.0002953
1 CU.FT. LIQUID	4.428 4.418 7.798	0.002214 0.002209 0.003899	850.1 848.2 754.2	7.48052	1.0	28.3162			
							Normal-Hydrogen	4.428	0.002214
							Equilibrium-Hydr.	4.418	0.002209
1 LITER LIQUID	0.1564 0.1560 0.2754	0.00007819 0.00007801 0.0001377	30.02 29.99 26.63	0.264178	0.0353154	1.0			
							Normal-Hydrogen	0.1564	0.00007819
							Equilibrium-Hydr.	0.1560	0.00007801

Liquid quantities refer to conditions at 14.6960 p.s.i.a. pressure and the following temperatures:

OXYGEN: 90.19 °K or - 297.33 °K - NITROGEN: 77.395 °K or - 320.36 °F - ARGON: 87.29 °K or - 302.55 °F

NORMAL-HYDROGEN: 20.39 °K or - 432.2 °F (0.21% orthohydrogen, 99.79% parahydrogen (liquid))

HELIUM: 4.216 °K or - 452.1 °F

SCF gas measured at 70 °F = 14.6960 p.s.i.a.

All values are consistent with standards adopted by the Compressed Gas Association on June 19, 1962.

# Dew point to P.P.M. conversion table

To convert parts per million by volume of water vapour to dew points, use this convenient table.

D.P.	ppm	D.P.	ppm	D.P.	ppm	D.P.	ppm	D.P.	ppm	D.P.	ppm
- 130°F	0.1	- 91°F	3.28	- 73°F	13.3	- 56°F	44.6	- 38°F	144.	- 21°F	400.
- 120	0.25	- 90	3.84	- 72	14.3	- 55	48.0	- 37	153.	- 20	422.
- 110	0.63	- 89	3.84	- 71	15.4	- 54	51.	- 36	164.	- 19	448.
- 105	1.00	- 88	4.15	- 70	16.6	- 53	55.	- 35	174.	- 18	475.
- 104	1.08	- 87	4.50	- 69	17.9	- 52	59.	- 34	185.	- 17	500.
- 103	1.18	- 86	4.78	- 68	19.2	- 51	62.	- 33	196.	- 16	530.
- 102	1.29	- 85	5.3	- 67	20.6	- 50	67.	- 32	210.	- 15	560.
- 101	1.40	- 84	5.7	- 66	22.1	- 49	72.	- 31	222.	- 14	590.
- 100	1.53	- 83	6.2	- 65	23.6	- 48	76.	- 30	235.	- 13	630.
- 99	1.66	- 82	6.6	- 64	25.6	- 47	82.	- 29	250.	- 12	660.
- 98	1.81	- 81	7.2	- 63	27.5	- 46	87.	- 28	265.	- 11	700.
- 97	1.96	- 80	7.8	- 62	29.4	- 45	92.	- 27	283.	- 10	740.
- 96	2.15	- 79	8.4	- 61	31.7	- 44	98.	- 26	300.	- 9	780.
- 95	2.35	- 78	9.1	- 60	34.0	- 43	105.	- 25	317.	- 8	820.
- 94	2.54	- 77	9.8	- 59	36.5	- 42	113.	- 24	338.	- 7	870.
- 93	2.76	- 76	10.5	- 58	39.0	- 41	119.	- 23	358.	- 6	920.
- 92	3.00	- 75	11.4	- 57	41.8	- 40	128.	- 22	378.	- 5	970.
		- 74	12.3			- 39	136.			- 4	1,020.

Conversion of Parts per Million (ppm) to Per Cent: 1 ppm = 0.0001 %, 10 ppm = 0.001 %, 100 ppm = 0.01 %, 1,000 ppm = 0.1 %, 10,000 ppm = 1 %, etc.