

# SECTION 6

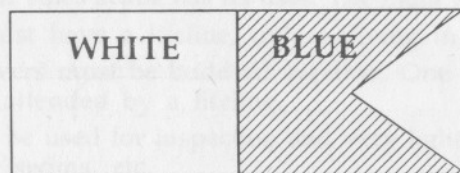
COMMUNICATIONS

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.

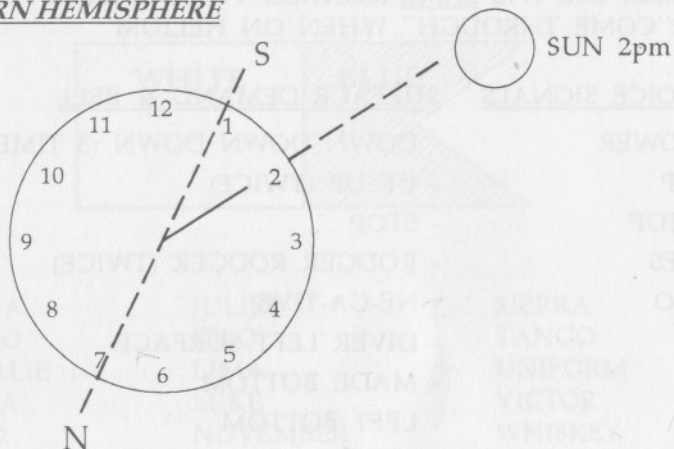
EVERYONE USE THE SAME SIGNALS. VOICE SIGNAL PICKED ARE WHAT "COME THROUGH" WHEN ON HELIUM

<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.

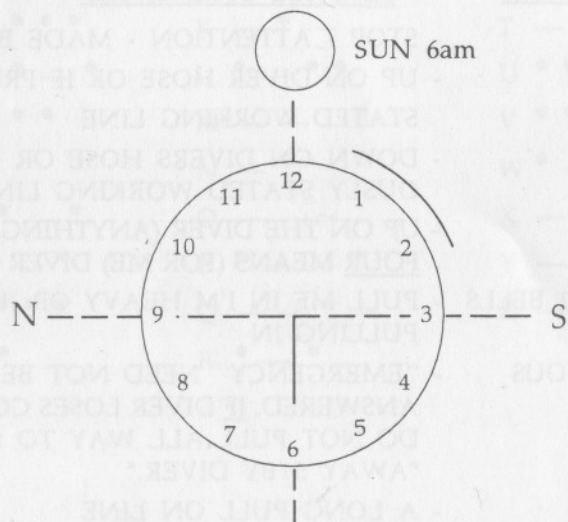
## DIRECTION FINDING USING YOUR WATCH.

### 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	$10^4$	Btu/min	watts	0.2931
	amps/sq in.	$6.452 \times 10^{-4}$		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/	amp-truns/cm	0.01		pints (dry)	64.0
meter	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	sq meters	100.0	Centigrade	Fahrenheit(Co X 9/5) + 32	
	cms of mercury	76.0	Centigrams	grams	0.01
	ft of water	33.90	Centilitres	liters	0.01
	(at 4°C)		Centimeters	feet	$3.281 \times 10^{-2}$
	in. of mercury	29.92		inches	0.3937
	(at 0°C)			kilometers	$10^{-6}$
	kgs/sq cm	1.0333		meters	0.01
	kgs/sq meter	10,332.		miles	$6.214 \times 10^{-6}$
	pounds/sq in.	14.70		millimeters	10.0
	tons/sq ft	1.058		mils	393.7
<b>B</b>					
barrels (oil)	gallons(oil)	42.0		yards	$1.094 \times 10^{-2}$
bars	atmospheres	0.9869	centimeter-dynes	cm-grams	$1.020 \times 10^{-3}$
	dynes/sq cm	$10^9$		meter-kgs	$1.020 \times 10^{-6}$
bars	kgs/sq meter	$1.020 \times 10^{-4}$		pound-feet	$7.376 \times 10^{-6}$
	pounds/sq ft	2,089.	centimeter-grams	cm-dynes	980.7
	pounds/sq in.	14.50		meter-kgs	$10^{-5}$
				pound-feet	$7.233 \times 10^{-6}$
			centimeters of	atmospheres	0.01316
			mercury	feet of water	0.4461
				kgs/sq meter	136.0
				pounds/sq ft	27.85

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	$1.036 \times 10^9$		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	coulombs/sq cm	$10^{-4}$			
meter	coulombs/sq in.	$6.452 \times 10^{-4}$	days	hours	24.0
cubic centimeters	cu feet	$3.531 \times 10^{-6}$		minutes	1,440.0
	cu inches	0.06102		seconds	86,400.0
	cu meters	$10^{-6}$	deciliters	liters	0.1
	cu yards	$1.308 \times 10^{-6}$	decimeters	meters	0.1
	gallons (U.S. liq.)	$2.642 \times 10^{-4}$	degrees (angle)	minutes	60.0
	liters	0.001		radians	0.01745
	pints (U.S. liq.)	$2.113 \times 10^{-3}$		seconds	3,600.0
	quartz(U.S. liq.)	$1.057 \times 10^{-3}$	degrees (terr. great	miles (naut.)	60.0
	bushels (dry)	0.8036	circle)		
cubic feet	cu inches	1,728.0	degrees/sec	radians/sec	0.01745
	cu meters	0.02832		revolutions/min	0.1667
	cu yards	0.03704		revolutions/sec	$2.778 \times 10^3$
	gallons (U.S. liq.)	7.48052	dekagrams	grams	10.0
	liters	28.32	dekaliters	liters	10.0
	pints (U.S. liq.)	59.84	dekameters	meters	10.0
	quartz (U.S. liq.)	29.92	drams	grams	1.7718
cubic feet/min	cu cms/sec	472.0		grains	27.3437
	gallons/sec	0.1247	ounces	0.0625	
	liters/sec	0.4720	dynes	grams	$1.020 \times 10^3$
	pounds of water/	62.43		joules/cm	$10^{-3}$
	min			joules/meter	$10^{-6}$
cubic feet/sec	million gals/day	0.64		kilograms	$1.020 \times 10^{-6}$
	gallons/min	448.831		poundals	$7.233 \times 10^{-6}$
cubic inches	cu cms	16.39		pounds	$2.248 \times 10^{-6}$
	cu feet	$5.787 \times 10^{-4}$		bars	$10^{-6}$
	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	$9.480 \times 10^{-11}$	miles/hr/sec		0.6818
	dyne-centimeters	1.0	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		$2.260 \times 10^{-6}$
ergs/sec	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
<b>F</b>					
farads	microfarads	$10^6$	kilowatts		$1.356 \times 10^{-3}$
faradays	ampere-hours	26.80	rods		40.0
fathoms	coulombs	$9.649 \times 10^4$	feet		660.0
	feet	6.0			
feet	centimeters	30.48			
	kilometers	$3.048 \times 10^{-4}$			
	meters	0.3048			
	miles (naut.)	$1.645 \times 10^{-4}$			
	miles (stat.)	$1.894 \times 10^{-4}$			
	millimeters	304.8			
	mils	$1.2 \times 10^4$			
feet of water	atmospheres	0.02950			
	in. of mercury	0.8826			
	kgs/sq cm	0.03048			
	kgs/sq meter	304.8			
	pounds/sq ft	62.43			
	pounds/sq in.	0.4335			
	cms/sec	0.5080			
	feet/sec	0.01667			
feet/min	kms/hr	0.01829			
	meters/min	0.3048			
	miles/hr	0.01136			
	cms/sec	30.48			
feet/sec	kms/hr	1.097			
	knots	0.5921			
	meters/min	18.29			
	miles/hr	0.6818			
	miles/min	0.01136			
feet/sec/sec	cms/sec/sec	30.48			
	kms/hr/sec	1.097			
	meters/sec/sec	0.3048			

To convert	Into	Multiply by	To convert	Into	Multiply by
<b>G</b>					
gallons	cu cms	3,785.0	gallons (Imp.)		0.83267
	cu feet	0.1337	pounds of water		8.3453
	cu inches	231.0	cu ft/sec		$2.228 \times 10^{-3}$
	cu meters	$3.785 \times 10^{-3}$	liters/sec		0.06308
	cu yards	$4.951 \times 10^{-3}$	cu ft/hr		8.0208
	liters	3.785	lines/sq in.		6.452
	pints	8.0	webers/sq cm		$10^{-6}$
	quarts	4.0	webers/sq in.		$6.452 \times 10^{-6}$
	gallons (U.S. liq.)	1.20095	webers/sq meter		$10^{-4}$
			ampere-turns		0.7958
			amp-turns/cm		0.7958
			amp-turns/in.		2.021
			amp-turns/meter		79.58
			liters		0.1183
			pints (liq.)		0.25
			grains (avdp)		1.0
			grams		0.06480
			ounces (avdp)		$2.0833 \times 10^{-3}$
			pennyweight (troy)		0.01467
<b>H</b>					
hectares	acres	2.471	horsepower (metric)	horsepower	
	sq feet	$1.076 \times 10^6$	0.9863		
hectograms	grams	100.0	(542.5 ft lb/sec)	(500 ft lb/sec)	
hectoliters	liters	100.0	horsepower	horsepower (metric)	1.014
hectometers	meters	100.0	(550 ft lb/sec)	(542.5 ft lb/sec)	
hectowatts	watts	100.0	horsepower	kg-calories/min	10.68
henries	millihenries	1,000.0			
horsepower	Btu/min	42.44			
	foot-lbs/min	33,000.			
	foot-lbs/sec	550.0			
<b>I</b>					
inches	centimeters	2.540	horsepower (boiler)	Btu/hr	33.479
	feet	$8.333 \times 10^{-2}$		kilowatts	9.803
	meters	$2.540 \times 10^{-2}$	horsepower-hrs	Btu	2,547.
	miles	$1.578 \times 10^{-6}$		ergs	$2.6845 \times 10^{13}$
	millimeters	25.4		foot-lbs	$1.98 \times 10^6$
	mils	1,000.0		gram-calories	641,190.
	yards	$2.778 \times 10^3$		joules	$2.684 \times 10^6$
inches of mercury	atmospheres	0.03342		kg-calories	641.1
	feet of water	1.133		kg-meters	$2.737 \times 10^6$
	kgs/sq cm	0.03453		Kilowatt-hrs	0.7457
	kgs/sq meter	345.3	hours	days	$4.167 \times 10^{-2}$
	pounds/sq ft	70.73		minutes	60.0
	pounds/sq in.	0.4912		seconds	3,600.0
inches of water	atmospheres	$2.458 \times 10^3$		weeks	$5.952 \times 10^{-3}$
(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>J</b>					
joules	Btu	$9.480 \times 10^2$			
	ergs	107			
	foot-pounds	0.7376			
	kg-calories	$2.389 \times 10^2$			
	kg-meters	0.1020			
	watts-hrs	$2.778 \times 10^2$			
	grams	$1.020 \times 10^2$			
	dynes	$10^7$			
	joules/meter	100.0			
	(newtons)				
	poundals	723.3			
	pounds	22.48			

To convert	Into	Multiply by	To convert	Into	Multiply by
<b>K</b>					
kilograms	dynes	980,665.	kilometers/hr/sec	meters/min	16.67
	grams	1,000.0		miles/hr	0.6214
	joules/cm	0.09807		cms/sec/sec	27.78
	joules/meter	9.807	kilowatts	ft/sec/sec	0.9113
	(newtons)			meters/sec/sec	0.2778
	poundals	70.93		miles/hr/sec	0.6214
	pounds	2.205		Btu/min	56.92
	tons (long)	$9.842 \times 10^2$		foot-lbs/min	$4.426 \times 10^4$
	tons (short)	$1.102 \times 10^3$		foot-lbs/sec	737.6
kilograms/cu meter	grams/cu cm	0.001	kilowatt-hrs	horsepower	1.341
	pounds/cu ft	0.06243		kg-calories/min	14.34
	pounds/cu in.	$3.613 \times 10^3$		watts	1,000.0
	pounds/mil-foot	$3.406 \times 10^{12}$		Btu	3,413.
kilograms/meter	pounds/ft	0.6720		ergs	$3.600 \times 10^{13}$
kilograms/sq cm	atmospheres	0.9678		foot-lbs	$2.655 \times 10^{13}$
	feet of water	32.81		gram-calories	$2.655 \times 10^6$
	inches of mercury	28.96		gram-calories	859,950.
	pounds/sq ft	2,048.		horsepower-hrs	1.341
	pounds/sq in.	14.22		joules	$3.6 \times 10^6$
kilograms/sq meter	atmospheres	$9.678 \times 10^3$		kg-calories	859.85
	bars	$98.07 \times 10^2$		kg-meters	$3.671 \times 10^6$
	feet of water	$3.281 \times 10^3$		pounds of water evaporated from and at 212°F.	3.53
	inches of mercury	$2.896 \times 10^3$		pounds of water raised from 62° to 212°F.	22.75
	pounds/sq ft	0.2048	knots	feet/hr	6,080.2
	pounds/sq in.	$1.422 \times 10^3$		kilometers/hr	1.8532
kilograms/sq mm	kgs/sq meter	105		nautical miles/hr	1.0
kilogram-calories	Btu	3.968		statute miles/hr	1.1516
	foot-pounds	3,088.		yards/hr	2,027.
	hp-hrs	$1.560 \times 10^3$		feet/sec	1.689
	joules	4,186.	<b>L</b>		
	kg-meters	426.9	league (marine)	miles (naut.)	3.0
	kilojoules	4.186	lines/sq cm	gausses	1.0
	kilowatt-hrs	$1.163 \times 10^3$	lines/sq in.	gausses	0.1550
kilograms meters	Btu	$9.294 \times 10^3$	lines/sq in.	webers/sq cm	$1.550 \times 10^{-9}$
	ergs	$9.804 \times 10^7$		webers/sq in.	$10^{-9}$
	foot-pounds	7.233		webers/sq meter	$1.550 \times 10^{-6}$
	joules	9.804	links (engineer's)	inches	12.0
	kg-calories	$2.342 \times 10^{-3}$	links (surveyor's)	inches	7.92
	kilowatt-hrs	$2.723 \times 10^{-6}$	liters	bushels (U.S. dry)	0.
kilolines	maxwells	1,000.0		cu cm	1,000.0
kiloliters	liters	1,000.0		cu feet	0.03531
kilometers	centimeters	$10^5$		cu inches	61.02
	feet	3,281.		cu meters	0.001
	inches	$3.937 \times 10^4$		cu yards	$1.308 \times 10^{-3}$
	meters	1,000.0	liters	gallons (U.S. liq.)	0.2642
	miles	0.6214		pints (U.S. liq.)	2.113
	millimeters	$10^6$		quarts (U.S. liq.)	1.057
	yards	1,094.		cu ft/sec	$5.886 \times 10^{-4}$
kilometers/hr	cms/sec	27.78			
	feet/min	54.68			
	feet/sec	0.9113			
	knots	0.5396			

To convert	Into	Multiply by	To convert	Into	Multiply by
<b>M</b>					
lumens/sq ft	gals/sec	$4.403 \times 10^{-3}$	meters	meters	1,609.
lux	foot-candles	1.0	miles (naut.)	miles (naut.)	0.8684
	foot-candles	0.0929	yards	yards	1,760.
			cms/sec	cms/sec	44.70
			feet/min	feet/min	88.
			feet/sec	feet/sec	1.467
			kms/hr	kms/hr	1.609
			kms/min	kms/min	0.02682
			knots	knots	0.8684
			meters/min	meters/min	26.82
			miles/min	miles/min	0.01667
			cms/sec/sec	cms/sec/sec	44.70
			feet/sec/sec	feet/sec/sec	1.467
			kms/hr/sec	kms/hr/sec	1.609
			meters/sec/sec	meters/sec/sec	0.4470
			cms/sec	cms/sec	2,682.
			feet/sec	feet/sec	88.
			kms/min	kms/min	1.609
			miles (naut.)/min	miles (naut.)/min	0.8684
			miles/hr	miles/hr	60.0
			cu inches	cu inches	$9.425 \times 10^{-6}$
			kilograms	kilograms	1,000.
			grams	grams	0.001
			parts/million	parts/million	1.0
			henries	henries	0.001
			liters	liters	0.001
			centimeters	centimeters	0.1
			feet	feet	$3.281 \times 10^{-3}$
			inches	inches	0.03937
			kilometers	kilometers	$10^{-6}$
			meters	meters	0.001
			miles	miles	$6.214 \times 10^{-7}$
			mils	mils	39.37
			yards	yards	$1.094 \times 10^{-3}$
			cu ft/sec	cu ft/sec	1.54723
			centimeters	centimeters	$2.540 \times 10^{-3}$
			feet	feet	$8.333 \times 10^{-6}$
			inches	inches	0.001
			kilometers	kilometers	$2.540 \times 10^{-6}$
			yards	yards	$2.778 \times 10^{-6}$
			cu ft/min	cu ft/min	1.5
			degrees	degrees	0.01667
			quadrants	quadrants	$1.852 \times 10^{-4}$
			radians	radians	$2.909 \times 10^{-4}$
			seconds	seconds	60.0
			kilograms	kilograms	10.0
			kilometers	kilometers	10.0
			kilowatts	kilowatts	10.0
			<b>N</b>		
			decibels	decibels	8.686

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

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



To convert	Into	Multiply by	To convert	Into	Multiply by
	tons (short)	1.120			
tons (metric)	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	$9.144 \times 10^4$
	pounds	2,000.		meters	0.9144
	pounds (troy)	2,430.56		miles (naut.)	$4.934 \times 10^6$
	tons (long)	0.89287		miles (stat.)	$5.682 \times 10^4$
	tons (metric)	0.9076		millimeters	914.4
tons (short)/sq ft	kgs/sq meter	9.765.			
	pounds/sq in.	2,000.			
tons of	pounds of	83.333			
water/24 hrs	water/hr				
	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	$1.341 \times 10^{-3}$
	horsepower (metric)	$1.360 \times 10^{-3}$
	kg-calories/min	0.01433
	kilowatts	0.001
watt-hours	Btu	3.413
	ergs	$3.60 \times 10^{10}$
	foot-pounds	2,656.
	gram-calories	859.85
	horsepower-hrs	$1.341 \times 10^3$
	kilogram-calories	0.8598
	kilogram-meters	367.2
	kilowatt-hrs	0.001
webers	maxwells	108
	kilolines	105
webers/sq in.	gausses	$1.550 \times 10^3$
	lines/sq in.	108
	webers/sq cm	0.1550
	webers/sq meter	1,550.
webers/sq meter	gausses	104
	lines/sq in.	$6.452 \times 10^4$
	webers/sq cm	10.4
	webers/sq in.	$6.452 \times 10^4$

**Degrees Fahrenheit** -  $C = F^\circ - 32 \times 0.555$   
**Degrees Centigrade ( $^\circ$  C.)** -  $F = C^\circ \times 1.8 + 32$

- 459.4 , 0		1 , 60		61 , 290		300 , 890		900 , 3000	
C	F	C	F	C	F	C	F	C	F
- 273	- 459.4	- 17.2	1	16.1	61	149	300	482	900
- 268	- 450	- 16.7	2	16.7	62	154	310	488	910
- 262	- 440	- 16.1	3	17.2	63	160	320	493	920
- 257	- 430	- 15.6	4	17.8	64	166	330	499	930
- 251	- 420	- 15.0	5	18.3	65	171	340	504	940
- 246	- 410	- 14.4	6	18.9	66	177	350	510	950
- 240	- 400	- 13.9	7	19.4	67	182	360	516	960
- 234	- 390	- 13.3	8	20.0	68	188	370	521	970
- 229	- 380	- 12.8	9	20.6	69	193	380	527	980
- 223	- 370	- 12.2	10	21.1	70	199	390	532	990
- 218	- 360	- 11.7	11	21.7	71	204	400	538	1000
- 212	- 350	- 11.1	12	22.2	72	210	410	549	1020
- 207	- 340	- 10.6	13	22.8	73	216	420	560	1040
- 201	- 330	- 10.0	14	23.3	74	221	430	571	1060
- 196	- 320	- 9.4	15	23.9	75	227	440	582	1080
- 190	- 310	- 8.9	16	24.4	76	232	450	593	1100
- 184	- 300	- 8.3	17	25.0	77	238	460	604	1120
- 179	- 290	- 7.8	18	25.6	78	243	470	616	1140
- 173	- 280	- 7.2	19	26.1	79	249	480	627	1160
- 169	- 273	- 6.7	20	26.7	80	254	490	638	1180
- 168	- 270	- 6.1	21	27.2	81	260	500	649	1200
- 162	- 260	- 5.6	22	27.8	82	266	510	660	1220
- 157	- 250	- 5.0	23	28.3	83	271	520	671	1240
- 151	- 240	- 4.4	24	28.9	84	277	530	682	1260
- 146	- 230	- 3.9	25	29.4	85	282	540	693	1280
- 140	- 220	- 3.3	26	30.0	86	288	550	704	1300
- 134	- 210	- 2.8	27	30.6	87	293	560	716	1320
- 129	- 200	- 2.2	28	31.1	88	299	570	727	1340
- 123	- 180	- 1.7	29	31.7	89	304	580	738	1360
- 112	- 170	- 1.1	30	32.2	90	310	590	749	1380
- 107	- 160	- 0.6	31	32.8	91	316	600	760	1400
- 101	- 150	0	32	33.3	92	321	610	771	1420
- 96	- 140	0.6	33	33.9	93	327	620	782	1440
- 90	- 130	1.1	35	34.4	94	332	630	793	1460
- 84	- 120	1.7	35	35.0	95	338	640	804	1480
- 79	- 110	2.2	36	35.6	96	343	650	815	1500
- 73	- 100	2.8	37	36.1	97	349	660	826	1520
- 68	- 90	3.3	38	36.7	98	354	670	837	1540
- 62	- 80	3.9	39	37.2	99	360	680	848	1560
- 57	- 70	4.4	40	37.8	100	366	690	859	1580
- 51	- 60	5.0	41	43	101	371	700	870	1600
- 46	- 50	5.6	42	49	120	377	710	881	1620
- 40	- 40	6.1	43	54	130	382	720	892	1640
- 34	- 30	6.7	44	60	140	388	730	903	1660
- 29	- 20	7.2	45	66	150	393	740	914	1680
- 23	- 10	7.8	46	71	160	399	750	925	1700
- 17.8	- 0	8.3	47	77	170	404	760	936	1720
		8.9	48	82	180	410	770	947	1740
		9.4	49	88	190	416	780	958	1760
		10.0	50	93	200	421	790	969	1780
		10.6	51	99	210	427	800	980	1800
		11.1	52	100	212	432	810	991	1820
		11.7	53	104	220	438	820	1002	1840
		12.2	54	110	230	443	830	1013	1860
		12.8	55	116	240	449	840	1024	1880
		13.3	56	121	250	454	850	1035	1900
		13.9	57	127	260	460	860	1046	1920
		14.4	58	132	270	466	870	1057	1940
		15.0	59	138	280	471	880	1068	1960
		15.6	60	143	290	477	890	1079	1980



Cubic Feet (cu. ft.)

cu. m.			cu. ft.			cu. m.			cu. ft.		
0.028317	1	35.3147	0.96277	34	1200.70	1.89723	67	2366.08			
0.05668	2	70.63	0.99109	35	1236.01	1.92555	68	2401.40			
0.08495	3	105.94	1.01941	36	1271.33	1.95386	69	2436.70			
0.11327	4	141.26	1.04772	37	1306.64	1.98218	70	2472.03			
0.14158	5	176.57	1.07604	38	1341.96	2.01050	71	2507.34			
0.16990	6	211.89	1.10436	39	1377.27	2.03881	72	2542.66			
0.19822	7	247.20	1.13267	40	1412.59	2.06713	73	2577.97			
0.22654	8	282.52	1.16099	41	1447.90	2.09545	74	2613.28			
0.25485	9	317.83	1.18931	42	1483.22	2.12376	75	2648.60			
0.28317	10	353.15	1.21762	43	1518.53	2.15208	76	2683.90			
0.31149	11	388.46	1.24594	44	1553.84	2.18040	77	2719.23			
0.33980	12	423.78	1.27426	45	1589.16	2.20872	78	2754.54			
0.36812	13	459.09	1.30258	46	1624.47	2.23703	79	2789.86			
0.39612	14	494.40	1.33089	47	1659.79	2.26535	80	2825.17			
0.42475	15	529.72	1.35921	48	1695.10	2.29367	81	2860.49			
0.45307	16	565.03	1.38753	49	1730.42	2.32198	82	2895.80			
0.48139	17	600.35	1.41584	50	1765.73	2.35030	83	2931.12			
0.50970	18	635.66	1.44416	51	1801.05	2.37862	84	2966.43			
0.53802	19	670.98	1.47248	52	1836.36	2.40693	85	3001.75			
0.56634	20	706.29	1.50079	53	1871.68	2.43525	86	3037.06			
0.59465	21	741.60	1.52910	54	1906.99	2.46357	87	3072.38			
0.62297	22	776.92	1.55743	55	1942.30	2.49188	88	3107.69			
0.65129	23	812.24	1.58574	56	1977.62	2.52020	89	3134.00			
0.67960	24	847.55	1.61406	57	2012.94	2.54852	90	3178.32			
0.70792	25	882.87	1.64238	58	2048.25	2.57683	91				
0.73624	26	918.18	1.67069	59	2083.56	2.60515	92	3248.95			
0.76456	27	953.50	1.69901	60	2118.88	2.63347	93	3284.26			
0.79287	28	988.80	1.72733	61	2154.19	2.66178	94	3319.58			
0.82119	29	1024.13	1.75565	62	2189.51	2.69010	95	3354.89			
0.84951	30	1059.44	1.78396	63	2224.82	2.71842	96				
0.87782	31	1094.75	1.81228	64	2260.14	2.74674	97	3425.52			
0.90614	32	1130.07	1.84060	65	2295.45	2.77505	98	3460.84			
0.93446	33	1165.38	1.86890	66	2330.77	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	20.4216	67	219.816
0.6096	2	6.562	10.6680	35	114.829	20.7264	68	223.097
0.9144	3	9.843	10.9728	36	118.110	21.0312	69	226.378
1.2192	4	13.123	11.2776	37	121.390	21.3360	70	229.659
1.5240	5	16.404	11.5824	38	124.672	21.6408	71	232.940
1.8288	6	19.685	11.8872	39	127.953	21.9456	72	236.220
2.1336	7	22.966	12.1920	40	131.234	22.2504	73	239.501
2.4384	8	26.247	12.4968	41	134.514	22.5552	74	242.782
2.7432	9	29.528	12.8016	42	137.795	22.8600	75	246.063
3.0480	10	32.808	13.1064	43	141.076	23.1648	76	249.344
3.3528	11	36.089	13.4112	44	144.357	23.4696	77	252.625
3.6576	12	39.370	13.7160	45	147.638	23.7744	78	255.906
3.9624	13	42.650	14.0208	46	150.919	24.0792	79	259.186
4.2672	14	45.932	14.3256	47	154.199	24.3840	80	262.467
4.5720	15	49.213	14.6304	48	157.480	24.6888	81	265.748
4.8768	16	52.493	14.9352	49	160.760	24.9936	82	269.029
5.1816	17	55.774	15.2400	50	164.042	25.2984	83	272.310
5.4864	18	59.055	15.5448	51	167.323	25.6032	84	275.590
5.7912	19	62.336	15.8496	52	170.604	25.9080	85	278.871
6.0960	20	65.617	16.1544	53	173.884	26.2128	86	282.152
6.4008	21	68.898	16.4592	54	177.165	26.5176	87	285.433
6.7056	22	72.178	16.7640	55	180.446	26.8224	88	288.714
7.0104	23	75.459	17.0688	56	183.727	27.1272	89	291.995
7.3152	24	78.740	17.3736	57	187.008	27.4320	90	295.276
7.6200	25	82.020	17.6784	58	190.289	27.7368	91	298.557
7.9248	26	85.302	17.9832	59	193.570	28.0416	92	301.837
8.2296	27	88.583	18.2880	60	196.850	28.3464	93	305.116
8.5344	28	91.863	18.5928	61	200.131	28.6512	94	
8.8392	29	95.144	18.8976	62	203.412	28.9560	95	311.680
9.1440	30	98.425	19.2024	63	206.693	29.2608	96	314.960
9.4488	31	101.706	19.5072	64	209.974	29.5656	97	318.241
9.7536	32	104.987	19.8120	65	213.255	29.8704	98	321.522
10.0584	33	108.268	20.1168	66	216.535	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



**Square Inches** (sq. in.)

sq. cm.			sq. in.			sq. cm.			sq. in.		
6.452	1	0.155	219.354	34	5.270	432.257	67	10.385			
12.903	2	0.310	225.806	35	5.425	438.709	68	10.540			
19.355	3	0.465	232.258	36	5.580	445.160	69	10.695			
25.806	4	0.620	238.709	37	5.735	451.612	70	10.850			
32.258	5	0.775	245.160	38	5.890	458.064	71	11.005			
38.710	6	0.930	251.160	39	6.045	464.515	72	11.160			
45.161	7	1.085	258.064	40	6.200	470.967	73	11.315			
51.613	8	1.240	264.516	41	6.355	477.418	74	11.470			
58.064	9	1.395	270.967	42	6.510	483.870	75	11.625			
64.516	10	1.550	277.419	43	6.665	490.322	76	11.780			
70.968	11	1.705	283.870	44	6.820	496.773	77	11.935			
77.419	12	1.860	290.322	45	6.975	503.225	78	12.090			
83.870	13	2.015	296.774	46	7.130	509.676	79	12.245			
90.322	14	2.170	303.225	47	7.285	516.128	80				
96.774	15	2.325	309.677	48	7.440	522.579	81	12.555			
103.226	16	2.480	316.128	49	7.595	529.030	82	12.710			
109.677	17	2.635	322.580	50	7.750	535.483	83	12.865			
116.129	18	2.790	329.032	51	7.905	541.934	84	13.020			
122.580	19	2.945	335.483	52	8.060	548.386	85	13.175			
129.032	20	3.100	341.935	53	8.215	554.838	86	13.330			
135.484	21	3.255	348.386	54	8.370	561.289	87	13.485			
141.935	22	3.410	354.838	55	8.525	567.741	88	13.640			
148.387	23	3.565	361.290	56	8.680	574.192	89	13.795			
154.838	24	3.720	367.741	57	8.835	580.644	90	13.950			
161.290	25	3.875	374.193	58	8.990	587.096	91	14.105			
167.742	26	4.030	380.644	59	9.145	593.547	92	14.260			
174.193	27	4.185	387.096	60	9.300	599.999	93	14.415			
180.645	28	4.340	393.548	61	9.455	606.450	94	14.570			
187.096	29	4.495	399.999	62	9.610	612.902	95	14.725			
193.548	30	4.650	406.450	63	9.765	619.354	96	14.880			
200.000	31	4.805	412.902	64	9.920	625.805	97	15.035			
206.451	32	4.960	419.354	65	10.075	632.257	98	15.190			
212.903	33	5.115	425.806	66	10.230	638.708	99	15.345			

## Cubic Inches (cu. in.)

cu. cm.			cu. in.			cu. cm.			cu. in.		
16.387064	1	0.061024	557.160	34	2.0748	1097.933	67	4.0886			
32.774	2	0.1220	573.547	35	2.1358	1114.320	68	4.1496			
49.161	3	0.1831	589.934	36	2.1969	1130.707	69	4.2107			
65.548	4	0.2441	606.321	37	2.2579	1147.094	70	4.2717			
81.935	5	0.3050	622.708	38	2.3189	1163.480	71	4.3327			
98.322	6	0.3661	639.708	39	2.3799	1179.868	72	4.3937			
114.709	7	0.4272	655.483	40	2.4410	1196.255	73	4.4548			
131.097	8	0.4882	671.876	41	2.5020	1212.642	74	4.5158			
147.484	9	0.5492	688.257	42	2.5630	1229.295	75	4.5768			
163.871	10	0.6102	704.644	43	2.6440	1245.417	76	4.6378			
180.258	11	0.6713	721.418	44	2.6851	1261.804	77	4.6988			
196.645	12	0.7323	737.418	45	2.7461	1278.190	78	4.7599			
213.032	13	0.7933	753.805	46	2.8071	1294.578	79	4.8209			
229.419	14	0.8543	770.192	47	2.8680	1310.965	80	4.8819			
245.806	15	0.9154	786.579	48	2.9292	1327.352	81	4.9429			
278.580	16	0.9764	802.966	49	2.9902	1343.739	82	5.0040			
278.580	17	1.0374	819.353	50	3.0512	1360.126	83	5.0650			
294.947	18	1.0984	835.740	51	3.1122	1376.513	84	5.1260			
311.354	19	1.1595	852.127	52	3.1732	1392.900	85	5.1870			
327.741	20	1.2205	868.514	53	3.2343	1409.288	86	5.2481			
344.128	21	1.2815	884.901	54	3.2953	1425.675	87	5.3091			
360.515	22	1.3425	901.288	55	3.3563	1442.062	88	5.3701			
376.902	23	1.4036	917.675	56	3.4173	1458.449	89	5.4310			
393.290	24	1.4646	934.062	57	3.4784	1474.836	90	5.4922			
409.677	25	1.5256	950.449	58	3.5394	1491.223	91	5.5532			
426.064	26	1.5866	966.837	59	3.6004	1507.610	92	5.6142			
442.451	27	1.6476	983.224	60	3.6614	1523.997	93	5.6752			
458.838	28	1.7087	999.611	61	3.7225	1540.384	94	5.7363			
475.225	29	1.7697	1015.998	62	3.7835	1556.771	95	5.7973			
491.612	30	1.8307	1032.385	63	3.8445	1573.158	96	5.8583			
507.999	31	1.8917	1048.772	64	3.9055	1589.545	97	5.9193			
524.386	32	1.9528	1065.159	65	3.9666	1605.932	98	5.9804			
540.773	33	2.0138	1081.546	66	4.0276	1622.319	99	6.0414			



**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	37.396	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	4.3395	240.936	53	11.6587	390.953	86	18.9179
95.465	21	4.6195	245.482	54	11.8787	395.953	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
425.5920	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

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

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

H.P.			C.V.			H.P.			C.V.		
0.98632	1	1.01387	33.5348	34	34.4716	66.0834	67	67.9293			
1.9726	2	2.0277	34.5212	35	35.4854	67.0698	68	68.9432			
2.9590	3	3.0416	35.5075	36	36.4993	68.0561	69	69.9570			
3.9453	4	4.0555	36.4938	37	37.5132	69.0424	70	70.9709			
4.9316	5	5.0694	37.4800	38	38.5217	70.0287	71	71.9848			
5.9179	6	6.0832	38.4664	39	39.5409	71.0150	72	72.9986			
6.9042	7	7.0970	39.4528	40	40.5548	72.0014	73	74.0125			
7.8906	8	8.1110	40.4390	41	41.5687	72.9877	74	75.0264			
8.8769	9	9.1248	41.4254	42	42.5825	73.9740	75	76.0402			
9.8632	10	10.1387	42.4117	43	43.5964	74.9603	76	77.0541			
10.8495	11	11.1526	43.3980	44	44.6103	75.9466	77	78.0680			
11.8358	12	12.1664	44.3844	45	45.6240	76.9330	78	79.0819			
12.8222	13	13.1803	45.3707	46	46.6380	77.9193	79	80.0957			
13.8085	14	14.1942	46.3570	47	47.6519	78.9056	80	81.1096			
14.7948	15	15.2080	47.3433	48	48.6658	79.8919	81	82.1235			
15.7811	16	16.2219	48.3296	49	49.6769	80.8782	82	83.1373			
16.7674	17	17.2358	49.3160	50	50.6935	81.8646	83	84.1512			
17.7538	18	18.2497	50.3023	51	51.7074	82.8509	84	85.1651			
18.7401	19	19.2635	51.2886	52	52.7212	83.8372	85	86.1789			
19.7264	20	20.2774	52.2750	53	53.7351	84.8235	86	87.1928			
20.7127	21	21.2913	53.2613	54	54.7490	85.8098	87	88.2067			
21.6990	22	22.3050	54.2476	55	55.7628	86.7962	88	89.2206			
22.6853	23	23.3190	55.2339	56	56.7767	87.7825	89	90.2344			
23.6716	24	24.3329	56.2202	57	57.7906	88.7688	90	91.2483			
24.6580	25	25.3467	57.2066	58	58.8045	89.7550	91	92.2622			
25.6443	26	26.3606	58.1929	59	59.8183	90.7414	92	93.2760			
26.6306	27	27.3745	59.1792	60	60.8322	91.7278	93	94.2899			
27.6169	28	28.3884	60.1655	61	61.8460	92.7140	94	95.3038			
28.6032	29	29.4022	61.1518	62	62.8599	93.7004	95	96.3176			
29.5896	30	30.4161	62.1382	63	63.8738	94.6867	96	97.3315			
30.5759	31	31.4300	63.1245	64	64.8877	95.6730	97	98.3454			
31.5622	32	32.4438	64.1108	65	65.9015	96.6594	98	99.3593			
32.5485	33	33.4577	65.0971	66	66.9154	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 { Oxygen Nitrogen Argon	1.0	0.0005	12.08 13.80 9.671	0.1050 0.1481 0.08600	0.01403 0.01982 0.01150	0.3973 0.5612 0.3255
1 TON { Oxygen Nitrogen Argon	2,000.0	1.0	24,160. 27,605. 19,342.	209.9 296.5 172.0	28.06 39.64 22.99	794.6 1,122.3 651.1
1 SCF GAS { Oxygen Nitrogen Argon	0.08281 0.07245 0.1034	0.00004141 0.00003623 0.00005170	1.0	0.008691 0.01074 0.008893	0.001162 0.001436 0.001189	0.03290 0.04066 0.03366
1 GAL. LIQUID { Oxygen Nitrogen Argon	9.527 6.745 11.63	0.004764 0.003373 0.005814	115.1 93.11 112.5	1.0	0.133680	3.78533
1 CU.FT. LIQUID { Oxygen Nitrogen Argon	71.27 50.46 86.98	0.03564 0.02523 0.04349	860.6 696.5 841.2	7.48052	1.0	28.3162
1 LITER LIQUID { Oxygen Nitrogen Argon	2.517 1.782 3.072	0.001259 0.0008910 0.001536	30.38 24.60 29.71	0.264178	0.0353154	1.0
1 POUND { Normal-Hydrogen Equilibrium-Hydr. Helium	1.0	0.0005	192.0 192.0 96.71	1.686 1.693 0.9593	0.2258 0.2263 0.1282	6.381 6.409 3.631
1 TON { Normal-Hydrogen Equilibrium-Hydr. Helium	2,000.0	1.0	383,950. 383,950. 193,424.	3,379. 3,386. 1,919.	451.7 452.7 256.5	12,762. 12,819. 7,262.
1 SCF GAS { Normal-Hydrogen Equilibrium-Hydr. Helium	0.005209 0.005209 0.01034	0.000002605 0.000002605 0.000005170	1.0	0.008781 0.008820 0.009919	0.001176 0.001179 0.001326	0.03288 0.03339 0.03755
1 GAL. LIQUID { Normal-Hydrogen Equilibrium-Hydr. Helium	0.5919 0.5906 1.042	0.0002960 0.0002953 0.0005212	113.6 113.4 100.8	1.0	0.133680	3.78533
1 CU.FT. LIQUID { Normal-Hydrogen Equilibrium-Hydr. Helium	4.428 4.418 7.798	0.002214 0.002209 0.003899	850.1 848.2 754.2	7.48052	1.0	28.3162
1 LITER LIQUID { Normal-Hydrogen Equilibrium-Hydr. Helium	0.1564 0.1560 0.2754	0.00007819 0.00007801 0.0001377	30.02 29.99 26.63	0.264178	0.0353154	1.0

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 = 10 %, etc.