

# Technical Information: Equivalents and Conversions

## Table of Equivalent Temperatures

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-50	-58	75	167	200	392	325	617	450	842	575	1067	700	1292	825	1517
-45	-49	80	176	205	401	330	626	455	851	580	1076	705	1301	830	1526
-40	-40	85	185	210	410	335	635	460	860	585	1085	710	1310	835	1535
-35	-31	90	194	215	419	340	644	465	869	590	1094	715	1319	840	1544
-30	-22	95	203	220	428	345	653	470	878	595	1103	720	1328	845	1553
-25	-13	100	212	225	437	350	662	475	887	600	1112	725	1337	850	1562
-20	-4	105	221	230	446	355	671	480	896	605	1121	730	1346	855	1571
-15	-5	110	230	235	455	360	680	485	905	610	1130	735	1355	860	1580
-10	14	115	239	240	464	365	689	490	914	615	1139	740	1364	865	1589
-5	23	120	248	245	473	370	698	495	923	620	1148	745	1373	870	1598
0	32	125	257	250	482	375	707	500	932	625	1157	750	1382	875	1607
5	41	130	266	255	491	380	716	505	941	630	1166	755	1391	880	1616
10	50	135	275	260	500	385	725	510	950	635	1175	760	1400	885	1625
15	59	140	284	265	509	390	734	515	959	640	1184	765	1409	890	1634
20	68	145	293	270	518	395	743	520	968	645	1193	770	1418	895	1643
25	77	150	302	275	527	400	752	525	977	650	1202	775	1427	900	1652
30	86	155	311	280	536	405	761	530	986	655	1211	780	1436	905	1661
35	95	160	320	285	545	410	770	535	995	660	1220	785	1445	910	1670
40	104	165	329	290	554	415	779	540	1004	665	1229	790	1454	915	1679
45	113	170	338	295	563	420	788	545	1013	670	1238	795	1463	920	1688
50	122	175	347	300	572	425	797	550	1022	675	1247	800	1472	925	1697
55	131	180	356	305	581	430	806	555	1031	680	1256	805	1481	930	1706
60	140	185	365	310	590	435	815	560	1040	685	1265	810	1490	935	1715
65	149	190	374	315	599	440	824	565	1049	690	1274	815	1499	940	1724
70	158	195	383	320	608	445	833	570	1058	695	1283	820	1508	945	1733

## Values for Interpolation in the Above

1°C = 1.8°F	4°C = 7.2°F	7°C = 12.6°F	1°F = .55°C	4°F = 2.22°C	7°F = 3.88°C
2°C = 3.6°F	5°C = 9.0°F	8°C = 14.4°F	2°F = 1.11°C	5°F = 2.77°C	8°F = 4.44°C
3°C = 5.4°F	6°C = 10.8°F	9°C = 16.2°F	3°F = 1.66°C	6°F = 3.33°C	9°F = 5.00°C

All decimals are exact.

All decimals are repeating decimals.

## Temperature Conversions

°F (Fahrenheit)	=	$(9/5^{\circ}\text{C}) + 32$
°C (Celsius)	=	$5/9 (^{\circ}\text{F}-32)$
K (Kelvin)	=	°C + 273
°R (Rankine)	=	°F + 460

# Technical Information: Equivalents and Conversions

## Decimal & Millimeter Equivalents

DECIMALS		MILLIMETERS	DECIMALS		MILLIMETERS	MM	IN	MM	IN	MM	IN
	$\frac{1}{64}$	.015625	0.397		$\frac{33}{64}$	.515625	13.097	.01 - .0004	.67 - .0264	35 - 1.378	
	$\frac{1}{32}$	.031250	0.794		$\frac{17}{32}$	.531250	13.494	.02 - .0008	.68 - .0268	36 - 1.417	
	$\frac{3}{64}$	.046875	1.191		$\frac{35}{64}$	.546875	13.891	.03 - .0012	.69 - .0272	37 - 1.457	
	$\frac{1}{16}$	.062500	1.588		$\frac{9}{16}$	.562500	14.288	.04 - .0016	.70 - .0276	38 - 1.496	
	$\frac{5}{64}$	.078125	1.984		$\frac{37}{64}$	.578125	14.684	.05 - .0020	.71 - .0280	39 - 1.535	
	$\frac{3}{32}$	.093750	2.381		$\frac{19}{32}$	.593750	15.081	.06 - .0024	.72 - .0284	40 - 1.575	
	$\frac{7}{64}$	.109375	2.778		$\frac{39}{64}$	.609375	15.478	.07 - .0028	.73 - .0287	41 - 1.614	
<b>1</b>	$\frac{1}{8}$	.125000	3.175		<b>5</b>	$\frac{5}{8}$	.625000	15.875	.08 - .0031	.74 - .0291	42 - 1.654
	$\frac{9}{64}$	.140625	3.572		$\frac{41}{64}$	.640625	16.272	.09 - .0035	.75 - .0295	43 - 1.693	
	$\frac{5}{32}$	.156250	3.969		$\frac{21}{32}$	.656250	16.669	.10 - .0039	.76 - .0299	44 - 1.732	
	$\frac{11}{64}$	.171875	4.366		$\frac{43}{64}$	.671875	17.066	.11 - .0043	.77 - .0303	45 - 1.772	
	$\frac{3}{16}$	.187500	4.763		$\frac{11}{16}$	.687500	17.463	.12 - .0047	.78 - .0307	46 - 1.811	
	$\frac{13}{64}$	.203125	5.159		$\frac{45}{64}$	.703125	17.859	.13 - .0051	.79 - .0311	47 - 1.850	
	$\frac{7}{32}$	.218750	5.556		$\frac{23}{32}$	.718750	18.256	.14 - .0055	.80 - .0315	48 - 1.890	
	$\frac{15}{64}$	.234375	5.953		$\frac{47}{64}$	.734375	18.653	.15 - .0059	.81 - .0319	49 - 1.929	
<b>1</b>	$\frac{1}{4}$	.250000	6.350		<b>3</b>	$\frac{3}{4}$	.750000	19.050	.16 - .0063	.82 - .0323	50 - 1.969
	$\frac{17}{64}$	.265625	6.747		$\frac{49}{64}$	.765625	19.447	.17 - .0067	.83 - .0327	51 - 2.008	
	$\frac{9}{32}$	.281250	7.144		$\frac{25}{32}$	.781250	19.844	.18 - .0071	.84 - .0331	52 - 2.047	
	$\frac{19}{64}$	.296875	7.541		$\frac{51}{64}$	.796875	20.241	.19 - .0075	.85 - .0335	53 - 2.087	
	$\frac{5}{16}$	.312500	7.938		$\frac{13}{16}$	.812500	20.638	.20 - .0079	.86 - .0339	54 - 2.126	
	$\frac{21}{64}$	.328125	8.334		$\frac{53}{64}$	.828125	21.034	.21 - .0083	.87 - .0343	55 - 2.165	
	$\frac{11}{32}$	.343750	8.731		$\frac{27}{32}$	.843750	21.431	.22 - .0087	.88 - .0347	56 - 2.205	
	$\frac{23}{64}$	.359375	9.128		$\frac{55}{64}$	.859375	21.828	.23 - .0091	.89 - .0350	57 - 2.244	
<b>3</b>	$\frac{3}{8}$	.375000	9.525		<b>7</b>	$\frac{7}{8}$	.875000	22.225	.24 - .0094	.90 - .0354	58 - 2.284
	$\frac{25}{64}$	.390625	9.922		$\frac{57}{64}$	.890625	22.622	.25 - .0098	.91 - .0358	59 - 2.323	
	$\frac{13}{32}$	.406250	10.319		$\frac{29}{32}$	.906250	23.019	.26 - .0102	.92 - .0362	60 - 2.362	
	$\frac{27}{64}$	.421875	10.716		$\frac{59}{64}$	.921875	23.416	.27 - .0106	.93 - .0366	61 - 2.402	
	$\frac{7}{16}$	.437500	11.113		$\frac{15}{16}$	.937500	23.813	.28 - .0110	.94 - .0370	62 - 2.441	
	$\frac{29}{64}$	.453125	11.509		$\frac{61}{64}$	.953125	24.209	.29 - .0114	.95 - .0374	63 - 2.480	
	$\frac{15}{32}$	.468750	11.906		$\frac{31}{32}$	.968750	24.606	.30 - .0118	.96 - .0378	64 - 2.520	
	$\frac{31}{64}$	.484375	12.303		$\frac{63}{64}$	.984375	25.003	.31 - .0122	.97 - .0382	65 - 2.559	
<b>1</b>	$\frac{1}{2}$	.500000	12.700		<b>1</b>	1.000000	25.400	.32 - .0126	.98 - .0386	66 - 2.598	
								.33 - .0130	.99 - .0390	67 - 2.638	
								.34 - .0134	1 - .0394	68 - 2.677	
								.35 - .0138	2 - .0408	69 - 2.717	
								.36 - .0142	3 - .0422	70 - 2.756	
								.37 - .0146	4 - .0436	71 - 2.795	
								.38 - .0150	5 - .0450	72 - 2.835	
								.39 - .0154	6 - .0464	73 - 2.874	
								.40 - .0158	7 - .0478	74 - 2.913	
								.41 - .0161	8 - .0492	75 - 2.953	
								.42 - .0165	9 - .0506	76 - 2.992	
								.43 - .0169	10 - .0520	77 - 3.032	
								.44 - .0173	11 - .0534	78 - 3.071	
								.45 - .0177	12 - .0548	79 - 3.110	
								.46 - .0181	13 - .0562	80 - 3.150	
								.47 - .0185	14 - .0576	81 - 3.189	
								.48 - .0189	15 - .0590	82 - 3.228	
								.49 - .0193	16 - .0604	83 - 3.268	
								.50 - .0197	17 - .0618	84 - 3.307	
								.51 - .0201	18 - .0632	85 - 3.347	
								.52 - .0205	19 - .0646	86 - 3.386	
								.53 - .0209	20 - .0660	87 - 3.425	
								.54 - .0213	21 - .0674	88 - 3.465	
								.55 - .0217	22 - .0688	89 - 3.504	
								.56 - .0221	23 - .0702	90 - 3.543	
								.57 - .0224	24 - .0716	91 - 3.583	
								.58 - .0228	25 - .0730	92 - 3.622	
								.59 - .0232	26 - .0744	93 - 3.661	
								.60 - .0236	27 - .0758	94 - 3.701	
								.61 - .0240	28 - .0772	95 - 3.740	
								.62 - .0244	29 - .0786	96 - 3.780	
								.63 - .0248	30 - .0800	97 - 3.819	
								.64 - .0252	31 - .0814	98 - 3.858	
								.65 - .0256	32 - .0828	99 - 3.898	
								.66 - .0260	33 - .0842	100 - 3.937	

1 mm = .03937"

# Technical Information: Equivalents and Conversions

Metric System/Length					
Unit		Metric Equivalent		U.S. Equivalent	
millimeter	(mm)	= 0.001	meter	= 0.03937	inch
centimeter	(cm)	= 0.01	meter	= 0.3937	inch
decimeter	(dm)	= 0.1	meter	= 3.937	inches
METER	(m)	= 1	meter	= 39.37	inches
dekameter	(dkm)	= 10.0	meters	= 10.93	yards
hectometer	(hm)	= 100.0	meters	= 328.08	feet
kilometer	(km)	= 1000.0	meters	= 0.6214	mile

Metric System/Weight or Mass					
Unit		Metric Equivalent		U.S. Equivalent	
milligram	(mg)	= 0.001	gram	= 0.0154	grain
centigram	(cg)	= 0.01	gram	= 0.1543	grain
decigram	(dg)	= 0.1	gram	= 1.543	grains
GRAM	(g)	= 1	gram	= 15.43	grains
dekagram	(dkg)	= 10.0	grams	= 0.3527	ounce avoirdupois
hectogram	(hg)	= 100.0	grams	= 3.527	ounces avoirdupois
kilogram	(kg)	= 1000.0	grams	= 2.2	pounds avoirdupois

Metric System/Capacity					
Unit		Metric Equivalent		U.S. Equivalent	
milliliter	(ml)	= 0.001	liter	= 0.034	fluid ounce
centiliter	(cl)	= 0.01	liter	= 0.338	fluid ounce
deciliter	(dl)	= 0.1	liter	= 3.38	fluid ounces
LITER	(l)	= 1.0	liter	= 1.05	liquid quarts
dekaliter	(dkl)	= 10.0	liters	= 0.284	bushel
hectoliter	(hl)	= 100.0	liters	= 2.837	bushels
kiloliter	(kl)	= 1000.0	liters	= 264.18	gallons

Metric System/Area					
Unit		Metric Equivalent		U.S. Equivalent	
square millimeter	(mm <sup>2</sup> )	= 0.000001	centare	= 0.00155	square inch
square centimeter	(cm <sup>2</sup> )	= 0.0001	centare	= 0.155	square inch
square decimeter	(dm <sup>2</sup> )	= 0.01	centare	= 15.5	square inches
CENTARE also	(ca)	= 1.0	centare	= 10.76	square feet
square meter	(m <sup>2</sup> )				
are also	(a)	= 100.0	centares	= 0.0247	acre
square dekameter	(dkm <sup>2</sup> )				
hectare also	(ha)	= 10,000.0	centares	= 2.47	acres
square hectometer	(hm <sup>2</sup> )				
square kilometer	(km <sup>2</sup> )	= 1,000,000.0	cantres	= 0.386	square mile

Metric System/Volume					
Unit		Metric Equivalent		U.S. Equivalent	
cubic millimeter	(mm <sup>3</sup> )	= 0.001	cubic centimeter	= 0.016	minim
cubic centimeter	(cc, cm <sup>3</sup> )	= 0.001	cubic decimeter	= 0.061	cubic inch
cubic decimeter	(dm <sup>3</sup> )	= 0.001	cubic meter	= 61.023	cubic inches
STERE also	(s)	= 1.0	cubic meter	= 1.308	cubic yards
cubic meter	(m <sup>3</sup> )				
cubic dekameter	(dkm <sup>3</sup> )	= 1000.0	cubic meters	= 1307.943	cubic yards
cubic hectometer	(hm <sup>3</sup> )	= 1,000,000.0	cubic meters	= 1,307,942.8	cubic yards
cubic kilometer	(km <sup>3</sup> )	= 1,000,000,000.0	cubic meters	= 0.25	cubic mile

Pressure							
Unit	Atm.	kg./cm. <sup>2</sup>	lb./in. <sup>2</sup>	bar	mm. Hg. (0°C)	in. Hg. (32°F)	ft. H <sub>2</sub> O (60°F)
1 Atmosphere	1*	1.033228	14.6959	1.013250	760*	29.921	33.934
1 kg./cm <sup>2</sup>	0.967841	1*	14.2233	0.980665*	735.559	28.959	32.843
10 lb./in. <sup>2</sup>	0.68046	0.70307	10*	0.689476	517.149	20.360	23.091
1 bar	0.986923	1.019716	14.5038	1*	750.062	29.530	33.490
1 meter Hg. (0°C)	1.31579	1.35951	19.3368	1.333224	1000*	39.370	44.65
10 in. Hg. (32°F)	0.33421	0.34532	4.9115	0.33864	254*	10*	11.341
100 ft. H <sub>2</sub> O (60°F)	2.9469	3.0448	43.308	2.9859	2239.6	88.175	100*

1 inch of Hg (mercury) = 13.6 inch H<sub>2</sub>O  
1 PSI = 2.31 inches of H<sub>2</sub>O

Conversion Table		
1 Btu = 251.996 international calories		
Multiply Number of...	By...	To Obtain...
	778.3	Foot-pounds
British thermal units	3.929 x 10 <sup>-4</sup>	Horsepower-hours
	2.930 x 10 <sup>-4</sup>	Kilowatt-hours
	.2930	Watts-hours
Foot-pounds	1.285 x 10 <sup>-3</sup>	British thermal units
	5.05 x 10 <sup>-7</sup>	Horsepower-hours
	3.766 x 10 <sup>-7</sup>	Kilowatt-hours
	3.766 x 10 <sup>-4</sup>	Watt-hours
Horsepower-hours	2545	British thermal units
	1.98 x 10 <sup>4</sup>	Foot-pounds
	.7457	Kilowatt-hours
Kilowatt-hours	745.7	Watt-hours
	3413	British thermal units
	2.655 x 10 <sup>6</sup>	Foot-pounds
	1.341	Horsepower-hours
Watt-hours	1000	Watt-hours
	3.413	British thermal hours
	2655	Foot-pounds
	1.341 x 10 <sup>-3</sup>	Horsepower-hours
	.001	Kilowatt-hours

Conversion Factors	
Length	Weight
1 in. = 2.54 cm	1 kg. = 2.205 lb.
1 ft. = .3048 m	
1 yd. = .9144 m	<b>Volume</b>
1 m = 39.37 in.	1 cu. in. = 16.39 cm <sup>3</sup>
	1 cu. ft. = .02832 m <sup>3</sup>
<b>Area</b>	1 cu. ft. = 62.43 lb. water
1 sq. in. = 6.452 cm <sup>2</sup>	1 cu. ft. = 7.5 gal water
1 sq. ft. = .0929 m <sup>2</sup>	1 cu. ft. = 28.32 liters
	1 U.S. gal = .1337 cu. ft.
<b>Horsepower</b>	1 U.S. gal = 231 cu. in.
1 hp. = .746 kW	1 U.S. gal = 8.345 lb. water
1 boiler hp. = 9.8 kW	1 U.S. gal = 3.785 liters

Natural Gas Equivalent		
One therm. = 1,000,000 BTU		
One cu. ft. of gas = 1040 BTU (range 1020 - 1055)		
One Therm (Rounding off) = 100 cu. ft. gas		
One MCF = 1,040,000 BTU		
Multiply Number of...	By...	To Obtain...
bar	.987	Atmosphere
bar	100,000	Pascal
barrel (42 US gal.)	.159	Cu. meters
calorie	4.184	Joule
Joule	.00095	BTU
Kilojoule	3,600	Kilowatt-hours
Kilograms/sq. cm.	14.2	Pounds/sq. in.