



CONVERSIONS

TABLE

TO OBTAIN	MULTIPLY BY	TO FIND	TO CONVERT	MULTIPLY BY	TO OBTAIN
DISTANCE					
INCH	2.54	CENTIMETER		0.3937	INCH
INCHES	25.4	MILLIMETERS		0.03937	INCHES
FEET	0.3048	METERS		3.281	FEET
YARDS	0.9144	METERS		1.094	YARDS
MILES (STATUTE)	1.609	KILOMETER		0.6214	MILES (STATUTE)
WEIGHT					
OUNCES-AVOIRDUPOIS	28.35	GRAMS		0.0353	OUNCES-AVOIRDUPOIS
POUNDS	0.4536	KILOGRAMS		2.205	POUNDS
SHORT TONS (2000 LBS.)	0.9072	METRIC TONS		1.102	SHORT TONS
LONG TONS (2240 LBS.)	1.016	METRIC TONS		0.9842	LONG TONS
AREA					
SQUARE INCHES	645.2	SQ. MILLIMETERS		0.00155	SQUARE INCHES
CUBIC INCHES	16.387	CUBIC CENTIMETERS		0.06102	CUBIC INCHES
CUBIC FEET	0.02832	CUBIC METERS		35.31	CUBIC FEET
CUBIC YARDS	0.7646	CUBIC METERS		1.308	CUBIC YARDS
IMPACT ENERGY VALUE					
FOOT-POUNDS	1.35582	JOULES		0.73754	FOOT-POUNDS
BRITISH THERMAL UNIT	1.0555	KILOJOULES		0.947817	BRITISH THERMAL UNIT
PRESSURE					
LBS. PER SQ. INCH	0.07031	kg/cm ²		14.2233	LBS. PER SQ. INCH
LBS. PER SQ. INCH	0.007	N/mm ² (Mpa)		145.04	LBS. PER SQ. INCH
LBS. PER SQ. FOOT	0.0004883	kg/cm ²		2048.1552	LBS. PER SQ. FOOT
TONS/PSI	157.488	kg/cm ²		0.0063497	TONS/PSI
POUNDS PER FOOT	1.4882	kg/m		0.67195	POUNDS PER FOOT
POUNDS PER YARD	0.49605	kg/m		2.01592	POUNDS PER YARD
TEMPERATURE					
DEGREES FAHRENHEIT	X .5556	X (°F - 32)	=	DEGREES CELSIUS	
DEGREES CELSIUS	X (1.8 X °C)	+ 32	=	DEGREES FAHRENHEIT	



VANGUARD STEEL LTD.

PRODUCT MANUAL

CONVERSIONS

CONVERSION OF FRACTIONS OF AN INCH TO DECIMAL EQUIVALENT AND MILLIMETERS

INCHES	DECIMAL	MM	INCHES	DECIMAL	MM
1/64	0.015625	0.3969	33/64	0.515625	13.0969
1/32	0.03125	0.7938	17/32	0.53125	13.4938
3/64	0.046875	1.1906	35/64	0.546875	13.8906
1/16	0.0625	1.5875	9/16	0.5625	14.2875
5/64	0.078125	1.9844	37/64	0.578125	14.6844
3/32	0.09375	2.3812	19/32	0.59375	15.0812
7/64	0.109375	2.7781	39/64	0.609375	15.4781
1/8	0.125	3.175	5/8	0.625	15.875
9/64	0.140625	3.5719	41/64	0.640625	16.2719
5/32	0.15625	3.9687	21/32	0.65625	16.6688
11/64	0.171875	4.3656	43/64	0.671875	17.0656
3/16	0.1875	4.7625	11/16	0.6875	17.4625
13/64	0.203125	5.1594	45/64	0.703125	17.8594
7/32	0.21875	5.5562	23/32	0.71875	18.2562
13/64	0.234375	5.9531	47/64	0.734375	18.6531
1/4	0.25	6.35	3/4	0.75	19.05
17/64	0.265625	6.7469	49/64	0.765625	19.4469
9/32	0.28125	7.1438	25/32	0.78125	19.8438
19/64	0.296875	7.5406	51/64	0.796875	20.2406
5/16	0.3125	7.9375	13/16	0.8125	20.6375
21/64	0.328125	8.3344	53/64	0.828125	21.0344
11/32	0.34375	8.7312	27/32	0.84375	21.4312
23/64	0.359375	9.1281	55/64	0.859375	21.8281
3/8	0.375	9.525	7/8	0.875	22.225
25/64	0.390625	9.9219	57/64	0.890625	22.6219
13/32	0.40625	10.3188	29/32	0.90625	23.0188
27/64	0.421875	10.7156	59/64	0.921875	23.4156
7/16	0.4375	11.1125	15/16	0.9375	23.8125
29/64	0.453125	11.5094	61/64	0.953125	24.2094
15/32	0.46875	11.9062	31/32	0.96875	24.6062
31/64	0.484375	12.3031	63/64	0.984375	25.0031
1/2	0.50	12.7	1	1.00	25.4



CONVERSIONS

TEMPERATURE CONVERSIONS

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° F	° C	° F	° C	° F	° C	
-458.00	-272.22	-388.00	-233.33	-320.00	-195.56	
-456.00	-271.11	-386.00	-232.22	-318.00	-194.44	
-454.00	-270.00	-384.00	-231.11	-316.00	-193.33	
-432.00	-257.78	-382.00	-230.00	-314.00	-192.22	
-450.00	-267.78	-380.00	-228.89	-312.00	-191.11	
-448.00	-266.67	-378.00	-227.78	-310.00	-190.00	
-446.00	-265.56	-376.00	-226.67	-308.00	-188.89	
-444.00	-264.44	-374.00	-225.56	-310.00	-190.00	
-442.00	-263.33	-372.00	-224.44	-308.00	-188.89	
-440.00	-262.22	-370.00	-223.33	-306.00	-187.78	
-438.00	-261.11	-368.00	-222.22	-304.00	-186.67	
-436.00	-260.00	-366.00	-221.11	-302.00	-185.56	
-434.00	-258.89	-364.00	-220.00	-300.00	-184.44	
-432.00	-257.78	-362.00	-218.89	-288.00	-177.78	
-430.00	-256.67	-360.00	-217.78	-286.00	-176.67	
-428.00	-255.56	-368.00	-222.22	-284.00	-175.56	
-426.00	-254.44	-356.00	-215.56	-282.00	-174.44	
-424.00	-253.33	-354.00	-214.44	-280.00	-173.33	
-422.00	-252.22	-352.00	-213.33	-278.00	-172.22	
-420.00	-251.11	-350.00	-212.22	-276.00	-171.11	
-418.00	-250.00	-348.00	-211.11	-274.00	-170.00	
-416.00	-248.89	-346.00	-210.00	-457.60	-272.00	-168.89
-412.00	-246.67	-344.00	-208.89	-454.00	-270.00	-167.78
-410.00	-245.56	-342.00	-207.78	-450.40	-268.00	-166.67
-408.00	-244.44	-340.00	-206.67	-446.80	-266.00	-165.56
-406.00	-243.33	-338.00	-205.56	-443.20	-264.00	-164.44
-404.00	-242.22	-336.00	-204.44	-439.60	-262.00	-163.33
-402.00	-241.11	-334.00	-203.33	-436.00	-260.00	-162.22
-400.00	-240.00	-332.00	-202.22	-432.40	-258.00	-161.11
-398.00	-238.89	-330.00	-201.11	-428.80	-256.00	-160.00
-396.00	-237.78	-328.00	-200.00	-425.20	-254.00	-158.89
-394.00	-236.67	-326.00	-198.89	-421.60	-252.00	-157.78
-392.00	-235.56	-324.00	-197.78	-418.00	-250.00	-156.67
-390.00	-234.44	-322.00	-196.67	-414.40	-248.00	-155.56

(CONTINUED)



CONVERSIONS

TEMPERATURE CONVERSIONS

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Table with 9 columns: °F, °C, °F, °C, °F, °C, °F, °C, °C. It lists temperature conversion values for various Fahrenheit and Celsius temperatures.

(CONTINUED)



CONVERSIONS

TEMPERATURE CONVERSIONS

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° F	° C	° F	° C	° F	° C
-43.60	-42.00	-41.11	78.80	26.00	-3.33
-40.00	-40.00	-40.00	82.40	28.00	-2.22
-36.40	-38.00	-38.89	86.00	30.00	-1.11
-32.80	-36.00	-37.78	89.60	32.00	0.00
-29.20	-34.00	-36.67	93.20	34.00	1.11
-25.60	-32.00	-35.56	96.80	36.00	2.22
-22.00	-30.00	-34.44	100.40	38.00	3.33
-18.40	-28.00	-33.33	104.00	40.00	4.44
-14.80	-26.00	-32.22	107.60	42.00	5.56
-11.20	-24.00	-31.11	111.20	44.00	6.67
-7.60	-22.00	-30.00	114.80	46.00	7.78
-4.00	-20.00	-28.89	118.40	48.00	8.89
-0.40	-18.00	-27.78	122.00	50.00	10.00
3.20	-16.00	-26.67	125.60	52.00	11.11
6.80	-14.00	-25.56	129.20	54.00	12.22
10.40	-12.00	-24.44	132.80	56.00	13.33
14.00	-10.00	-23.33	136.40	58.00	14.44
17.60	-8.00	-22.22	140.00	60.00	15.56
21.20	-6.00	-21.11	143.60	62.00	16.67
24.80	-4.00	-20.00	147.20	64.00	17.78
28.40	-2.00	-18.89	150.80	66.00	18.89
32.00	0.00	-17.78	154.40	68.00	20.00
35.60	2.00	-16.67	158.00	70.00	21.11
39.20	4.00	-15.56	161.60	72.00	22.22
42.80	6.00	-14.44	165.20	74.00	23.33
46.40	8.00	-13.33	168.80	76.00	24.44
50.00	10.00	-12.22	172.40	78.00	25.56
53.60	12.00	-11.11	176.00	80.00	26.67
57.20	14.00	-10.00	179.60	82.00	27.78
60.80	16.00	-8.89	183.20	84.00	28.89
64.40	18.00	-7.78	186.80	86.00	30.00
68.00	20.00	-6.67	190.40	88.00	31.11
71.60	22.00	-5.56	194.00	90.00	32.22
75.20	24.00	-4.44	197.60	92.00	33.33
201.20	94.00	34.44	204.80	96.00	35.56
208.40	98.00	36.67	212.00	100.00	37.78
215.60	102.00	38.89	219.20	104.00	40.00
222.80	106.00	41.11	226.40	108.00	42.22
230.00	110.00	43.33	233.60	112.00	44.44
237.20	114.00	45.56	240.80	116.00	46.67
244.40	118.00	47.78	248.00	120.00	48.89
251.60	122.00	50.00	255.20	124.00	51.11
258.80	126.00	52.22	262.40	128.00	53.33
266.00	130.00	54.44	269.60	132.00	55.56
273.20	134.00	56.67	276.80	136.00	57.78
280.40	138.00	58.89	284.00	140.00	60.00
287.60	142.00	61.11	291.20	144.00	62.22
294.80	146.00	63.33	298.40	148.00	64.44
302.00	150.00	65.56	305.60	152.00	66.67
309.20	154.00	67.78	312.80	156.00	68.89
316.40	158.00	70.00	320.00	160.00	71.11

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TEMPERATURE CONVERSIONS

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° F	° C	° F	° C	° F	° C			
323.60	162.00	72.22	464.00	240.00	115.56	586.40	308.00	153.33
327.20	164.00	73.33	467.60	242.00	116.67	590.00	310.00	154.44
330.80	166.00	74.44	471.20	244.00	117.78	593.60	312.00	155.56
334.40	168.00	75.56	474.80	246.00	118.89	597.20	314.00	156.67
338.00	170.00	76.67	478.40	248.00	120.00	600.80	316.00	157.78
341.60	172.00	77.78	482.00	250.00	121.11	604.40	318.00	158.89
345.20	174.00	78.89	485.60	252.00	122.22	608.00	320.00	160.00
348.80	176.00	80.00	489.20	254.00	123.33	611.60	322.00	161.11
352.40	178.00	81.11	492.80	256.00	124.44	615.20	324.00	162.22
356.00	180.00	82.22	496.40	258.00	125.56	618.80	326.00	163.33
359.60	182.00	83.33	500.00	260.00	126.67	622.40	328.00	164.44
363.20	184.00	84.44	503.60	262.00	127.78	626.00	330.00	165.56
366.80	186.00	85.56	507.20	264.00	128.89	629.60	332.00	166.67
370.40	188.00	86.67	510.80	266.00	130.00	633.20	334.00	167.78
392.00	200.00	93.33	514.40	268.00	131.11	636.80	336.00	168.89
395.60	202.00	94.44	518.00	270.00	132.22	640.40	338.00	170.00
399.20	204.00	95.56	521.60	272.00	133.33	644.00	340.00	171.11
402.80	206.00	96.67	525.20	274.00	134.44	647.60	342.00	172.22
406.40	208.00	97.78	528.80	276.00	135.56	651.20	344.00	173.33
410.00	210.00	98.89	532.40	278.00	136.67	654.80	346.00	174.44
413.60	212.00	100.00	536.00	280.00	137.78	658.40	348.00	175.56
417.20	214.00	101.11	539.60	282.00	138.89	662.00	350.00	176.67
420.80	216.00	102.22	543.20	284.00	140.00	665.60	352.00	177.78
424.40	218.00	103.33	546.80	286.00	141.11	669.20	354.00	178.89
428.00	220.00	104.44	550.40	288.00	142.22	672.80	356.00	180.00
431.60	222.00	105.56	554.00	290.00	143.33	676.40	358.00	181.11
435.20	224.00	106.67	557.60	292.00	144.44	680.00	360.00	182.22
438.80	226.00	107.78	561.20	294.00	145.56	683.60	362.00	183.33
442.40	228.00	108.89	564.80	296.00	146.67	687.20	364.00	184.44
446.00	230.00	110.00	568.40	298.00	147.78	690.80	366.00	185.56
449.60	232.00	111.11	572.00	300.00	148.89	694.40	368.00	186.67
453.20	234.00	112.22	575.60	302.00	150.00	698.00	370.00	187.78
456.80	236.00	113.33	579.20	304.00	151.11	701.60	372.00	188.89
460.40	238.00	114.44	582.80	306.00	152.22	705.20	374.00	190.00

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TEMPERATURE CONVERSIONS

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° F	° C	° F	° C	° F	° C			
1112.00	600.00	315.56	1868.00	1020.00	548.89	2480.00	1360.00	737.78
1130.00	610.00	321.11	1886.00	1030.00	554.44	2498.00	1370.00	743.33
1148.00	620.00	326.67	1904.00	1040.00	560.00	2516.00	1380.00	748.89
1166.00	630.00	332.22	1922.00	1050.00	565.56	2534.00	1390.00	754.44
1184.00	640.00	337.78	1940.00	1060.00	571.11	2552.00	1400.00	760.00
1220.00	660.00	348.89	1958.00	1070.00	576.67	2570.00	1410.00	765.56
1256.00	680.00	360.00	1976.00	1080.00	582.22	2588.00	1420.00	771.11
1274.00	690.00	365.56	1994.00	1090.00	587.78	2606.00	1430.00	776.67
1292.00	700.00	371.11	2012.00	1100.00	593.33	2624.00	1440.00	782.22
1310.00	710.00	376.67	2030.00	1110.00	598.89	2642.00	1450.00	787.78
1328.00	720.00	382.22	2048.00	1120.00	604.44	2660.00	1460.00	793.33
1346.00	730.00	387.78	2066.00	1130.00	610.00	2678.00	1470.00	798.89
1436.00	780.00	415.56	2084.00	1140.00	615.56	2696.00	1480.00	804.44
1454.00	790.00	421.11	2102.00	1150.00	621.11	2714.00	1490.00	810.00
1472.00	800.00	426.67	2120.00	1160.00	626.67	2732.00	1500.00	815.56
1490.00	810.00	432.22	2138.00	1170.00	632.22	2750.00	1510.00	821.11
1508.00	820.00	437.78	2156.00	1180.00	637.78	2768.00	1520.00	826.67
1526.00	830.00	443.33	2174.00	1190.00	643.33	2786.00	1530.00	832.22
1544.00	840.00	448.89	2192.00	1200.00	648.89	2804.00	1540.00	837.78
1580.00	860.00	460.00	2210.00	1210.00	654.44	2822.00	1550.00	843.33
1598.00	870.00	465.56	2228.00	1220.00	660.00	2840.00	1560.00	848.89
1616.00	880.00	471.11	2246.00	1230.00	665.56	2858.00	1570.00	854.44
1652.00	900.00	482.22	2264.00	1240.00	671.11	2876.00	1580.00	860.00
1670.00	910.00	487.78	2282.00	1250.00	676.67	2894.00	1590.00	865.56
1688.00	920.00	493.33	2300.00	1260.00	682.22	2912.00	1600.00	871.11
1706.00	930.00	498.89	2318.00	1270.00	687.78	2930.00	1610.00	876.67
1724.00	940.00	504.44	2336.00	1280.00	693.33	2948.00	1620.00	882.22
1742.00	950.00	510.00	2354.00	1290.00	698.89	2966.00	1630.00	887.78
1760.00	960.00	515.56	2372.00	1300.00	704.44	2984.00	1640.00	893.33
1778.00	970.00	521.11	2390.00	1310.00	710.00	3002.00	1650.00	898.89
1796.00	980.00	526.67	2408.00	1320.00	715.56	3020.00	1660.00	904.44
1814.00	990.00	532.22	2426.00	1330.00	721.11	3038.00	1670.00	910.00
1832.00	1000.00	537.78	2444.00	1340.00	726.67	3056.00	1680.00	915.56
1850.00	1010.00	543.33	2462.00	1350.00	732.22	3074.00	1690.00	921.11

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° F	° C	° F	° C	° F	° C	
3092.00	1700.00	926.67	3704.00	2040.00	1115.56	
3110.00	1710.00	932.22	3722.00	2050.00	1121.11	
3128.00	1720.00	937.78	3740.00	2060.00	1126.67	
3146.00	1730.00	943.33	3758.00	2070.00	1132.22	
3164.00	1740.00	948.89	3776.00	2080.00	1137.78	
3182.00	1750.00	954.44	3794.00	2090.00	1143.33	
3200.00	1760.00	960.00	3812.00	2100.00	1148.89	
3218.00	1770.00	965.56	3830.00	2110.00	1154.44	
3236.00	1780.00	971.11	3848.00	2120.00	1160.00	
3254.00	1790.00	976.67	3866.00	2130.00	1165.56	
3272.00	1800.00	982.22	3884.00	2140.00	1171.11	
3290.00	1810.00	987.78	3902.00	2150.00	1176.67	
3308.00	1820.00	993.33	3920.00	2160.00	1182.22	
3326.00	1830.00	998.89	3938.00	2170.00	1187.78	
3344.00	1840.00	1004.44	3956.00	2180.00	1193.33	
3362.00	1850.00	1010.00	3974.00	2190.00	1198.89	
3380.00	1860.00	1015.56	3992.00	2200.00	1204.44	
3398.00	1870.00	1021.11	4010.00	2210.00	1210.00	
3416.00	1880.00	1026.67	4028.00	2220.00	1215.56	
3434.00	1890.00	1032.22	4046.00	2230.00	1221.11	
3452.00	1900.00	1037.78	4064.00	2240.00	1226.67	
3470.00	1910.00	1043.33	4082.00	2250.00	1232.22	
3488.00	1920.00	1048.89	4100.00	2260.00	1237.78	
3506.00	1930.00	1054.44	4118.00	2270.00	1243.33	
3524.00	1940.00	1060.00	4136.00	2280.00	1248.89	
3542.00	1950.00	1065.56	4154.00	2290.00	1254.44	
3560.00	1960.00	1071.11	4172.00	2300.00	1260.00	
3578.00	1970.00	1076.67	4190.00	2310.00	1265.56	
3596.00	1980.00	1082.22	4208.00	2320.00	1271.11	
3614.00	1990.00	1087.78	4226.00	2330.00	1276.67	
3632.00	2000.00	1093.33	4244.00	2340.00	1282.22	
3650.00	2010.00	1098.89	4262.00	2350.00	1287.78	
3668.00	2020.00	1104.44	4280.00	2360.00	1293.33	
3686.00	2030.00	1110.00	4298.00	2370.00	1298.89	
				4316.00	2380.00	1304.44
				4334.00	2390.00	1310.00
				4352.00	2400.00	1315.56
				4370.00	2410.00	1321.11
				4388.00	2420.00	1326.67
				4406.00	2430.00	1332.22
				4424.00	2440.00	1337.78
				4442.00	2450.00	1343.33
				4460.00	2460.00	1348.89
				4478.00	2470.00	1354.44
				4496.00	2480.00	1360.00
				4514.00	2490.00	1365.56
				4532.00	2500.00	1371.11
				4550.00	2510.00	1376.67
				4568.00	2520.00	1382.22
				4586.00	2530.00	1387.78
				4604.00	2540.00	1393.33
				4622.00	2550.00	1398.89
				4640.00	2560.00	1404.44
				4658.00	2570.00	1410.00
				4676.00	2580.00	1415.56
				4694.00	2590.00	1421.11
				4712.00	2600.00	1426.67
				4730.00	2610.00	1432.22
				4748.00	2620.00	1437.78
				4766.00	2630.00	1443.33
				4784.00	2640.00	1448.89
				4802.00	2650.00	1454.44
				4820.00	2660.00	1460.00
				4838.00	2670.00	1465.56
				4856.00	2680.00	1471.11
				4874.00	2690.00	1476.67
				4892.00	2700.00	1482.22
				4910.00	2710.00	1487.78

(CONTINUED)



CONVERSIONS

TEMPERATURE CONVERSIONS

THE MIDDLE COLUMNS OF NUMBERS REFER TO THE TEMPERATURE EITHER IN DEGREES OF CELSIUS OR FAHRENHEIT TO BE CONVERTED. WHEN CONVERTING FROM DEGREES OF FAHRENHEIT TO DEGREES OF CELSIUS, READ THE CELSIUS EQUIVALENT IN THE COLUMN HEADED " ° C ". WHEN CONVERTING FROM CELSIUS TO FAHRENHEIT, READ THE FAHRENHEIT EQUIVALENT IN THE COLUMN HEADED " ° F ".

° F	° C	° F	° C	° F	° C	
4928.00	2720.00	1493.33	5630.00	3110.00	1710.00	
5036.00	2780.00	1526.67	5648.00	3120.00	1715.56	
5054.00	2790.00	1532.22	5666.00	3130.00	1721.11	
5072.00	2800.00	1537.78	5684.00	3140.00	1726.67	
5090.00	2810.00	1543.33	5702.00	3150.00	1732.22	
5108.00	2820.00	1548.89	5720.00	3160.00	1737.78	
5126.00	2830.00	1554.44	5738.00	3170.00	1743.33	
5144.00	2840.00	1560.00	5756.00	3180.00	1748.89	
5162.00	2850.00	1565.56	5774.00	3190.00	1754.44	
5180.00	2860.00	1571.11	5792.00	3200.00	1760.00	
5198.00	2870.00	1576.67	5810.00	3210.00	1765.56	
5216.00	2880.00	1582.22	5828.00	3220.00	1771.11	
5234.00	2890.00	1587.78	5846.00	3230.00	1776.67	
5252.00	2900.00	1593.33	5864.00	3240.00	1782.22	
5270.00	2910.00	1598.89	5522.00	3050.00	1676.67	
5288.00	2920.00	1604.44	5540.00	3060.00	1682.22	
5306.00	2930.00	1610.00	5558.00	3070.00	1687.78	
5324.00	2940.00	1615.56	5576.00	3080.00	1693.33	
5342.00	2950.00	1621.11	5594.00	3090.00	1698.89	
5360.00	2960.00	1626.67	7232.00	4000.00	2204.44	
5378.00	2970.00	1632.22	7250.00	4010.00	2210.00	
5396.00	2980.00	1637.78	7268.00	4020.00	2215.56	
5414.00	2990.00	1643.33	7286.00	4030.00	2221.11	
5432.00	3000.00	1648.89	7304.00	4040.00	2226.67	
5450.00	3010.00	1654.44	7322.00	4050.00	2232.22	
5468.00	3020.00	1660.00	7340.00	4060.00	2237.78	
5486.00	3030.00	1665.56	7358.00	4070.00	2243.33	
5504.00	3040.00	1671.11	7376.00	4080.00	2248.89	
5522.00	3050.00	1676.67	7394.00	4090.00	2254.44	
5540.00	3060.00	1682.22	7412.00	4100.00	2260.00	
5558.00	3070.00	1687.78	7430.00	4110.00	2265.56	
5576.00	3080.00	1693.33	7448.00	4120.00	2271.11	
5594.00	3090.00	1698.89	7466.00	4130.00	2276.67	
5612.00	3100.00	1704.44	7484.00	4140.00	2282.22	
				8096.00	4480.00	2471.11

(CONTINUED)



CONVERSIONS

TEMPERATURE CONVERSIONS

THE MIDDLE COLUMNS OF NUMBERS REFER TO THE TEMPERATURE EITHER IN DEGREES OF CELSIUS OR FAHRENHEIT TO BE CONVERTED. WHEN CONVERTING FROM DEGREES OF FAHRENHEIT TO DEGREES OF CELSIUS, READ THE CELSIUS EQUIVALENT IN THE COLUMN HEADED " ° C ". WHEN CONVERTING FROM CELSIUS TO FAHRENHEIT, READ THE FAHRENHEIT EQUIVALENT IN THE COLUMN HEADED " ° F ".

° F	° C	° F	° C		
8114.00	4490.00	2476.67	8726.00	4830.00	2665.56
8132.00	4500.00	2482.22	8744.00	4840.00	2671.11
8150.00	4510.00	2487.78	8762.00	4850.00	2676.67
8168.00	4520.00	2493.33	8780.00	4860.00	2682.22
8186.00	4530.00	2498.89	8798.00	4870.00	2687.78
8204.00	4540.00	2504.44	8816.00	4880.00	2693.33
8222.00	4550.00	2510.00	8834.00	4890.00	2698.89
8240.00	4560.00	2515.56	8852.00	4900.00	2704.44
8258.00	4570.00	2521.11	8870.00	4910.00	2710.00
8276.00	4580.00	2526.67	8888.00	4920.00	2715.56
8294.00	4590.00	2532.22	8906.00	4930.00	2721.11
8312.00	4600.00	2537.78	8924.00	4940.00	2726.67
8330.00	4610.00	2543.33	8942.00	4950.00	2732.22
8348.00	4620.00	2548.89	8960.00	4960.00	2737.78
8366.00	4630.00	2554.44	8978.00	4970.00	2743.33
8384.00	4640.00	2560.00	8996.00	4980.00	2748.89
8402.00	4650.00	2565.56	9014.00	4990.00	2754.44
8420.00	4660.00	2571.11	9032.00	5000.00	2760.00
8438.00	4670.00	2576.67	9122.00	5050.00	2787.78
8456.00	4680.00	2582.22	9212.00	5100.00	2815.56
8474.00	4690.00	2587.78	9302.00	5150.00	2843.33
8492.00	4700.00	2593.33	9392.00	5200.00	2871.11
8510.00	4710.00	2598.89	9482.00	5250.00	2898.89
8528.00	4720.00	2604.44	9572.00	5300.00	2926.67
8546.00	4730.00	2610.00	9662.00	5350.00	2954.44
8564.00	4740.00	2615.56	9752.00	5400.00	2982.22
8582.00	4750.00	2621.11	9842.00	5450.00	3010.00
8600.00	4760.00	2626.67	9932.00	5500.00	3037.78
8618.00	4770.00	2632.22	10022.00	5550.00	3065.56
8636.00	4780.00	2637.78	10832.00	6000.00	3315.56
8654.00	4790.00	2643.33			
8672.00	4800.00	2648.89			
8690.00	4810.00	2654.44			
8708.00	4820.00	2660.00			



CONVERSIONS

CONVERSIONS FOR IMPACT ENERGY VALUES

JOULES	FT. LBS.	JOULES	FT. LBS.	JOULES	FT. LBS.	JOULES	FT. LBS.
1.36	1	37.96	28	74.57	55	111.18	82
2.71	2	39.32	29	75.93	56	112.53	83
4.07	3	40.67	30	77.28	57	113.89	84
5.42	4	42.03	31	78.64	58	115.24	85
6.78	5	43.39	32	79.99	59	116.60	86
8.13	6	44.74	33	81.35	60	117.96	87
9.49	7	46.10	34	82.71	61	119.31	88
10.85	8	47.45	35	84.06	62	120.67	89
12.20	9	48.81	36	85.42	63	122.02	90
13.56	10	50.17	37	86.77	64	123.38	91
14.91	11	51.52	38	88.13	65	124.74	92
16.27	12	52.88	39	89.48	66	126.09	93
17.63	13	54.23	40	90.84	67	126.09	93
18.98	14	55.59	41	92.20	68	127.45	94
20.34	15	56.94	42	93.55	69	128.80	95
21.69	16	58.30	43	94.91	70	130.16	96
23.05	17	59.66	44	96.26	71	131.51	97
24.40	18	61.01	45	97.62	72	132.87	98
25.76	19	62.37	46	98.97	73	134.23	99
27.12	20	63.72	47	100.33	74	135.58	100
28.47	21	65.08	48	101.69	75		
29.83	22	66.44	49	103.04	76		
31.18	23	67.79	50	104.40	77		
32.54	24	69.15	51	105.75	78		
33.90	25	70.50	52	107.11	79		
35.25	26	71.86	53	108.47	80		
36.61	27	73.21	54	109.82	81		



CONVERSIONS

CONVERSION FOR STRESS VALUES KSI TO MPA

THE MIDDLE COLUMN OF FIGURES CONTAINS THE READINGS (IN MPa OR KSI) TO BE CONVERTED. IF CONVERTING FROM KSI TO MPa, READ THE MPa EQUIVALENT IN THE COLUMN HEADED "MPa". IF CONVERTING FROM MPa TO KSI, READ THE EQUIVALENT IN THE COLUMN HEADED "KSI".

KSI		MPA	KSI		MPA	KSI		MPA
0.14504	1	6.895	4.4962	31	213.737	8.847	61	420.580
0.29008	2	13.790	4.6412	32	220.632	8.992	62	427.475
0.43511	3	20.684	4.7862	33	227.527	9.137	63	434.370
0.58015	4	27.579	4.9313	34	234.422	9.282	64	441.264
0.72519	5	34.474	5.0763	35	241.316	9.427	65	448.159
0.87023	6	41.369	5.2214	36	248.211	9.572	66	455.054
1.0153	7	48.263	5.3664	37	255.106	9.718	67	461.949
1.1603	8	55.158	5.5114	38	262.001	9.863	68	468.843
1.3053	9	62.053	5.6565	39	268.896	10.008	69	475.738
1.4504	10	68.948	5.8015	40	275.790	10.153	70	482.633
1.5954	11	75.842	5.9465	41	282.685	10.298	71	489.528
1.7405	12	82.737	6.0916	42	289.580	10.443	72	496.423
1.8855	13	89.632	6.2366	43	296.475	10.588	73	503.317
2.0305	14	96.527	6.3817	44	303.369	10.733	74	510.212
2.1756	15	103.421	6.5267	45	310.264	10.878	75	517.107
2.3206	16	110.316	6.6717	46	317.159	11.023	76	524.002
2.4656	17	117.211	6.8168	47	324.054	11.168	77	530.896
2.6107	18	124.106	6.9618	48	330.948	11.313	78	537.791
2.7557	19	131.000	7.1068	49	337.843	11.458	79	544.686
2.9008	20	137.895	7.2519	50	344.738	11.603	80	551.581
3.0458	21	144.790	7.3969	51	351.633	11.748	81	558.475
3.1908	22	151.685	7.5420	52	358.527	11.893	82	565.370
3.3359	23	158.579	7.6870	53	365.422	12.038	83	572.265
3.4809	24	165.474	7.8320	54	372.317	12.183	84	579.160
3.6259	25	172.369	7.9771	55	379.212	12.328	85	586.054
3.7710	26	179.264	8.1221	56	386.106	12.473	86	592.949
3.9160	27	186.158	8.2672	57	393.001	12.618	87	599.844
4.0611	28	193.053	8.4122	58	399.896	12.763	88	606.739
4.2061	29	199.948	8.5572	59	406.791	12.908	89	613.633
4.3511	30	206.843	8.7023	60	413.685	13.053	90	620.528

(CONTINUED)



CONVERSIONS

CONVERSION FOR STRESS VALUES KSI TO MPA

THE MIDDLE COLUMN OF FIGURES CONTAINS THE READINGS (IN MPa OR KSI) TO BE CONVERTED. IF CONVERTING FROM KSI TO MPa, READ THE MPa EQUIVALENT IN THE COLUMN HEADED "MPa". IF CONVERTING FROM MPa TO KSI, READ THE EQUIVALENT IN THE COLUMN HEADED "KSI".

KSI	MPA	KSI	MPA	KSI	MPA		
13.343	92	634.318	47.862	330	2275.270		
13.489	93	641.212	49.313	340	2344.217		
13.634	94	648.107	50.763	350	2413.165		
13.779	95	655.002	52.214	360	2482.113		
13.924	96	661.897	53.664	370	2551.060		
14.069	97	668.791	55.114	380	2620.008		
14.214	98	675.686	56.565	390	2688.955		
14.504	100	689.476	58.015	400	2757.903		
15.954	110	758.423	59.465	410	2826.850		
17.405	120	827.371	60.916	420	2895.798		
18.855	130	896.318	62.366	430	2964.746		
20.305	140	965.266	63.817	440	3033.693		
21.756	150	1034.214	65.267	450	3102.641		
23.206	160	1103.161	66.717	460	3171.588		
24.656	170	1172.109	68.168	470	3240.536		
26.107	180	1241.056	69.618	480	3309.483		
27.557	190	1310.004	71.068	490	3378.431		
29.008	200	1378.951	72.519	500	3447.379		
30.458	210	1447.899	73.969	510	-----		
31.908	220	1516.847	75.420	520	-----		
33.359	230	1585.794	76.870	530	-----		
34.809	240	1654.742	78.320	540	-----		
36.259	250	1723.689	79.771	550	-----		
37.710	260	1792.637	81.221	560	-----		
39.160	270	1861.584	82.672	570	-----		
40.611	280	1930.532	84.122	580	-----		
42.061	290	1999.480	85.572	590	-----		
43.511	300	2068.427	87.023	600	-----		
44.962	310	2137.375	88.473	610	-----		
46.412	320	2206.322	89.923	620	-----		
					91.374	630	-----
					92.824	640	-----
					94.275	650	-----
					95.725	660	-----
					97.175	670	-----
					98.626	680	-----
					100.076	690	-----
					101.526	700	-----
					102.977	710	-----
					104.427	720	-----
					105.878	730	-----
					107.328	740	-----
					108.778	750	-----
					110.229	760	-----
					111.679	770	-----
					113.129	780	-----
					114.580	790	-----
					116.030	800	-----
					117.481	810	-----
					118.931	820	-----
					120.381	830	-----
					121.832	840	-----
					123.282	850	-----
					124.732	860	-----
					126.183	870	-----
					127.633	880	-----
					130.534	900	-----
					131.984	910	-----
					133.435	920	-----
					134.885	930	-----

(CONTINUED)



CONVERSIONS

HARDNESS CONVERSIONS

APPROXIMATE RELATIONS BETWEEN BRINELL, ROCKWELL, SHORE, VICKERS AND FIRTH HARDNESS AND THE TENSILE STRENGTHS OF S.A.E. CARBON AND CONSTRUCTIONAL STEELS

BRINELL		VICKERS OR FIRTH	ROCKWELL			TENSILE STRENGTH (X 1000 PSI)
DIA. (MM) 3,000 KG. 10 MM. CARBIDE BALL	HARDNESS NUMBER	DIAMETER PYRAMID (50 KB. BRALE)	C SCALE (150 KG. BRALE)	B. SCALE 100 KG. 1/16" BALL	SHORE	
-----	-----	940	68	-----	97	-----
-----	-----	860	66	-----	92	-----
2.30	712	800	64	-----	88	-----
2.35	682	737	62	-----	85	-----
2.40	653	697	60	-----	81	-----
2.50	601	677	59	-----	80	328
2.55	578	640	57	-----	77	309
2.60	555	591	55	120	73	285
2.65	534	579	54	119	71	279
2.70	514	547	52	119	70	263
2.75	495	528	51	117	68	253
2.80	477	508	50	117	67	247
2.85	461	494	49	116	66	237
2.90	444	472	47	115	63	225
2.95	429	455	46	115	61	217
3.00	415	440	45	114	59	212
3.05	401	425	43	113	58	200
3.10	388	410	42	112	56	196
3.15	375	396	40	112	54	186
3.20	363	383	39	110	52	181
3.25	352	372	38	110	51	177
3.30	341	360	37	109	50	174
3.35	331	350	36	109	48	168
3.40	321	339	34	108	47	158
3.45	311	328	33	108	46	154
3.50	302	319	32	107	45	150

(CONTINUED)



CONVERSIONS

HARDNESS CONVERSIONS

APPROXIMATE RELATIONS BETWEEN BRINELL, ROCKWELL, SHORE, VICKERS AND FIRTH HARDNESS AND THE TENSILE STRENGTHS OF S.A.E. CARBON AND CONSTRUCTIONAL STEELS

BRINELL		VICKERS OR FIRTH	ROCKWELL			
DIA. (MM) 3,000 KG. 10 MM. CARBIDE BALL	HARDNESS NUMBER	DIAMETER PYRAMID (50 KB. BRALE)	C SCALE (150 KG. BRALE)	B. SCALE 100 KG. 1/16" BALL	SHORE	TENSILE STRENGTH (X 1000 PSI)
3.55	293	309	31	106	43	146
3.60	285	301	30	105	42	142
3.65	277	292	29	104	41	138
3.70	262	276	27	103	39	131
3.75	255	269	25	102	38	125
3.80	248	261	24	101	37	121
3.85	241	253	23	100	36	119
3.90	235	247	22	99	35	117
4.00	229	241	21	98	34	113
4.05	223	234	18	97	33	110
4.10	217	228	18	96	33	107
4.15	212	222	16	95	32	102
4.20	207	218	15	95	32	100
4.25	202	212	14	94	31	98
4.30	197	207	13	93	30	96
4.35	192	202	12	92	29	94
4.40	187	196	10	91	-----	90
4.45	183	192	9	90	28	89
4.50	179	188	8	89	27	87
4.55	174	182	6	88	-----	84
4.60	170	178	5	87	26	82
4.65	166	175	4	86	-----	80
4.70	163	171	3	85	25	78
4.75	159	167	2	84	-----	77
4.80	156	163	1	83	24	76
4.85	153	160	-----	82	-----	75
4.90	149	156	-----	81	23	74

(CONTINUED)



CONVERSIONS

HARDNESS CONVERSIONS

APPROXIMATE RELATIONS BETWEEN BRINELL, ROCKWELL, SHORE, VICKERS AND FIRTH HARDNESS AND THE TENSILE STRENGTHS OF S.A.E. CARBON AND CONSTRUCTIONAL STEELS

BRINELL		VICKERS OR FIRTH	ROCKWELL			
DIA. (MM) 3,000 KG. 10 MM. CARBIDE BALL	HARDNESS NUMBER	DIAMETER PYRAMID (50 KB. BRALE)	C SCALE (150 KG. BRALE)	B. SCALE 100 KG. 1/16" BALL	SHORE	TENSILE STRENGTH (X 1000 PSI)
4.95	146	153	-----	80	-----	72
5.00	143	150	-----	79	22	71
5.05	140	147	-----	78	-----	70
5.10	137	143	-----	76	21	67
5.15	134	140	-----	75	-----	66
5.20	131	137	-----	74	-----	65
5.25	128	134	-----	73	-----	64
5.30	126	132	-----	72	20	63
5.35	124	129	-----	71	-----	62
5.40	121	127	-----	70	19	60
5.45	118	124	-----	69	-----	59
5.50	116	122	-----	68	18	58
5.55	114	119	-----	67	-----	57
5.60	111	117	-----	66	15	56
5.65	109	-----	-----	65	-----	-----
5.70	107	-----	-----	64	-----	-----
5.75	105	-----	-----	62	-----	-----
5.80	103	-----	-----	61	-----	-----



VANGUARD STEEL LTD.

PRODUCT MANUAL

CONVERSIONS

TENSILE STRENGTH CONVERSION

LBS. PER SQ. IN.	LONG TONS PER SQ. IN.	KG. PER SQ. MM.	LBS. PER SQ. IN.	LONG TONS PER SQ. IN.	KG. PER SQ. MM.
45,000	20.09	31.64	111,000	49.55	78.04
46,000	20.54	32.35	112,000	50.00	78.74
47,000	20.98	33.04	113,000	50.45	79.45
48,000	21.43	33.75	114,000	50.89	80.15
49,000	21.88	34.46	115,000	51.34	80.85
50,000	22.32	35.15	116,000	51.79	81.56
51,000	22.77	35.86	117,000	52.23	82.26
52,000	23.21	36.55	118,000	52.68	82.96
53,000	23.66	37.26	119,000	53.13	83.67
54,000	24.11	37.97	120,000	53.57	84.37
55,000	24.55	38.66	121,000	54.02	85.07
56,000	25.00	39.37	122,000	54.47	85.78
57,000	25.45	40.08	123,000	54.91	86.48
58,000	25.89	40.77	124,000	55.36	87.19
59,000	26.34	41.48	125,000	55.81	87.89
60,000	26.79	42.19	126,000	56.25	88.59
61,000	27.23	42.88	127,000	56.70	89.30
62,000	27.68	43.59	128,000	57.14	89.99
63,000	28.13	44.30	129,000	57.59	90.70
64,000	28.57	44.99	130,000	58.04	91.41
65,000	29.02	45.70	131,000	58.48	92.10
66,000	29.47	46.41	132,000	58.93	92.81
67,000	29.91	47.10	133,000	59.38	93.52
68,000	30.36	47.81	134,000	59.82	94.21
69,000	30.80	48.51	135,000	60.27	94.92
70,000	31.25	49.21	136,000	60.72	95.63
80,000	35.72	56.25	137,000	61.16	96.32
90,000	40.18	63.28	138,000	61.61	97.03
100,000	44.64	70.30	139,000	62.06	97.74
101,000	45.09	71.01	140,000	62.50	98.43
102,000	45.54	71.72	141,000	62.95	99.14
103,000	45.98	72.41	142,000	63.39	99.83
104,000	46.43	73.12	143,000	63.84	100.54
105,000	46.88	73.83	144,000	64.29	101.25
106,000	47.32	74.52	145,000	64.73	101.94
107,000	47.77	75.23	146,000	65.18	102.65
108,000	48.22	75.94	147,000	65.63	103.36
109,000	48.66	76.63	148,000	66.07	104.05
110,000	49.11	77.34	149,000	66.52	104.76

(CONTINUED)



VANGUARD STEEL LTD.

PRODUCT MANUAL

CONVERSIONS

TENSILE STRENGTH CONVERSION

LBS. PER SQ. IN.	LONG TONS PER SQ. IN.	KG. PER SQ. MM.	LBS. PER SQ. IN.	LONG TONS PER SQ. IN.	KG. PER SQ. MM.
150,000	66.97	105.47	189,000	84.38	132.89
151,000	67.41	106.16	190,000	84.82	133.58
152,000	67.86	106.87	191,000	85.27	134.29
153,000	68.31	107.58	192,000	85.72	135.00
154,000	68.75	108.27	193,000	86.16	135.69
155,000	69.20	108.98	194,000	86.61	136.40
156,000	69.64	109.67	195,000	87.06	137.11
157,000	70.09	110.38	196,000	87.50	137.80
158,000	70.54	111.09	197,000	87.95	138.51
159,000	70.98	111.78	198,000	88.40	139.22
160,000	71.43	112.49	199,000	88.84	139.91
161,000	71.88	113.20	200,000	89.29	140.62
162,000	72.32	113.89	201,000	89.73	141.31
163,000	72.77	114.60	202,000	90.18	142.02
164,000	73.22	115.31	203,000	90.63	142.73
165,000	73.66	116.01	204,000	91.07	143.42
166,000	74.11	116.71	205,000	91.52	144.13
167,000	74.56	117.42	206,000	91.97	144.84
168,000	75.00	118.12	207,000	92.41	145.53
169,000	75.45	118.82	208,000	92.86	146.24
170,000	75.89	119.52	209,000	93.31	146.95
171,000	76.34	120.23	210,000	93.75	147.64
172,000	76.79	120.93	211,000	94.20	148.35
173,000	77.23	121.63	212,000	94.65	149.06
174,000	77.68	122.34	213,000	95.09	149.75
175,000	78.13	123.04	214,000	95.54	150.46
176,000	78.57	123.74	215,000	95.98	151.16
177,000	79.02	124.45	216,000	96.43	151.87
178,000	79.47	125.16	217,000	96.88	152.57
179,000	79.91	125.85	218,000	97.32	153.27
180,000	80.36	126.56	219,000	97.77	153.98
181,000	80.81	127.27	220,000	98.22	154.68
182,000	81.25	127.96	221,000	98.66	155.38
183,000	81.70	128.67	222,000	99.11	156.09
184,000	82.14	129.36	223,000	99.56	156.79
185,000	82.59	130.07	224,000	100.00	157.49
186,000	83.04	130.78	225,000	100.45	158.20
187,000	83.48	131.47	226,000	100.90	158.90
188,000	83.93	132.18	227,000	101.34	159.60

(CONTINUED)



VANGUARD STEEL LTD.

PRODUCT MANUAL

CONVERSIONS

TENSILE STRENGTH CONVERSION

LBS. PER SQ. IN.	LONG TONS PER SQ. IN.	KG. PER SQ. MM.	LBS. PER SQ. IN.	LONG TONS PER SQ. IN.	KG. PER SQ. MM.
228,000	101.79	160.31	264,000	117.86	185.61
229,000	102.23	161.00	265,000	118.31	186.32
230,000	102.68	161.71	266,000	118.75	187.02
231,000	103.13	162.42	267,000	119.20	187.73
232,000	103.57	163.11	268,000	119.65	188.43
230,000	102.68	161.71	269,000	120.09	189.13
231,000	103.13	162.42	270,000	120.54	189.84
232,000	103.57	163.11	271,000	120.99	190.54
233,000	104.02	163.82	272,000	121.43	191.24
234,000	104.47	164.53	273,000	121.88	191.95
235,000	104.91	165.22	274,000	122.32	192.64
236,000	105.36	165.93	275,000	122.77	193.35
237,000	105.81	166.64	276,000	123.22	194.06
238,000	106.25	167.33	277,000	123.66	194.75
239,000	106.70	168.04	278,000	124.11	195.46
240,000	107.15	168.75	279,000	124.56	196.17
241,000	107.59	169.44	280,000	125.00	196.86
242,000	108.04	170.15	281,000	125.45	197.57
243,000	108.48	170.84	282,000	125.90	198.28
244,000	108.93	171.55	283,000	126.34	198.97
245,000	109.38	172.26	284,000	126.79	199.68
246,000	109.82	172.95	285,000	127.24	200.39
247,000	110.27	173.66	286,000	127.68	201.08
248,000	110.72	174.37	287,000	128.13	201.79
249,000	111.16	175.06	288,000	128.57	202.48
250,000	111.61	175.77	289,000	129.02	203.19
251,000	112.06	176.48	290,000	129.47	203.90
252,000	112.50	177.17	291,000	129.91	204.59
253,000	112.95	177.88	292,000	130.36	205.30
254,000	113.40	178.59	293,000	130.81	206.01
255,000	113.84	179.28	294,000	131.25	206.70
256,000	114.29	179.99	295,000	131.70	207.41
257,000	114.74	180.70	296,000	132.15	208.12
258,000	115.18	181.39	297,000	132.59	208.81
259,000	115.63	182.10	298,000	133.04	209.52
260,000	116.07	182.80	299,000	133.49	210.23
261,000	116.52	183.50	300,000	133.93	210.92
262,000	116.97	184.21			
263,000	117.41	184.91			