## Hardness Conversion Chart

Rockwell							Rockwell	Superfic	ial	Bri	inell	Vickers	Shore	
A	В	С	D	E	F	15-N	30-N	45-N	30-Т	3000 kg	500 kg	136		Approx Tensile Strength (psi)
60kg Brale	100kg 1/16" Ball	150kg Brale	100kg Brale	100kg 1/8" Ball	60kg 1/16" Ball	15kg Brale	30kg Brale	45kg Brale	30 kg 1/16" Ball	10mm Ball Steel	10mm Ball Steel	Diamond Pyramid	Sciero-scope	
86.5		70	78.5			94.0	86.0	77.6				1076	101	
86.0		69	77.7			93.5	85.0	76.5				1044	99	
85.6		68	76.9			93.2	84.4	75.4				940	97	
85.0		67	76.1			92.9	83.6	74.2				900	95	
84.5		66	75.4			92.5	82.8	73.2				865	92	
83.9		65	74.5			92.2	81.9	72.0		739		832	91	
83.4		64	73.8			91.8	81.1	71.0		722		800	88	
82.8		63	73.0			91.4	80.1	69.9		705		772	87	
82.3		62	72.2			91.1	79.3	68.8		688		746	85	
81.8		61	71.5			90.7	78.4	67.7		670		720	83	
81.2		60	70.7			90.2	77.5	66.6		654		697	81	320,000
80.7		59	69.9			89.8	76.6	65.5		634		674	80	310,000
80.1		58	69.2			89.3	75.7	64.3		615		653	78	300,000
79.6		57	68.5			88.9	74.8	63.2		595		633	76	290,000
79.0		56	67.7			88.3	73.9	62.0		577		613	75	282,000
78.5	120	55	66.9			87.9	73.0	60.9		560		595	74	274,000
78.0	120	54	66.1			87.4	72.0	59.8		543		577	72	266,000
77.4	119	53	65.4			86.9	71.2	58.6		525		560	71	257,000
76.8	119	52	64.6			86.4	70.2	57.4		500		544	69	245,000
76.3	118	51	63.8			85.9	69.4	56.1		487		528	68	239,000
75.9	117	50	63.1			85.5	68.5	55.0		475		513	67	233,000
75.2	117	49	62.1			85.0	67.6	53.8		464		498	66	227,000
74.7	116	48	61.4			84.5	66.7	52.5		451		484	64	221,000
74.1	116	47	60.8			83.9	65.8	51.4		442		471	63	217,000
73.6	115	46	60.0			83.5	64.8	50.3		432		458	62	212,000
73.1	115	45	59.2			83.0	64.0	49.0		421		446	60	206,000
72.5	114	44	58.5			82.5	63.1	47.8		409		434	58	200,000
72.0	113	43	57.7			82.0	62.2	46.7		400		423	57	196,000

Rockwell						Rockwell Superficial				Brinell		Vickers	Shore	
<b>A</b> 60kg Brale	<b>B</b> 100kg 1/16" Ball	<b>C</b> 150kg Brale	<b>D</b> 100kg Brale	<b>E</b> 100kg 1/8" Ball	<b>F</b> 60kg 1/16" Ball	<b>15-N</b> 15kg Brale	<b>30-N</b> 30kg Brale	<b>45-N</b> 45kg Brale	<b>30-T</b> 30 kg 1/16" Ball	3000 kg 10mm Ball Steel	500 kg  10mm Ball Steel	<b>136</b> Diamond Pyramid	Sciero-scope	Approx Tensile Strength (psi)
71.5	113	42	56.9			81.5	61.3	45.5		390		412	56	191,000
70.9	112	41	56.2			80.9	60.4	44.3		381		402	55	187,000
70.4	112	40	55.4	<u></u>		80.4	59.5	43.1		371		392	54	182,000
69.9	111	39	54.6	<u></u>		79.9	58.6	41.9		362		382	52	177,000
69.4	110	38	53.8			79.4	57.7	40.8		353		372	51	173,000
68.9	110	37	53.1			78.8	56.8	39.6		344		363	50	169,000
68.4	109	36	52.3			78.3	55.9	38.4		336		354	49	165,000
67.9	109	35	51.5			77.7	55.0	37.2		327		345	48	160,000
67.4	108	34	50.8			77.2	54.2	36.1		319		336	47	156,000
66.8	108	33	50.0			76.6	53.3	34.9		311		327	46	152,000
66.3	107	32	49.2			76.1	52.1	33.7		301		318	44	147,000
65.8	106	31	48.4			75.6	51.3	32.5		294		310	43	144,000
65.3	105	30	47.7			75.0	50.4	31.3		286		302	42	140,000
64.7	104	29	47.0			74.5	49.5	30.1		279		294	41	137,000
64.3	104	28	46.1			73.9	48.6	28.9		271		286	41	133,000
63.8	103	27	45.2			73.3	47.7	27.8		264		279	40	129,000
63.3	103	26	44.6			72.8	46.8	26.7		258		272	39	126,000
62.8	102	25	43.8			72.2	45.9	25.5		253		266	38	124,000
62.4	101	24	43.1			71.6	45.0	24.3		247		260	37	121,000
62.0	100	23	42.1			71.0	44.0	23.1	82.0	240	201	254	36	118,000
61.5	99	22	41.6			70.5	43.2	22.0	81.5	234	195	248	35	115,000
61.0	98	21	40.9			69.9	42.3	20.7	81.0	228	189	243	35	112,000
60.5	97	20	40.1			69.4	41.5	19.6	80.5	222	184	238	34	109,000
59.0	96	18							80.0	216	179	230	33	106,000
58.0	95	16							79.0	210	175	222	32	103,000
57.5	94	15							78.5	205	171	213	31	100,000
57.0	93	13							78.0	200	167	208	30	98,000
56.5	92	12							77.5	195	163	204	29	96,000
56.0	91	10							77.0	190	160	196	28	93,000
55.5	90	9							76.0	185	157	192	27	91,000
55.0	89	8							75.5	180	154	188	26	88,000

Rockwell						Rockwell Superficial				Brinell		Vickers	Shore	
A 60kg Brale	<b>B</b> 100kg 1/16"	<b>C</b> 150kg	<b>D</b>	<b>E</b> 100kg 1/8"	<b>F</b> 60kg 1/16"	<b>15-N</b> 15kg	<b>30-N</b> 30kg	<b>45-N</b> 45kg	<b>30-T</b> 30 kg 1/16"	<b>3000 kg</b> 10mm Ball	<b>500 kg</b> 10mm Ball	<b>136</b> Diamond	Sciero-scope	Approx Tensile Strength (psi)
	Ball	Brale	Brale	Ball	Ball	Brale	Brale	Brale	Ball	Steel	Steel	Pyramid		
54.0	88	7							75.0	176	151	184	26	86,000
53.5	87	6							74.5	172	148	180	26	84,000
53.0	86	5							74.0	169	145	176	25	83,000
52.5	85	4							73.5	165	142	173	25	81,000
52.0	84	3							73.0	162	140	170	25	79,000
51.0	83	2							72.0	159	137	166	24	78,000
50.5	82	1							71.5	156	135	163	24	76,000
50.0	81	0							71.0	153	133	160	24	75,000
49.5	80								70.0	150	130			73,000
49.0	79								69.5	147	128			
48.5	78								69.0	144	126			
48.0	77								68.0	141	124			
47.0	76								67.5	139	122			
46.5	75				99.5				67.0	137	120			
46.0	74				99.0				66.0	135	118			
45.5	73				98.5				65.5	132	116			
45.0	72				98.0				65.0	130	114			
44.5	71			100.0	97.5				64.2	127	112			
44.0	70			99.5	97.0				63.5	125	110			
43.5	69			99.0	96.0				62.8	123	109			
43.0	68			98.0	95.5				62.0	121	107			
42.5	67			97.5	95.0				61.4	119	106			
42.0	66			97.0	94.5				60.5	117	104			
41.8	65			96.0	94.0				60.1	116	102			
41.5	64			95.5	93.5				59.5	114	101			
41.0	63			95.0	93.0				58.7	112	99			
40.5	62			94.5	92.0				58.0	110	98			
40.0	61			93.5	91.5				57.3	108	96			
39.5	60			93.0	91.0				56.5	107	95			
39.0	59			92.5	90.5				55.9	106	94			
38.5	58			92.0	90.0				55.0	104	92			<u></u>
				<u> </u>			<u> </u>	<u> </u>		1.57	٠ <u>ـ</u>	<u> </u>	<u> </u>	<u> </u>

Color   Colo	Rockwell							Rockwell	Superfic	ial	Brinell		Vickers	Shore	
														Science coope	Tensile
37.8         56          90.5         89.0           54.0         101         90   53.2         99         89                   51.8          86            51.0          86           51.0          86           51.0          83            49.5          83            49.5          83             49.5          83 <th></th> <th></th> <th>Brale</th> <th>Brale</th> <th></th> <th></th> <th>Brale</th> <th>Brale</th> <th>Brale</th> <th></th> <th></th> <th></th> <th>Pyramid</th> <th>Sciero-scope</th> <th></th>			Brale	Brale			Brale	Brale	Brale				Pyramid	Sciero-scope	
37.5         55          90.0         88.0           53.2         99         89 <td></td> <td>57</td> <td></td> <td></td> <td>91.0</td> <td>89.5</td> <td></td> <td></td> <td></td> <td>54.6</td> <td>102</td> <td></td> <td></td> <td></td> <td></td>		57			91.0	89.5				54.6	102				
37.0         54          89.5         87.5           52.5          87.7															
38.5         53          88.0         87.0           51.8          86 </td <td></td> <td>99</td> <td></td> <td></td> <td></td> <td></td>											99				
36.0         52          88.0         86.5           51.0          85              35.5         51           87.5         86.0           50.4          84              35.0         50           86.5         85.0           49.5          83              34.8         49           86.5         85.0            48.1          82              34.0         47           85.5         84.5           47.7          80              33.0         46           84.5         83.0           47.0          79              32.0         43           82.5         81.5 </td <td>37.0</td> <td></td> <td></td> <td></td> <td>89.5</td> <td>87.5</td> <td></td> <td></td> <td></td> <td>52.5</td> <td></td> <td>87</td> <td></td> <td></td> <td></td>	37.0				89.5	87.5				52.5		87			
35.5         51          87.5         86.0           50.4          84              35.0         50           87.0         85.5            49.5          83              34.8         49           85.5         84.5            49.1          82               49.1           82              49.1          82               49.5            48.5            49.1               49.0                       .	36.5	53			89.0	87.0				51.8		86			
35.0         50          87.0         86.5           49.5          83               49.1          82               49.1          82 </td <td>36.0</td> <td>52</td> <td></td> <td></td> <td>88.0</td> <td>86.5</td> <td></td> <td></td> <td></td> <td>51.0</td> <td></td> <td>85</td> <td></td> <td></td> <td></td>	36.0	52			88.0	86.5				51.0		85			
34.8         49          66.5         86.0           49.1          82              34.5         48           86.5         84.5           48.5          81              34.0         47          85.0         84.0           47.7          80              33.5         46           84.0         82.5           47.0          79              33.0         45           82.0           46.2          79              32.0         43          82.5         81.5           44.8          77              31.0         41          81.5         80.5            43.4          75 <td>35.5</td> <td>51</td> <td></td> <td></td> <td>87.5</td> <td>86.0</td> <td></td> <td></td> <td></td> <td>50.4</td> <td></td> <td>84</td> <td></td> <td></td> <td></td>	35.5	51			87.5	86.0				50.4		84			
34.5         48           85.5         84.5           48.5          81              47.7          80             47.7          80             47.7          80             47.7          80             47.7          80            47.0            47.0             47.0             47.0             47.0             47.0             46.2            46.2            45.5            45.5            45.2            44.	35.0	50			87.0	85.5				49.5		83			
34.0         47          85.0         84.0           47.7          80              33.5         46           84.0         82.5           47.0          79              32.5         44           83.5         82.0           45.5          77              32.0         43           82.0         81.5            44.8  <	34.8	49			86.5	85.0				49.1		82			
33.5         46           84.5         83.0           47.0          79 </td <td>34.5</td> <td>48</td> <td></td> <td></td> <td>85.5</td> <td>84.5</td> <td></td> <td></td> <td></td> <td>48.5</td> <td></td> <td>81</td> <td></td> <td></td> <td></td>	34.5	48			85.5	84.5				48.5		81			
33.0         45           84.0         82.5           46.2          79              32.5         44           83.5         82.0           45.5          78              32.0         43           82.5         81.5           44.8   <	34.0	47			85.0	84.0				47.7		80			
32.5       44        83.5       82.0         45.5        78            32.0       43         82.5       81.5          44.8	33.5	46			84.5	83.0				47.0		79			
32.0       43         82.5       81.5         44.8        77            31.5       42         82.0       81.0          44.0        76            31.0       41         81.5       80.5          43.4        75            30.8       40         81.0       79.5          43.0	33.0	45			84.0	82.5				46.2		79			
31.5         42          82.0         81.0           44.0          76              31.0         41           81.5         80.5            43.4          75              30.8         40          81.0         79.5            43.0          74              30.5         39           80.0         79.0            42.1          74              30.0         38           79.5         78.5           41.5          73               29.5         37           79.0         78.0           40.7          72              29.0         36           78.5 <td>32.5</td> <td>44</td> <td></td> <td></td> <td>83.5</td> <td>82.0</td> <td></td> <td></td> <td></td> <td>45.5</td> <td></td> <td>78</td> <td></td> <td></td> <td></td>	32.5	44			83.5	82.0				45.5		78			
31.0         41           81.5         80.5           43.4          75              30.8         40           81.0         79.5            44.0          74              30.5         39           80.0         79.0            42.1          74              30.0         38           79.5         78.5            41.5          73               29.5         37           79.0         78.0           40.0          71              29.0         36           78.5         77.5            40.0          71 </td <td>32.0</td> <td>43</td> <td></td> <td></td> <td>82.5</td> <td>81.5</td> <td></td> <td></td> <td></td> <td>44.8</td> <td></td> <td>77</td> <td></td> <td></td> <td></td>	32.0	43			82.5	81.5				44.8		77			
30.8       40        81.0       79.5         43.0        74 <td< td=""><td>31.5</td><td>42</td><td></td><td></td><td>82.0</td><td>81.0</td><td></td><td></td><td></td><td>44.0</td><td></td><td>76</td><td></td><td></td><td></td></td<>	31.5	42			82.0	81.0				44.0		76			
30.5         39          80.0         79.0           42.1          74            30.0         38           79.5         78.5           41.5          73	31.0	41			81.5	80.5				43.4		75			
30.0         38          79.5         78.5           41.5          73 </td <td>30.8</td> <td>40</td> <td></td> <td></td> <td>81.0</td> <td>79.5</td> <td></td> <td></td> <td></td> <td>43.0</td> <td></td> <td>74</td> <td></td> <td></td> <td></td>	30.8	40			81.0	79.5				43.0		74			
29.5       37        79.0       78.0         40.7        72 <td< td=""><td>30.5</td><td>39</td><td></td><td><b>—</b></td><td>80.0</td><td>79.0</td><td></td><td></td><td></td><td>42.1</td><td></td><td>74</td><td></td><td></td><td></td></td<>	30.5	39		<b>—</b>	80.0	79.0				42.1		74			
29.0       36        78.5       77.5         40.0        71 <td< td=""><td>30.0</td><td>38</td><td></td><td></td><td>79.5</td><td>78.5</td><td></td><td></td><td></td><td>41.5</td><td></td><td>73</td><td></td><td></td><td></td></td<>	30.0	38			79.5	78.5				41.5		73			
28.5       35        78.0       77.0         39.3        71 <td< td=""><td>29.5</td><td>37</td><td></td><td></td><td>79.0</td><td>78.0</td><td></td><td></td><td></td><td>40.7</td><td></td><td>72</td><td></td><td></td><td></td></td<>	29.5	37			79.0	78.0				40.7		72			
28.0     34      77.0     76.5       38.5      70           27.8     33       76.5     75.5       37.9      69           27.5     32       76.0     75.0        37.5      68          27.0     31       75.5     74.5       36.6      68          26.5     30       75.0     74.0       36.0      67          26.0     29       73.5     73.0       34.5      66          25.5     28       73.5     73.0       34.5      66	29.0	36			78.5	77.5				40.0		71			
27.8       33        76.5       75.5         37.9        69 <td< td=""><td>28.5</td><td>35</td><td></td><td></td><td>78.0</td><td>77.0</td><td></td><td></td><td></td><td>39.3</td><td></td><td>71</td><td></td><td></td><td></td></td<>	28.5	35			78.0	77.0				39.3		71			
27.5     32      76.0     75.0       37.5      68          27.0     31       75.5     74.5        36.6      68          26.5     30       75.0     74.0        36.0      67          26.0     29       74.0     73.5        35.2      66          25.5     28      73.5     73.0       34.5      66	28.0	34			77.0	76.5				38.5		70			
27.5     32      76.0     75.0       37.5      68          27.0     31       75.5     74.5        36.6      68          26.5     30       75.0     74.0        36.0      67          26.0     29       74.0     73.5        35.2      66          25.5     28      73.5     73.0       34.5      66	27.8	33			76.5	75.5				37.9		69			
27.0     31      75.5     74.5       36.6      68          26.5     30      75.0     74.0       36.0      67          26.0     29      74.0     73.5       35.2      66          25.5     28      73.5     73.0       34.5      66		-			ļ					-					
26.5     30      75.0     74.0       36.0      67          26.0     29      74.0     73.5        35.2      66          25.5     28      73.5     73.0       34.5      66						74.5									
26.0     29      74.0     73.5       35.2      66          25.5     28      73.5     73.0       34.5      66															
25.5 28 73.5 73.0 34.5 66															
		!													
	25.0	27			73.0	72.5				33.8		65			

	Rockwell						Rockwell Superficial				inell	Vickers	Shore	
A	В	С	D	E	F	15-N	30-N	45-N	30-T	3000 kg	500 kg	136		Approx Tensile Strength (psi)
60kg Brale	100kg 1/16" Ball	150kg Brale	100kg Brale	100kg 1/8" Ball	60kg 1/16" Ball	15kg Brale	30kg Brale	45kg Brale	30 kg 1/16" Ball	10mm Ball Steel	10mm Ball Steel	Diamond Pyramid	Sciero-scope	ouchgui (pai)
24.5	26			72.5	72.0				33.1		65			
24.2	25			72.0	71.0				32.4		64			
24.0	24			71.0	70.5				32.0		64			
23.5	23			70.5	70.0				31.1		63			
23.0	22			70.0	69.5				30.4		63			
22.5	21			69.5	69.0				29.7		62			
22.0	20			68.5	68.5				29.0		62			
21.5	19			68.0	68.0				28.1		61			
21.2	18			67.5	67.0				27.4		61			
21.0	17			67.0	66.5				26.7		60			
20.5	16			66.5	66.0				26.0		60			
20.0	15			65.5	65.5				25.3		59			
	14			65.0	65.0				24.6		59			
	13			64.5	64.5				23.9		58			
	12			64.0	64.0				23.5		58			
	11			63.5	63.5				22.6		57			
	10			62.5	63.0				21.9		57			
	9			62.0	62.0				21.2		56			
	8			61.5	61.5				20.5		56			
	7			61.0	61.0				19.8		56			
	6			60.5	60.5				19.1		55			
	5			60.0	60.0				18.4		55			
	4			59.0	59.5				18.0		55			
	3			58.5	59.0				17.1		54			
	2			58.0	58.0				16.4		54			
	1			57.5	57.5				15.7		53			
	0			57.0	57.0				15.0		53			

The information in this document is not guaranteed, you should be advised to consult with an engineer.

Source: CarbideDepot.com (Additional resources: www.carbidedepot.com/resources.htm)

Hardness Conversion Chart courtesy of Allied Titanium (www.alliedtitanium.com)