

# Hardness Conversion Chart

Estimated hardness conversion of Rockwell C Scale

Rockwell C Scale hardness Conic diamond rock Weight 150 kg f (Hr)	Vickers Hardness HV	Brinell Hardness Sphere weight 3000kg f		Rockwell Hardness			Shore Hardness HS	Tensile strength (Estimated) kg f/mm <sup>2</sup>
		Standard sphere HB	Tungsten carbide sphere HBS	A Scale weight 60 kg f Conic Diamond HRA	B Scale weight 100 kg f Diameter 1/16 in sphere HRB	D Scale weight 100 kg f Conic Diamond HRD		
80	1865	—	—	92.0	—	—	—	—
79	1787	—	—	91.5	—	—	—	—
78	1710	—	—	91.0	—	—	—	—
77	1633	—	—	90.5	—	—	—	—
76	1556	—	—	90.0	—	—	—	—
75	1478	—	—	89.5	—	—	—	—
74	1400	—	—	89.0	—	—	—	—
73	1323	—	—	88.5	—	—	—	—
72	1245	—	—	88.0	—	—	—	—
71	1160	—	—	87.0	—	—	—	—
70	1076	—	—	86.5	—	—	—	—
69	1004	—	—	86.0	—	—	—	—
68.0	940	—	—	85.6	—	76.9	97	—
67.5	920	—	—	85.3	—	76.5	96	—
67.0	900	—	—	85.0	—	76.1	95	—
66.4	880	—	767	84.7	—	75.7	93	—
65.9	860	—	757	84.4	—	75.3	92	—
65.3	840	—	745	84.1	—	74.8	91	—
64.7	820	—	733	83.8	—	74.3	90	—
64.0	800	—	722	83.4	—	73.8	88	—
—	—	—	712	—	—	—	—	—
63.3	780	—	710	83.0	—	73.3	87	—
62.5	760	—	698	82.6	—	72.6	86	—
61.8	740	—	684	82.2	—	72.1	—	—
61.7	737	—	682	82.2	—	72.0	84	—
61.0	720	—	670	81.8	—	71.5	83	—
60.1	700	—	656	81.3	—	70.8	—	—
60.0	697	—	653	81.2	—	70.7	81	—
59.7	690	—	647	81.1	—	70.5	—	—
59.2	680	—	638	80.8	—	70.1	80	—
58.8	670	—	630	80.6	—	69.8	—	—
58.7	667	—	627	80.5	—	69.7	79	—
57.3	640	—	601	79.8	—	68.7	77	—
56.0	615	—	578	79.1	—	67.7	75	—
54.7	591	—	555	78.4	—	66.7	73	210
53.5	569	—	534	77.8	—	65.8	71	202
52.1	547	—	514	76.9	—	64.7	70	193
51.0	528	—	495	76.3	—	63.8	68	186
49.6	508	—	477	75.6	—	62.7	66	177
48.5	491	—	461	74.9	—	61.7	65	170
47.1	472	—	444	74.2	—	60.8	63	162
45.7	455	429	429	73.4	—	59.7	61	154
44.5	440	415	415	72.8	—	58.8	59	149
43.1	425	401	401	72.0	—	57.8	58	142
41.8	410	388	388	71.4	—	56.8	56	136
40.4	396	375	375	70.6	—	55.7	54	129

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		Standard sphere HB	Tungsten carbide sphere HBS	A Scale weight 60 kg f Conic Diamond HRA	B Scale weight 100 kg f Diameter 1/16 in sphere HRB	D Scale weight 100 kg f Conic Diamond HRD		
39.1	383	363	363	70.0	—	54.6	52	124
37.9	372	352	352	69.3	(110.0)	53.8	51	120
36.6	360	341	341	68.7	(109.0)	52.8	50	115
35.5	350	331	331	68.1	(108.5)	51.9	48	112
34.3	339	321	321	67.5	(108.0)	51.0	47	108
33.1	328	311	311	66.9	(107.5)	50.0	46	105
32.1	319	302	302	66.3	(107.0)	49.3	45	103
30.9	309	293	293	65.7	(106.0)	48.3	43	99
29.9	301	285	285	65.3	(105.5)	47.6	—	97
28.8	292	277	277	64.6	(104.5)	46.7	41	94
27.6	284	269	269	64.1	(104.0)	45.9	40	91
26.6	276	262	262	63.6	(103.0)	45.0	39	89
25.4	269	255	255	63.0	(102.0)	44.2	38	86
24.2	261	248	248	62.5	(101.0)	43.2	37	84
22.8	253	241	241	61.8	100.0	42.0	36	82
21.7	247	235	235	61.4	99.0	41.4	35	80
20.5	241	229	229	60.8	98.2	40.5	34	78
(18.8)	234	223	223	—	97.3	—	—	—
(17.5)	228	217	217	—	96.4	—	33	74
(16.0)	222	212	212	—	95.5	—	—	72
(15.2)	218	207	207	—	94.6	—	32	70
(13.8)	212	201	201	—	93.8	—	31	69
(12.7)	207	197	197	—	92.8	—	30	67
(11.5)	202	192	192	—	91.9	—	29	65
(10.0)	196	187	187	—	90.7	—	—	63
( 9.0)	192	183	183	—	90.0	—	28	63
( 8.0)	188	179	179	—	89.0	—	27	61
( 6.4)	182	174	174	—	87.8	—	—	60
( 5.4)	178	170	170	—	86.8	—	26	58
( 4.4)	175	167	167	—	86.0	—	—	57
( 3.3)	171	163	163	—	85.0	—	25	56
( 0.9)	163	156	156	—	82.9	—	—	53
	156	149	149	—	80.8	—	23	51
	150	143	143	—	78.7	—	22	50
	143	137	137	—	76.4	—	21	47
	137	131	131	—	74.0	—	—	46
	132	126	126	—	82.0	—	20	44
	127	121	121	—	69.8	—	19	42
	122	116	116	—	67.6	—	18	41
	117	111	111	—	65.7	—	15	39

(Note)

1. Numbers inside the parentheses are rarely in use.
2. This chart was copied from JIS Iron and Steel Handbook (1987).