

# Hardness conversion tables

Vickers Hardness	Rockwell C-Scale 150 Kgf Load Diamond Penetrator	Rockwell B-Scale 100 Kgf Load 1/16"dia (1.588 mm) ball	Brinell Hardness No. 3000 Kgf Load 10mm ball	Tensile Strength (approximate)			Shore Scleroscope Hardness No.	Rockwell A-Scale 60 Kgf Load Brale Penetrator	Rockwell D-Scale 100Kgf Load Diamond Penetrator	Rockwell Superficial Hardness No. Superficial Diamond Penetrator		
				Mpa	lbf/in <sup>2</sup> x 1000	tonf/in <sup>2</sup> t.s.i.				15-N Scale	15-N Scale	45-N Scale
										15Kgf Load	30Kgf Load	45Kgf Load
HV	HRC	HRB	HB				HRA	HRD	HR 15-N	HR 30-N	HR 45-N	
940	68	-	-	-	-	-	97	85.6	76.9	93.2	84.4	75.4
900	67	-	-	-	-	-	95	85.0	76.1	92.9	83.6	74.2
865	66	-	-	-	-	-	92	84.5	75.4	92.5	82.8	73.3
832	65	-	739	-	-	-	91	83.9	74.5	92.2	81.9	72
800	64	-	722	-	-	-	88	83.4	73.8	91.8	81.1	71
772	63	-	705	-	-	-	87	82.8	73.0	91.4	80.1	69.9
746	62	-	688	-	-	-	85	82.3	72.2	91.1	79.3	68.8
720	61	-	670	-	-	-	83	81.8	71.5	90.7	78.4	67.7
697	60	-	654	-	-	-	81	81.2	70.7	90.2	77.5	66.6
674	59	-	634	-	-	-	80	80.7	69.9	89.8	76.6	65.5
653	58	-	615	-	-	-	78	80.1	69.2	89.3	75.7	64.3
633	57	-	595	-	-	-	76	79.6	68.5	88.9	74.8	63.2
613	56	-	577	-	-	-	75	79.0	67.7	88.3	73.9	62
595	55	-	560	2075	301	134.0	74	78.5	66.9	87.9	73.0	60.9
577	54	-	543	2015	292	130.0	72	78.0	66.1	87.4	72.0	59.8
560	53	-	525	1950	283	126.0	71	77.4	65.4	86.9	71.2	58.6
544	52	-	512	1880	273	122.0	69	76.8	64.6	86.4	70.2	57.4
528	51	-	496	1820	264	118.0	68	76.3	63.8	85.9	69.4	56.1
513	50	-	481	1760	255	114.0	67	75.9	63.1	85.5	68.5	55
498	49	-	469	1695	246	110.0	66	75.2	62.1	85.0	67.6	53.8
484	48	-	451	1635	237	106.0	64	74.7	61.4	84.5	66.7	52.5
471	47	-	442	1580	229	102.0	63	74.1	60.8	83.9	65.8	51.4
458	46	-	432	1530	222	99.0	62	73.6	60.0	83.5	64.8	50.3
446	45	-	421	1480	215	96.0	60	73.1	59.2	83.0	64.0	49
434	44	-	409	1435	208	93.0	58	72.5	58.5	82.5	63.1	47.8
423	43	-	400	1385	201	90.0	57	72.0	57.7	82.0	62.2	46.7
412	42	-	390	1340	194	86.5	56	71.5	56.9	81.5	61.3	45.5
402	41	-	381	1295	188	84.0	55	70.9	56.2	80.9	60.4	44.3
392	40	-	371	1250	181	81.0	54	70.4	55.4	80.4	59.5	43.1
382	39	-	362	1215	176	78.5	52	69.9	54.6	79.9	58.6	41.9
372	38	-	353	1180	171	76.5	51	69.4	53.8	79.4	57.7	40.8
363	37	-	344	1160	168	75.0	50	68.9	53.1	78.8	56.8	39.6
354	36	(109.0)	336	1115	162	72.5	49	68.4	52.3	78.3	55.9	38.4
345	35	(108.5)	327	1080	157	70.0	48	67.9	51.5	77.7	55.0	37.2
336	34	(108.0)	319	1055	153	68.5	47	67.4	50.8	77.2	54.2	36.1
327	33	(107.5)	311	1025	149	66.5	46	66.8	50.0	76.6	53.3	34.9
318	32	(107.0)	301	1000	145	64.5	44	66.3	49.2	76.1	52.1	33.7
310	31	(106.0)	294	980	142	63.5	43	65.8	48.4	75.6	51.3	32.5
302	30	(105.5)	286	950	138	61.5	42	65.3	47.7	75.0	50.4	31.3
294	29	(104.5)	279	930	135	60.5	41	64.7	47.0	74.5	49.5	30.1
286	28	(104.0)	271	910	132	59.0	41	64.3	46.1	73.9	48.6	28.9
279	27	(103.0)	264	885	128	57.0	40	63.8	45.2	73.3	47.7	27.8
272	26	(102.5)	258	860	125	56.0	38	63.3	44.6	72.8	46.8	26.7
266	25	(101.5)	253	840	122	54.5	38	62.8	43.8	72.2	45.9	25.5
260	24	(101.0)	247	825	120	53.5	37	62.4	43.1	71.6	45.0	24.3
254	23	100.0	243	805	117	52.0	36	62.0	42.1	71.0	44.0	23.1
248	22	99.0	237	785	114	51.0	35	61.5	41.6	70.5	43.2	22
243	21	98.5	231	770	112	50.0	35	61.0	40.9	69.9	42.3	20.7
238	20	97.8	226	760	110	49.0	34	60.5	40.1	69.4	41.5	19.6
230	(18)	96.7	219	730	106	47.5	33					
222	(16)	95.5	212	705	102	45.5	32					
213	(14)	93.9	203	675	98	44.0	31					
204	(12)	92.3	194	650	94	42.0	29					
196	(10)	90.7	187	620	90	40.0	28					
188	(8)	89.5	179	600	87	39.0	27					
180	(6)	87.1	171	580	84	37.5	26					
173	(4)	85.5	165	550	80	35.5	25					
166	(2)	83.5	158	530	77	34.5	24					
160	(0)	81.7	152	515	75	33.5	24					
150	-	78.7	143	490	71	31.5	22					
140	-	75.0	133	455	66	29.5	21					
130	-	71.2	124	425	62	27.5	20					
120	-	66.7	114	395	57	25.5	-					
110	-	62.3	105	-	-	-	-					
100	-	56.2	95	-	-	-	-					
95	-	52.0	90	-	-	-	-					
90	-	48.0	86	-	-	-	-					
85	-	41.0	81	-	-	-	-					



*We harden steel . . .*

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This table is a universally accepted conversion and is based on that published in the SAE handbook. Values in ( ) are beyond the normal range and are for information only. All conversions must be regarded as approximate and these figures are provided only as a guide.