



## Hardness Conversion Chart

Approximate equivalent hardness numbers for carbon and alloy steels

Rockwell				Rockwell Superficial			Brinell	Vickers	Knoop	Scleroscope	Approx. Tensile Strength of Steel (PSI)
A Scale 60kg Diam. Brale	B Scale 100kg 1/16" Ball	C Scale 150kg Diam. Brale	D Scale 100kg Diam. Brale	15N Scale 15kg Diam. Brale	30N Scale 30kg Diam. Brale	45N Scale 45kg Diam. Brale	3000kg 10 mm Ball		500g or Greater Load		
92	-	80.0	87	97	92	87	-	1865	-	-	-
92	-	79.0	86	-	92	87	-	1787	-	-	-
91	-	78.0	85	96	91	86	-	1710	-	-	-
91	-	77.0	84	-	91	85	-	1633	-	-	-
90	-	76.0	83	96	90	84	-	1556	-	-	-
90	-	75.0	83	-	89	83	-	1478	-	-	-
89	-	74.0	82	95	89	82	-	1400	-	-	-
89	-	73.0	81	-	88	81	-	1323	-	-	-
88	-	72.0	80	95	87	80	-	1245	-	-	-
87	-	71.0	80	-	87	79	-	1160	-	-	-
87	-	70.0	79	94	86	78	-	1076	-	99	-
86	-	69.0	78	-	85	77	-	1004	-	98	-
85.6	-	68.0	76.9	93.2	84.4	75.4	-	940	920	97	-
85.3	-	67.5	76.5	93.0	84.0	74.8	-	920	908	96	-
85.0	-	67.0	76.1	92.9	83.6	74.2	-	900	895	95	-
84.7	-	66.4	75.7	92.7	83.1	73.6	-	880	882	93	-
84.4	-	65.9	75.3	92.5	82.7	73.1	-	860	867	92	-
84.1	-	65.3	74.8	92.3	82.2	72.2	-	840	852	91	-
83.8	-	64.7	74.3	92.1	81.7	71.8	745*	820	837	90	-
83.4	-	64.0	73.8	91.8	81.1	71.0	-	800	822	88	-
83.0	-	63.3	73.3	91.5	80.4	70.2	-	780	806	87	-
82.6	-	62.5	72.6	91.2	79.7	69.4	710*	760	788	86	-
82.2	-	61.8	72.1	91.0	79.1	68.6	-	740	772	84	-
81.8	-	61.0	71.5	90.7	78.4	67.7	-	720	754	83	-
81.3	-	60.1	70.8	90.3	77.6	66.7	653*	700	735	81	-
81.1	-	59.7	70.5	90.1	77.2	66.2	-	690	725	-	-
80.8	-	59.2	70.1	89.8	76.8	65.7	-	680	716	80	329,000
80.6	-	58.8	69.8	89.7	76.4	65.3	-	670	706	-	324,000
80.3	-	58.3	69.4	89.5	75.9	64.7	620*	660	697	79	-
80.0	-	57.8	69.0	89.2	75.5	64.1	611*	650	687	78	-
79.8	-	57.3	68.7	89.0	75.1	63.5	601*	640	677	77	309,000

79.5	-	56.8	68.3	88.8	74.6	63.0	591*	630	667	76	-
79.2	-	56.3	67.9	88.5	74.2	62.4	582*	620	657	75	297,000
78.9	-	55.7	67.5	88.2	73.6	61.7	573*	610	646	-	-
78.6	-	55.2	67.0	88.0	73.2	61.2	564*	600	636	74	-
78.4	-	54.7	66.7	87.8	72.7	60.5	554*	590	625	73	285,000
78.0	-	54.1	66.2	87.5	72.1	59.9	545*	580	615	72	-
77.8	-	53.6	65.8	87.2	71.7	59.3	535*	570	604	-	274,000
77.4	-	53.0	65.4	86.9	71.2	58.6	525*	560	594	71	-
77.0	-	52.3	64.8	86.6	70.5	57.8	517*	550	583	70	263,000
76.7	-	51.7	64.4	86.3	70.0	57.0	507*	540	572	69	-
76.4	-	51.1	63.9	86.0	69.5	56.2	497*	530	561	68	253,000
76.1	-	50.5	63.5	85.7	69.0	55.6	488*	520	550	67	-
75.7	-	49.8	62.9	85.4	68.3	54.7	479*	510	539	-	243,000
75.3	-	49.1	62.2	85.0	67.7	53.9	471*	500	528	66	-
74.9	-	48.4	61.6	84.7	67.1	53.1	460*	490	517	65	235,000
74.5	-	47.7	61.3	84.3	66.4	52.2	452*	480	505	64	-
74.1	-	46.9	60.7	83.9	65.7	51.3	441	470	494	-	225,000
73.6	-	46.1	60.1	83.6	64.9	50.4	433	460	482	62	-
73.3	-	45.3	59.4	83.2	64.3	49.4	425	450	471	-	-
72.8	-	44.5	58.8	82.8	63.5	48.4	415	440	459	59	210,000
72.3	-	43.6	58.2	82.3	62.7	47.4	405	430	447	58	-
71.8	-	42.7	57.5	81.8	61.9	46.4	397	420	435	57	-
71.4	-	41.8	56.8	81.4	61.1	45.3	388	410	423	56	195,000
70.8	-	40.8	56.0	80.8	60.2	44.1	379	400	412	55	-
70.3	-	39.8	55.2	80.3	59.3	42.9	369	390	400	-	-
69.8	-	38.8	54.4	79.8	58.4	41.7	360	380	389	52	-
69.2	-	37.7	53.6	79.2	57.4	40.4	350	370	378	51	176,000
68.7	-	36.6	52.8	78.6	56.4	39.1	341	360	367	50	-
68.1	-	35.5	51.9	78.0	55.4	37.8	331	350	356	48	166,000
67.6	-	34.4	51.1	77.4	54.4	36.5	322	340	346	47	-
67.0	-	33.3	50.2	76.8	53.6	35.2	313	330	337	46	-
66.4	-	32.2	49.4	76.2	52.3	33.9	303	320	328	45	150,000
65.8	-	31.0	48.4	75.6	51.3	32.5	294	310	318	-	-
65.2	-	29.8	47.5	74.9	50.2	31.1	284	300	309	42	141,000
64.8	-	29.2	47.1	74.6	49.7	30.4	280	295	305	-	-
64.5	-	28.5	46.5	74.2	49.0	29.5	275	290	300	41	-
64.2	-	27.8	46.0	73.8	48.4	28.7	270	285	296	-	133,000
63.8	-	27.1	45.3	73.4	47.8	27.9	265	280	291	40	-
63.5	-	26.4	44.9	73.0	47.2	27.1	261	275	286	39	129,000
63.1	-	25.6	44.3	72.6	46.4	26.2	256	270	282	38	-
62.7	-	24.8	43.7	72.1	45.7	25.2	252	265	277	-	-
62.4	-	24.0	43.1	71.6	45.0	24.3	247	260	272	37	122,000
62.0	-	23.1	42.2	71.1	44.2	23.2	243	255	267	-	-
61.6	99.5	22.2	41.7	70.6	43.4	22.2	238	250	262	36	-
61.2	-	21.3	41.1	70.1	42.5	21.1	233	245	258	35	115,000

60.7	98.1	20.3	40.3	69.6	41.7	19.9	228	240	253	34	-
-	-	-	-	-	-	-	-	235	-	-	-
-	96.7	-	-	-	-	-	219	230	243	33	105,000
-	-	-	-	-	-	-	-	225	-	-	-
-	95.0	-	-	-	-	-	209	220	234	32	100,000
-	-	-	-	-	-	-	-	215	-	-	-
-	93.4	-	-	-	-	-	200	210	226	30	98,000
-	-	-	-	-	-	-	-	205	-	-	-
-	91.5	-	-	-	-	-	190	200	216	29	-
-	-	-	-	-	-	-	-	195	-	-	90,000
-	89.5	-	-	-	-	-	181	190	206	28	-
-	-	-	-	-	-	-	-	185	-	-	-
-	87.1	-	-	-	-	-	171	180	196	26	83,000
-	-	-	-	-	-	-	-	175	-	-	-
-	85.0	-	-	-	-	-	162	170	185	25	79,000
-	-	-	-	-	-	-	-	165	-	-	-
-	81.7	-	-	-	-	-	152	160	175	23	-
-	-	-	-	-	-	-	-	155	-	-	-
-	78.7	-	-	-	-	-	143	150	164	22	71,000
-	-	-	-	-	-	-	-	145	-	-	-
-	75.0	-	-	-	-	-	133	140	154	21	-
-	-	-	-	-	-	-	-	135	-	-	-
-	71.2	-	-	-	-	-	124	130	143	20	63,000
-	-	-	-	-	-	-	-	125	-	-	-
-	66.7	-	-	-	-	-	114	120	133	18	-
-	-	-	-	-	-	-	-	115	-	-	56,000
-	62.3	-	-	-	-	-	105	110	123	-	-
-	-	-	-	-	-	-	-	105	-	-	-
-	56.2	-	-	-	-	-	95	100	112	-	-
-	52.0	-	-	-	-	-	90	95	107	-	-
-	48.0	-	-	-	-	-	86	90	102	-	-
-	41.0	-	-	-	-	-	81	85	97	-	-

\* Values for tungsten carbide ball only

**References:**

Hardness Testing, ASM Internationals, Metals Park, OH, 1987

[www.engineersedge.com](http://www.engineersedge.com)

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