

## Conversion Chart

### Hardened Steel and Hardened Alloys

Rockwell			Superficial			Vickers	Knoop	Brinell	Tensile Strength	Micro-ficial	
C	A	D	G	15-N	30-N	45-N	HV	HK	HB	KSI	WMN
150 kg kg Bra	60 kg kg Bra	100 kg kg Bra	150 kg kg 1/16" ball	15 kg kg N Bra	30 kg kg N Bra	45 kg kg N Bra	10 kg	500 gm gm and over	3000 kg kg 10 mm ball	1000 lbs/ sq in	1000 gm
80	92.0	86.5		96.5	92.0	87.0	1865	-	-	-	-
79	91.5	85.5		96.3	91.5	86.5	1787	-	-	-	-
78	91.0	84.5		96.0	91.0	85.5	1710	-	-	-	-
77	90.5	84.0		95.8	90.5	84.5	1633	-	-	-	-
76	90.0	83.0		95.5	90.0	83.5	1556	-	-	-	-
75	89.5	82.5		95.3	89.0	82.5	1478	-	-	-	-
74	89.0	81.5		95.0	88.5	81.5	1400	-	-	-	-
73	88.5	81.0		94.8	88.0	80.5	1323	-	-	-	-
72	88.0	80.0		94.5	87.0	79.5	1245	-	-	-	-
71	87.0	79.5		94.3	86.5	78.5	1160	-	-	-	-
70	86.5	78.5		94.0	86.0	77.5	1076	972	NOTE 1	NOTE 2	953
69	86.0	78.0		93.5	85.0	76.5	1004	946			949
68	85.6	76.9		93.2	84.4	75.4	940	920			945
67	85.0	76.1		92.9	83.6	74.2	900	895			942
66	84.5	75.4		92.5	82.8	73.3	865	870	NA		938
65	83.9	74.5		92.2	81.9	72.0	832	846	739		934
64	83.4	73.8		91.8	81.1	71.0	800	822	722		930
63	82.8	73.0		91.4	80.1	69.9	772	799	706		926
62	82.3	72.2		91.1	79.3	68.8	746	776	688		922
61	81.8	71.5		90.7	78.4	67.7	720	754	670		917
60	81.2	70.7		90.2	77.5	66.6	697	732	654	NA	913
59	80.7	69.9		89.8	76.6	65.5	674	710	634		909
58	80.1	69.2		89.3	75.7	64.3	653	690	615		904
57	79.6	68.5		88.9	74.8	63.2	633	670	595		900
56	79.0	67.7		88.3	73.9	62.0	613	650	577		896
55	78.5	66.9		87.9	73.0	60.9	595	630	560		891
54	78.0	66.1		87.4	72.0	59.8	577	612	543		887
53	77.4	65.4		86.9	71.2	58.6	560	594	525		883
52	76.8	64.6		86.4	70.2	57.4	544	576	512		879
51	76.3	63.8		85.9	69.4	56.1	528	558	496		874
50	75.9	63.1		85.5	68.5	55.0	513	542	481		870
49	75.2	62.1		85.0	67.6	53.8	498	526	469		865
48	74.7	61.4		84.5	66.7	52.5	484	510	455		861
47	74.1	60.8		83.9	65.8	51.4	471	495	443		856
46	73.6	60.0		83.5	64.8	50.3	458	480	432		851
45	73.1	59.2		83.0	64.0	49.4	446	466	421		847
44	72.5	58.5		82.5	63.1	47.8	434	452	409		842
43	72.0	57.7		82.0	62.2	46.7	423	438	400		837
42	71.5	56.9		81.5	61.3	45.5	412	426	390		832
41	70.9	56.2		80.9	60.4	44.3	402	414	381		827
40	70.4	55.4		80.4	59.5	43.1	392	402	371		822
39	69.9	54.6		79.9	58.6	41.9	382	391	362		817
38	69.4	53.8		79.4	57.7	40.8	372	380	353		812
37	68.9	53.1		78.8	56.8	39.6	363	370	344		807
36	68.4	52.3		78.3	55.9	38.4	354	360	336		802
35	67.9	51.5		77.7	55.0	37.2	345	351	327		798
34	67.4	50.8		77.2	54.2	36.1	336	342	319		793
33	66.8	50.0		76.6	53.3	34.9	327	334	311		788
32	66.3	49.2		76.1	52.1	33.7	318	326	301		783
31	65.8	48.4	NA	75.6	51.3	32.5	310	318	294		778
30	65.3	47.7	NA	75.0	50.4	31.3	302	311	286		773
29	64.6	47.0	91.0	74.5	49.5	30.1	294	304	279		768
28	64.3	46.1	90.0	73.9	48.6	28.9	286	297	271		763
27	63.8	45.2	89.0	73.3	47.7	27.8	279	290	264		757
26	63.3	44.6	88.0	72.8	46.8	26.7	272	284	258		751
25	62.8	43.8	87.0	72.2	45.9	25.5	266	278	253		746
24	62.4	43.1	86.0	71.6	45.0	24.3	260	272	247		741
23	62.0	42.1	84.5	71.0	44.0	23.1	254	266	243		736
22	61.5	41.6	83.5	70.5	43.2	22.0	248	261	237		730
21	61.0	40.9	82.5	69.9	42.3	20.7	243	256	231		725
20	60.5	40.1	81.0	69.4	41.5	19.6	238	251	226		720

Note  
 1: A 10 mm steel ball was used for 450 BHN and below. A 10 mm carbide ball was used above 450 BHN.  
 2: The tensile strength relation to hardness is not exact, even for steel, unless it is determined for a specific material.

### Cylindrical Correction Chart 53

Cylindrical work corrections to be added to observed Rockwell number for scales indicated

Scales C, D, A Brale Diamond Indenter Diameter of Specimen - inches (mm)											
Observed Reading	1/8 (3.2)	1/4 (6.4)	3/8 (10)	1/2 (13)	5/8 (16)	3/4 (19)	7/8 (22)	1 (25)	1-1/4 (32)	1-1/2 (38)	
90	NA	0.5	0	0	0	0	0	0	0	0	
85		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
80		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
75		1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
70		1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
65		1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	
60		1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	
55		2.0	1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	
50		2.5	2.0	1.5	1.0	1.0	0.5	0.5	0.5	0.5	
45		3.0	2.0	1.5	1.0	1.0	1.0	0.5	0.5	0.5	
40		3.5	2.5	2.0	1.5	1.0	1.0	1.0	0.5	0.5	
35		4.0	3.0	2.0	1.5	1.0	1.0	1.0	0.5	0.5	
30		5.0	3.5	2.5	2.0	1.5	1.5	1.0	1.0	0.5	
25		5.5	4.0	3.0	2.5	2.0	1.5	1.0	1.0	1.0	
20		6.0	4.5	3.5	2.5	2.0	1.5	1.0	1.0	1.0	

  

Scales B, F, G 1/16-in Ball Indenter Diameter of Specimen - inches (mm)											
Observed Reading	1/8 (3.2)	1/4 (6.4)	3/8 (10)	1/2 (13)	5/8 (16)	3/4 (19)	7/8 (22)	1 (25)	1-1/4 (32)	1-1/2 (38)	
100	NA	3.5	2.5	1.5	1.5	1.0	1.0	0.5	NA	NA	
90		4.0	3.0	2.0	1.5	1.5	1.5	1.0			
80		5.0	3.5	2.5	2.0	1.5	1.5	1.5			
75		6.0	4.0	3.0	2.5	2.0	2.0	1.5			
70		7.0	5.0	3.5	3.0	2.5	2.0	2.0			
65		8.0	5.5	4.0	3.5	3.0	2.5	2.0			
60		9.0	6.0	4.5	4.0	3.0	2.5	2.5			
55		10.0	6.5	5.0	4.5	3.5	3.0	2.5			
50		11.0	7.5	5.5	4.5	4.0	3.5	3.0			
45		12.0	8.0	6.0	5.0	4.0	3.5	3.0			
40		12.5	8.5	6.5	5.5	4.5	3.5	3.0			

  

Scales 15-N, 30-N, 45-N N Brale Diamond Indenter Diameter of Specimen - inches (mm)											
Observed Reading	1/8 (3.2)	1/4 (6.4)	3/8 (10)	1/2 (13)	5/8 (16)	3/4 (19)	7/8 (22)	1 (25)	1-1/4 (32)	1-1/2 (38)	
90	0	0	0	0	0	0	0	0	0	0	
85	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
80	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
75	1.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
70	2.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
65	2.5	1.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
60	3.0	1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	
55	3.5	2.0	1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	
50	3.5	2.0	1.5	1.0	1.0	1.0	0.5	0.5	0.5	0.5	
45	4.0	2.0	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
40	4.5	2.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	
35	5.0	2.5	2.0	1.5	1.0	1.0	1.0	1.0	1.0	1.0	
30	5.5	3.0	2.0	1.5	1.5	1.0	1.0	1.0	1.0	1.0	
25	5.5	3.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
20	6.0	3.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	

  

Scales 15-T, 30-T, 45-T 1/16-in Ball Indenter Diameter of Specimen - inches (mm)											
Observed Reading	1/8 (3.2)	1/4 (6.4)	3/8 (10)	1/2 (13)	5/8 (16)	3/4 (19)	7/8 (22)	1 (25)	1-1/4 (32)	1-1/2 (38)	
90	1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
80	3.0	2.0	1.5	1.5	1.0	1.0	1.0	0.5	0.5	0.5	
70	5.0	3.5	2.5	2.0	1.5	1.0	1.0	1.0	1.0	1.0	
60	6.5	4.5	3.0	2.5	2.0	1.5	1.5	1.5	1.5	1.5	
50	8.5	5.5	4.0	3.0	2.5	2.0	2.0	1.5	1.5	1.5	
40	10.0	6.5	4.5	3.5	3.0	2.5	2.0	2.0	2.0	2.0	
30	11.5	7.5	5.0	3.5	3.5	2.5	2.0	2.0	2.0	2.0	
20	13.0	9.0	6.0	4.5	4.5	3.0	2.0	2.0	2.0	2.0	

These corrections are approximate only and represent the averages to the nearest 1/2 Rockwell number.

### Soft Steel, Grey and Malleable Cast Iron and Most Non-Ferrous Metals

Rockwell			Superficial			Knoop	Brinell	Tensile Strength	Micro-ficial					
B	F	G	A	E	H	K	15-T	30-T	45-T	HK	HB	HB HV	KSI	WMN
100 kg kg 1/16" ball	60 kg kg 1/16" ball</													