

Conversion tables

In this section you will find the conversion tables, the table comparing the hardness values and the correspondence tables between tensile strength and hardness.

Conversion tables

Units of length	
1 inch	25.40 mm
1 foot (ft) (= 12 inches)	30.48 cm
1 yard (yd) (= 3 feet)	91.44 cm
1 terrestrial mile	1609.3 m
1 centimeter (cm)	0.3937 inch
1 meter (m)	39.37 inches = 3.2808 feet
1 kilometer (km)	0.62137 mile = 1093.6 yards

Units of surface	
1 square inch (sq. inch)	6.4516 cm ² = 645.16 mm ²
1 square foot (sq. ft)	0.0929 m ²
1 square yard (sq. yd)	0.8361 m ²
1 acre	40.47 ares
1 square mile	2.59 km ²
1 square millimeter (mm ²)	0.00155 sq. inch
1 square centimeter (cm ²)	0.155 sq. inch
1 square meter (m ²)	10.7639 sq. feet = 1.196 sq. yard
1 are (100 m ²)	119.6 sq. yards
1 hectare (10000 m ²)	2.4711 acres

Units of capacity	
1 pint (UK)	0.568 l
1 gallon (UK)	4.546 l
1 gallon (USA)	3.785 l
1 bushel (USA)	35.239 l
1 l	1.759 pint
1 cubic meter (m ³)	35.315 cubic feet
1 cubic foot	0.028 cubic meter (m ³)
1 register tonne (100 cu. ft.)	2.83 cubic meter (m ³)

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	Thermometrical equivalents
- 20° Celsius	- 4° Fahrenheit
- 10° Celsius	14° Fahrenheit
0° Celsius	32° Fahrenheit
10° Celsius	50° Fahrenheit
30° Celsius	86° Fahrenheit
37° Celsius	98° Fahrenheit
50° Celsius	122° Fahrenheit
100° Celsius	212° Fahrenheit

	Units of weight
1 ounce	28.35 g
1 pound (lb.)	453.6 g
1 stone	6.35 kg
1 hundredweight (cwt.)	45.36 kg
1 gross (long) tonne (2240 lbs.)	1016 kg = 22.4 cwts
1 metric tonne	1000 kg = 2204 lbs = 22.04 cwts
1 net (short) tonne (2000 lbs.)	907.2 kg
1 kg	2.204 pounds
1 metric tonne	2204.6 pounds = 0.9842 gross tonne = 1.1023 net t.
1 pound per foot	1.4882 kg/m
1 pound per yard	0.4961 kg/m
1 kg/m	0.672 pound per foot
1 pound per sq. inch (= 1lb/in ² = psi)	0.0703 kg/cm ²
1 pound per sq. foot	4.8825 kg/m ²
1 kg/mm ²	1422.32 lb/in ²
1 kg/cm ²	14.2232 lb/in ²
1 kg/m ²	0.2048 pound per sq. foot = 1.8433 pound per sq. yard

Approximate comparison of hardness values

Vickers P = 10 kg	Vickers P = 2 kg	HR 15 T 0.50 mm	HR 30 T 0.50 - 0.79 mm	HRB 0.80 mm
80	90	72.0	40.0	36
85	95	73.5	43.0	40
90	100	75.0	45.5	44
95	103	76.0	47.5	47
100	108	76.5	49.0	49
105	112	77.0	50.5	51
110	117	78.0	51.5	53
115	121	78.5	53.0	55
120	126	79.0	54.5	57
125	130	80.0	56.0	59
130	135	80.5	57.0	61
135	138	81.0	58.5	63
140	144	81.5	60.0	65
145	149	82.5	61.5	67
150	154	83.0	62.5	69
155	158	83.5	64.0	71
160	163	84.5	65.5	73
165	168	85.0	67.0	75
170	172	85.5	68.0	77
175	177	86.0	69.5	79

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Correspondence table between tensile strength and hardness

Conversion table between Brinell hardness and tensile strength
Median values and dispersion range (with a probability of 95%)

HBS HBW ⁽¹⁾	Min R _m MPa	Median R _m MPa	Max R _m MPa	HBS HBW ⁽¹⁾	Min R _m MPa	Median R _m MPa	Max R _m MPa
85	270	370	470	285	860	960	1060
90	280	380	480	290	880	980	1080
95	290	390	490	295	890	990	1090
100	310	410	510	300	910	1010	1110
105	320	420	520	310	950	1050	1150
110	330	430	530	320	980	1080	1180
115	350	450	550	330	1020	1120	1220
120	360	460	560	340	1050	1150	1250
125	370	470	570	350	1090	1190	1290
130	390	490	590	360	1120	1220	1320
135	400	500	600	370	1160	1260	1360
140	410	510	610	380	1200	1300	1400
145	430	530	630	390	1240	1340	1440
150	440	540	640	400	1270	1370	1470
155	460	560	660	410	1310	1410	1510
160	470	570	670	420	1350	1450	1550
165	490	590	690	430	1390	1490	1590
170	500	600	700	440	1430	1530	1630
175	510	610	710	450	1470	1570	1670
180	530	630	730	460	1510	1610	1710
185	540	640	740	470	1550	1650	1750
190	560	660	760	480	1590	1690	1790
195	570	670	770	490	1630	1730	1830
200	590	690	790	500	1680	1780	1880
205	600	700	800	510	1720	1820	1920
210	620	720	820	520	1760	1860	1960
215	630	730	830	530	1800	1900	2000
220	650	750	850	540	1850	1950	2050
225	670	770	870	550	1890	1990	2090
230	680	780	880	560	1940	2040	2140
235	700	800	900	570	1980	2080	2180
240	710	810	910	580	2030	2130	2230
245	730	830	930	590	2070	2170	2270
250	750	850	950	600	2120	2220	2320
255	760	860	960	610	2160	2260	2360
260	780	880	980	620	2210	2310	2410
265	790	890	990	630	2260	2360	2460
270	810	910	1010	640	2310	2410	2510
275	830	930	1030	650	2350	2450	2550
280	840	940	1040	-	-	-	-

(1) HBS, HBW for values ≤ 450 and HBW above

Conversion table between Vickers hardness and tensile strength
Median values and dispersion range (with a probability of 95%)

HV	Min R _m MPa	Median R _m MPa	Max R _m MPa	HV	Min R _m MPa	Median R _m MPa	Max R _m MPa
85	200	310	420	285	800	910	1020
90	220	320	430	290	820	930	1030
95	230	340	440	295	840	940	1050
100	240	350	460	300	850	960	1070
105	260	370	470	310	880	990	1100
110	270	380	490	320	920	1020	1130
115	290	390	500	330	950	1060	1160
120	300	410	520	340	980	1090	1200
125	320	420	530	350	1020	1120	1230
130	330	440	540	360	1050	1160	1260
135	340	450	560	370	1080	1190	1300
140	360	470	570	380	1120	1220	1330
145	370	480	590	390	1150	1260	1370
150	390	500	600	400	1190	1290	1400
155	400	510	620	410	1220	1330	1430
160	420	530	630	420	1250	1360	1470
165	430	540	650	430	1290	1400	1500
170	450	550	660	440	1320	1430	1540
175	460	570	680	450	1360	1470	1570
180	480	580	690	460	1400	1500	1610
185	490	600	710	470	1430	1540	1650
190	510	610	720	480	1470	1570	1680
195	520	630	740	490	1500	1610	1720
200	540	650	750	500	1540	1650	1750
205	550	660	770	510	1580	1680	1790
210	570	680	780	520	1610	1720	1830
215	580	690	800	530	1650	1760	1860
220	600	710	810	540	1690	1790	1900
225	610	720	830	550	1720	1830	1940
230	630	740	840	560	1760	1870	1980
235	650	750	860	570	1800	1910	2010
240	660	770	880	580	1840	1940	2050
245	680	780	890	590	1880	1980	2090
250	690	800	910	600	1910	2020	2130
255	710	820	920	610	1950	2060	2170
260	720	830	940	620	1990	2100	2210
265	740	850	950	630	2030	2140	2240
270	760	860	970	640	2070	2180	2280
275	770	880	990	650	2110	2220	2320
280	790	890	1000	-	-	-	-