FABORY

STANDARD

ISO : 31
EN : –
DIN : 301

TABLES

SI-units and conversion factors

1. The SI-Units system

From 1 January 1978 a law has been constituted that in all member countries of the E.E.C. only officially **recognized** units shall be used. They mainly belong to the "International System of Units, abbreviated SI (**S**ystème **I**nternational d'Unite's).

The object of the SI is that it shall replace **all** other unit systems, which were developed in the past (including the Anglo-Saxon system based on foot and pound) and shall be applied in **all** professional fields and **all over** the world.
The SI offers the possibility of achieving international uniformity with as few units as possible. Besides some so-called "old" units which shall still be accepted for the time being amongst others minute, hour, day, degree Celsius, the designations of the angle: degree, minute and second, litre, ton, bar (for liquid and gas pressure) are, nautical mile, knot and register ton, the introduction of the SI means that a number of familiar units will disappear, including kilogram force (kgf), horsepower(hp), the technical atmospheric pressure (at, also designated by kg/cm^2 or kgf/cm^2), calorie (cal or kilocalorie) and also all Anglo-Saxon units.
In the following tables a selection is given of those units and conversion factors that are commonly used in fastening technics.

			Some new units		
name	Symbol	Unit of:	replaces:	Mutual conversion (rounded off)	
newton	N	force	kgf,kp	1N≈0,1 kgf≈0,1 kp	1 kgf≈1 kp≈10N
joule	J	energy, work, heat	kcal, cal, kgf.m or kgm Btu (British thermal unit)	1J≈1Nm≈0,1 kgf.m 1J≈0,739 cal	1 kgf.m≈10J≈10Nm 1 cal≈4,187J
bar	bar	pressure of liquids and gases	at, kgf/cm^2 or kg/cm^2	1 bar≈1at≈1kgf/cm^2≈kg/cm^2	1 at≈1 bar
kelvin	K	temperature	partly degree °C	Tk≈273,15+$T_{°C}$	$T_{°C}$≈Tk-273,15
			Some old units still remaining		
meter	m	length	–		
second	s	time	–		
kilogram	kg	mass (quantity)	unit weight (weight is force)	1 kg (mass)≈10 N (weight) on earth	
volt	V	electrical voltage	–		
ampere	A	electrical current	–		
watt	W	power (not only electrical)	pk, hp and kcal/h	1 kW≈1,359 pk 1 kW≈1,341 hp 1 kW≈959,845 kcal/h	1 pk≈0,7355 kW 1 hp≈0,7457 kW 1 kcal/h≈0,001163 kW
			Some derived units		
–	N/mm^2	areal force (tension)	kgf/mm^2	1 N/mm^2	1 kgf/mm^2≈10Nmm^2
–	Nm	moment of force	kgfm	1 Nm≈0,1 kgfm	1kgfm≈10 Nm

2. Conversion factors between SI- and Anglo-Saxon units

Length

1 mm	= 0,3937 inches	1 inch	= 25,40 mm
1 m	= 3,2808 feet	1 foot	= 0,3048 m
1 m	= 1,0936 yards	1 yard	= 0,9144 m
1 km	= 0,6214 miles	1 mile	= 1,609 km

Volume

1 mm^3	= 6,10234x10^{-5} $inches^3$	1 $inch^3$	= 1,6387x10^4 mm^3
1 m^3	= 6,10234x10^4 $inches^3$	1 $inch^3$	= 1,6387x10^{-5} m^3
1 m^3	= 35,3147 $feet^3$	1 $foot^3$	= 0,0283 m^3
1 m^3	= 1,3079 $yards^3$	1 $yard^3$	= 0,7645 m^3
1 L	= 0,219 gallons (Brit)	1 gallon(brit)	= 4,566 L
1 L	= 0,264 gallons (USA)	1 gallon (USA)	= 3,7878 L

Energy, work, heat

1 J	= 0,7375 lbf ft	1 lbf ft	= 1,3559 J
1 J	= 2,77x10^{-7} kWh	1 kWh	= 3,6x10^6 J
1 J	= 0,9478x10^{-3} Btu	1 Btu	= 1055,06 J

Area

1 mm^2	= 0,00155 sq. inches	sq. inches	= 645,16 mm^2
1 m^2	= 10,764 sq. feet	sq. feet	= 0,0929 m^2
1 m^2	= 1,196 sq. yards	sq. yards	= 0,836 m^2
1 km^2	= 0,3861 sq. miles	sq. miles	= 2,5889 km^2

Mass

1 gram	= 0,035274 ounces	1 ounce	= 28,349 gram
1 kg	= 2,2046 pounds	1 pound	= 0,4536 kg
1 kg	= 0,0197 CWT	1 CWT	= 50,802 kg
1 ton	= 0,9842 longtons	1 longton	= 1,016 ton

Force

1 N	= 0,2248 lbf	1 lbf	= 4,4482 N
1 kN	= 0,1003 longtonf	1 longtonf	= 9,964 kN

Areal force (tension)

1 N/mm^2	= 145,038 lbf/in^2	1 lbf/in^2	= 0,0069 N/mm^2

Moment of force

1 Nm	= 141,612 ounce-inch	1 ounce-inch	= 0,00706 Nm
1 Nm	= 8,851 pound-inch	1 pound-inch	= 0,113 Nm
1 Nm	= 0,738 pound-foot	1 pound-foot	= 1,3558 Nm

3. Temperature conversion Celsius/Fahrenheit

°C=5/9 (°F-32°) °F=9/5 °C+32°

°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →	°C ←	T ↓	°F →
-28.9	**-20**	-4	43.3	**110**	230	115.6	**240**	464	188	**370**	698	260	**500**	932	332	**630**	1166	404	**760**	1400	477	**890**	1634	549	**1020**	1868	621	**1150**	2102	693	**1280**	2336
-23.3	**-10**	14	48.9	**120**	248	121.1	**250**	482	193	**380**	716	266	**510**	950	338	**640**	1184	410	**770**	1418	482	**900**	1652	554	**1030**	1886	627	**1160**	2120	699	**1290**	2354
-17.8	**0**	32	54.4	**130**	266	127	**260**	500	199	**390**	734	271	**520**	968	343	**650**	1202	416	**780**	1436	488	**910**	1670	560	**1040**	1904	632	**1170**	2138	704	**1300**	2372
-12.2	**10**	50	60.0	**140**	284	132	**270**	518	204	**400**	752	277	**530**	986	349	**660**	1220	421	**790**	1454	493	**920**	1688	566	**1050**	1922	638	**1180**	2156	710	**1310**	2390
-6.7	**20**	68	65.6	**150**	302	138	**280**	536	210	**410**	770	282	**540**	1004	354	**670**	1238	427	**800**	1472	499	**930**	1706	571	**1060**	1940	643	**1190**	2174	716	**1320**	2408
-1.1	**30**	86	71.1	**160**	320	143	**290**	554	216	**420**	788	288	**550**	1022	360	**680**	1256	432	**810**	1490	504	**940**	1724	577	**1070**	1958	649	**1200**	2192	721	**1330**	2426
4.4	**40**	104	76.7	**170**	338	149	**300**	572	221	**430**	806	293	**560**	1040	366	**690**	1274	438	**820**	1508	510	**950**	1742	582	**1080**	1976	654	**1210**	2210	727	**1340**	2444
10.0	**50**	122	82.2	**180**	356	154	**310**	590	227	**440**	824	299	**570**	1058	371	**700**	1292	443	**830**	1526	516	**960**	1760	588	**1090**	1994	660	**1220**	2228	732	**1350**	2462
15.6	**60**	140	87.8	**190**	374	160	**320**	608	232	**450**	842	304	**580**	1076	377	**710**	1310	449	**840**	1544	521	**970**	1778	593	**1100**	2012	666	**1230**	2246	738	**1360**	2480
21.1	**70**	158	93.3	**200**	392	166	**330**	626	238	**460**	860	310	**590**	1094	382	**720**	1328	454	**850**	1562	527	**980**	1796	599	**1110**	2030	671	**1240**	2264	743	**1370**	2498
26.7	**80**	176	98.9	**210**	410	171	**340**	644	243	**470**	878	316	**600**	1112	388	**730**	1346	460	**860**	1580	532	**990**	1814	604	**1120**	2048	677	**1250**	2282	749	**1380**	2516
32.2	**90**	194	104.4	**220**	428	177	**350**	662	249	**480**	896	321	**610**	1130	393	**740**	1364	466	**870**	1598	538	**1000**	1832	610	**1130**	2066	682	**1260**	2300	754	**1390**	2534
37.8	**100**	212	110.0	**230**	446	182	**360**	680	254	**490**	914	327	**620**	1148	399	**750**	1382	471	**880**	1616	543	**1010**	1850	616	**1140**	2084	688	**1270**	2318	760	**1400**	2552

PER DEGREE	
°C °F	°F °C
1= 1.8	1=0.56
2= 3.6	2=1.11
3= 5.4	3=1.67
4= 7.2	4=2.22
5= 9.0	5=2.78
6=10.8	6=3.33
7=12.6	7=3.89
8=14.4	8=4.44
9=16.2	9=5.0

Look up the given temperature in °C or °F in the middle column. The required temperature in °C can be found in the column on the left side and in °F on the right side e.g. in colum T, 200°C corresponds to the right side with 392°F and 200°F to the left side with 99,3°C. Never convert mutually between the column °C and °F. A more accurate result (with a maximum deviation of 0,44° in converting from °F to °C) is achieved by using the values from 1° till 9° on the right side of the table.
Example: 814°C = 810°C + 4°C = 1490°F + 7,2°F = 1497,2°F.

FABORY

STANDARD

ISO : –
EN : –
DIN : 4892

TABLES

Conversion from inch to decimal inch to millimeter

in.	dec. in	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"
		Millimeter (mm)											
0	0	0	25,400 0	50,800 0	76,200 0	101,600 0	127,000 0	152,400 0	177,800 0	203,200 0	228,600 0	254,000 0	279,400 0
1/64	0,015 625	0,396 9	25,796 9	51,196 9	76,596 9	101,996 9	127,396 9	152,796 9	178,196 9	203,596 9	228,996 9	254,396 9	279,796 9
1/32	0,031 25	0,793 8	26,193 8	51,593 8	76,993 8	102,393 8	127,793 8	153,193 8	178,593 8	203,993 8	229,393 8	254,793 8	280,193 8
3/64	0,046 875	1,190 6	26,590 6	51,990 6	77,390 6	102,790 6	128,190 6	153,590 6	178,990 6	204,390 6	229,790 6	255,190 6	280,590 6
1/16	0,062 5	1,587 5	26,987 5	52,387 5	77,787 5	103,187 5	128,587 5	153,987 5	179,387 5	204,787 5	230,187 5	255,587 5	280,987 5
5/64	0,078 125	1,984 4	27,384 4	52,784 4	78,184 4	103,584 4	128,984 4	154,384 4	179,784 4	205,184 4	230,584 4	255,984 4	281,384 4
3/32	0,093 75	2,381 2	27,781 2	53,181 2	78,581 2	103,981 2	129,381 2	154,781 2	180,181 2	205,581 2	230,981 2	256,381 2	281,781 2
7/64	0,109 375	2,778 1	28,178 1	53,578 1	78,978 1	104,378 1	129,778 1	155,178 1	180,578 1	205,978 1	231,378 1	256,778 1	282,178 1
1/8	**0,125**	**3,175 0**	**28,575 0**	**53,975 0**	**79,375 0**	**104,775 0**	**130,175 0**	**155,575 0**	**180,975 0**	**206,375 0**	**231,775 0**	**257,175 0**	**282,575 0**
9/64	0,140 625	3,571 9	28,971 9	54,371 9	79,771 9	105,171 9	130,571 9	155,971 9	181,371 9	206,771 9	232,171 9	257,571 9	282,971 9
5/32	0,156 25	3,968 8	29,368 8	54,768 8	80,168 8	105,568 8	130,968 8	156,368 8	181,768 8	207,168 8	232,568 8	257,968 8	283,368 8
11/64	0,171 875	4,365 6	29,765 6	55,165 6	80,565 6	105,965 6	131,365 6	156,765 6	182,165 6	207,565 6	232,965 6	258,365 6	283,765 6
3/16	0,187 5	4,762 5	30,162 5	55,562 5	80,962 5	106,362 5	131,762 5	157,162 5	182,562 5	207,962 5	233,362 5	258,762 5	284,162 5
13/64	0,203 125	5,159 4	30,559 4	55,959 4	81,359 4	106,759 4	132,159 4	157,559 4	182,959 4	208,359 4	233,759 4	259,159 4	284,559 4
7/32	0,218 75	5,556 2	30,956 2	56,356 2	81,756 2	107,156 2	132,556 2	157,956 2	183,356 2	208,756 2	234,156 2	259,556 2	284,956 2
15/64	0,234 375	5,953 1	31,353 1	56,753 1	82,153 1	107,553 1	132,953 1	158,353 1	183,753 1	209,153 1	234,553 1	259,953 1	285,353 1
1/4	**0,25**	**6,350 0**	**31,750 0**	**57,150 0**	**82,550 0**	**107,950 0**	**133,350 0**	**158,750 0**	**184,150 0**	**209,550 0**	**234,950 0**	**260,350 0**	**285,750 0**
17/64	0,265 625	6,746 9	32,146 9	57,546 9	82,946 9	108,346 9	133,746 9	159,146 9	184,546 9	209,946 9	235,346 9	260,746 9	286,146 9
9/32	0,281 25	7,143 8	32,543 8	57,943 8	83,343 8	108,743 8	134,143 8	159,543 8	184,943 8	210,343 8	235,743 8	261,143 8	286,543 8
19/64	0,296 875	7,540 6	32,940 6	58,340 6	83,740 6	109,140 6	134,540 6	159,940 6	185,340 6	210,740 6	236,140 6	261,540 6	286,940 6
5/16	0,312 5	7,937 5	33,337 5	58,737 5	84,137 5	109,537 5	134,937 5	160,337 5	185,737 5	211,137 5	236,537 5	261,937 5	287,337 5
21/64	0,328 125	8,334 4	33,734 4	59,134 4	84,534 4	109,934 4	135,334 4	160,734 4	186,134 4	211,534 4	236,934 4	262,334 4	287,734 4
11/32	0,343 75	8,731 2	34,131 2	59,531 2	84,931 2	110,331 2	135,731 2	161,131 2	186,531 2	211,931 2	237,331 2	262,731 2	288,131 2
23/64	0,359 375	9,128 1	34,528 1	59,928 1	85,328 1	110,728 1	136,128 1	161,528 1	186,928 1	212,328 1	237,728 1	263,128 1	288,528 1
3/8	**0,375**	**9,525 0**	**34,925 0**	**60,325 0**	**85,725 0**	**111,125 0**	**136,525 0**	**161,925 0**	**187,325 0**	**212,725 0**	**238,125 0**	**263,525 0**	**288,925 0**
25/64	0,390 625	9,921 9	35,321 9	60,721 9	86,121 9	111,521 9	136,921 9	162,321 9	187,721 9	213,121 9	238,521 9	263,921 9	289,321 9
13/32	0,406 25	10,318 8	35,718 8	61,118 8	86,518 8	111,918 8	137,318 8	162,718 8	188,118 8	213,518 8	238,918 8	264,318 8	289,718 8
27/64	0,421 875	10,715 6	36,115 6	61,515 6	86,915 6	112,315 6	137,715 6	163,115 6	188,515 6	213,915 6	239,315 6	264,715 6	290,115 6
7/16	0,437 5	11,112 5	36,512 5	61,912 5	87,312 5	112,712 5	138,112 5	163,512 5	188,912 5	214,312 5	239,712 5	265,112 5	290,512 5
29/64	0,453 125	11,509 4	36,909 4	62,309 4	87,709 4	113,109 4	138,509 4	163,909 4	189,309 4	214,709 4	240,109 4	265,509 4	290,909 4
15/32	0,468 75	11,906 2	37,306 2	62,706 2	88,106 2	113,506 2	138,906 2	164,306 2	189,706 2	215,106 2	240,506 2	265,906 2	291,306 2
31/64	0,484 375	12,303 1	37,703 1	63,103 1	88,503 1	113,903 1	139,303 1	164,703 1	190,103 1	215,503 1	240,903 1	266,303 1	291,703 1
1/2	**0,5**	**12,700 0**	**38,100 0**	**63,500 0**	**88,900 0**	**114,300 0**	**139,700 0**	**165,100 0**	**190,500 0**	**215,900 0**	**241,300 0**	**266,700 0**	**292,100 0**
33/64	0,515 625	13,096 9	38,496 9	63,896 9	89,296 9	114,696 9	140,096 9	165,496 9	190,896 9	216,296 9	241,696 9	267,096 9	292,496 9
17/32	0,531 25	13,493 8	38,893 8	64,293 8	89,693 8	115,093 8	140,493 8	165,893 8	191,293 8	216,693 8	242,093 8	267,493 8	292,893 8
35/64	0,546 875	13,890 6	39,290 6	64,690 6	90,090 6	115,490 6	140,890 6	166,290 6	191,690 6	217,090 6	242,490 6	267,890 6	293,290 6
9/16	0,562 5	14,287 5	39,687 5	65,087 5	90,487 5	115,887 5	141,287 5	166,687 5	192,087 5	217,487 5	242,887 5	268,287 5	293,687 5
37/64	0,578 125	14,684 4	40,084 4	65,484 4	90,884 4	116,284 4	141,684 4	167,084 4	192,484 4	217,884 4	243,284 4	268,684 4	294,084 4
19/32	0,593 75	15,081 2	40,481 2	65,881 2	91,281 2	116,681 2	142,081 2	167,481 2	192,881 2	218,281 2	243,681 2	269,081 2	294,481 2
39/64	0,609 375	15,478 1	40,878 1	66,278 1	91,678 1	117,078 1	142,478 1	167,878 1	193,278 1	218,678 1	244,078 1	269,478 1	294,878 1
5/8	**0,625**	**15,875 0**	**41,275 0**	**66,675 0**	**92,075 0**	**117,475 0**	**142,875 0**	**168,275 0**	**193,675 0**	**219,075 0**	**244,475 0**	**269,875 0**	**295,275 0**
41/64	0,640 625	16,271 9	41,671 9	67,071 9	92,471 9	117,871 9	143,271 9	168,671 9	194,071 9	219,471 9	244,871 9	270,271 9	295,671 9
21/32	0,656 25	16,668 8	42,068 8	67,468 8	92,868 8	118,268 8	143,668 8	169,068 8	194,468 8	219,868 8	245,268 8	270,668 8	296,068 8
43/64	0,671 875	17,065 6	42,465 6	67,865 6	93,265 6	118,665 6	144,065 6	169,465 6	194,865 6	220,265 6	245,665 6	271,065 6	296,465 6
11/16	0,687 5	17,462 5	42,862 5	68,262 5	93,662 5	119,062 5	144,462 5	169,862 5	195,262 5	220,662 5	246,062 5	271,462 5	296,862 5
45/64	0,703 125	17,859 4	43,259 4	68,659 4	94,059 4	119,459 4	144,859 4	170,259 4	195,659 4	221,059 4	246,459 4	271,859 4	297,259 4
23/32	0,718 75	18,256 2	43,656 2	69,056 2	94,456 2	119,856 2	145,256 2	170,656 2	196,056 2	221,456 2	246,856 2	272,256 2	297,656 2
47/64	0,734 375	18,653 1	44,053 1	69,453 1	94,853 1	120,253 1	145,653 1	171,053 1	196,453 1	221,853 1	247,253 1	272,653 1	298,053 1
3/4	**0,75**	**19,050 0**	**44,450 0**	**69,850 0**	**95,250 0**	**120,650 0**	**146,050 0**	**171,450 0**	**196,850 0**	**222,250 0**	**247,650 0**	**273,050 0**	**298,450 0**
49/64	0,765 625	19,446 9	44,846 9	70,246 9	95,646 9	121,046 9	146,446 9	171,846 9	197,246 9	222,646 9	248,046 9	273,446 9	298,846 9
25/32	0,781 25	19,843 8	45,243 8	70,643 8	96,043 8	121,443 8	146,843 8	172,243 8	197,643 8	223,043 8	248,443 8	273,843 8	299,243 8
51/64	0,796 875	20,240 6	45,640 6	71,040 6	96,440 6	121,840 6	147,240 6	172,640 6	198,040 6	223,440 6	248,840 6	274,240 6	299,640 6
13/16	0,812 5	20,637 5	46,037 5	71,437 5	96,837 5	122,237 5	147,637 5	173,037 5	198,437 5	223,837 5	249,237 5	274,637 5	300,037 5
53/64	0,828 125	21,034 4	46,434 4	71,834 4	97,234 4	122,634 4	148,034 4	173,434 4	198,834 4	224,234 4	249,634 4	275,034 4	300,434 4
27/32	0,843 75	21,431 2	46,831 2	72,231 2	97,631 2	123,031 2	148,431 2	173,831 2	199,231 2	224,631 2	250,031 2	275,431 2	300,831 2
55/64	0,859 375	21,828 1	47,228 1	72,628 1	98,028 1	123,428 1	148,828 1	174,228 1	199,628 1	225,028 1	250,428 1	275,828 1	301,228 1
7/8	**0,875**	**22,225 0**	**47,625 0**	**73,025 0**	**98,425 0**	**123,825 0**	**149,225 0**	**174,625 0**	**200,025 0**	**225,425 0**	**250,825 0**	**276,225 0**	**301,625 0**
57/64	0,890 625	22,621 9	48,021 9	73,421 9	98,821 9	124,221 9	149,621 9	175,021 9	200,421 9	225,821 9	251,221 9	276,621 9	302,021 9
29/32	0,906 25	23,018 8	48,418 8	73,818 8	99,218 8	124,618 8	150,018 8	175,418 8	200,818 8	226,218 8	251,618 8	277,018 8	302,418 8
59/64	0,921 875	23,415 6	48,815 6	74,215 6	99,615 6	125,015 6	150,415 6	175,815 6	201,215 6	226,615 6	252,015 6	277,415 6	302,815 6
15/16	0,937 5	23,812 5	49,212 5	74,612 5	100,012 5	125,412 5	150,812 5	176,212 5	201,612 5	227,012 5	252,412 5	277,812 5	303,212 5
61/64	0,953 125	24,209 4	49,609 4	75,009 4	100,409 4	125,809 4	151,209 4	176,609 4	202,009 4	227,409 4	252,809 4	278,209 4	303,609 4
31/32	0,968 75	24,606 2	50,006 2	75,406 2	100,806 2	126,206 2	151,606 2	177,006 2	202,406 2	227,806 2	253,206 2	278,606 2	304,006 2
63/64	0,984 375	25,003 1	50,403 1	75,803 1	101,203 1	126,603 1	152,003 1	177,403 1	202,803 1	228,203 1	253,603 1	279,003 1	304,403 1
		12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"
in.	dec. in.	Millimeter (mm)											
0	0	304,800 0	330,200 0	355,600 0	381,000 0	406,400 0	431,800 0	457,200 0	482,600 0	508,000 0	533,400 0	558,800 0	584,200 0
1/32	0,031 25	305,593 8	330,993 8	356,393 8	381,793 8	407,193 8	432,593 8	457,993 8	483,393 8	508,793 8	534,193 8	559,593 8	584,993 8
1/16	0,062 5	306,387 5	331,787 5	357,187 5	382,587 5	407,987 5	433,387 5	458,787 5	484,187 5	509,587 5	534,987 5	560,387 5	585,787 5
3/32	0,093 75	307,181 2	332,581 2	357,981 2	383,381 2	408,781 2	434,181 2	459,581 2	484,981 2	510,381 2	535,781 2	561,181 2	586,581 2
1/8	**0,125**	**307,975 0**	**333,375 0**	**358,775 0**	**384,175 0**	**409,575 0**	**434,975 0**	**460,375 0**	**485,775 0**	**511,175 0**	**536,575 0**	**561,975 0**	**587,375 0**
5/32	0,156 25	308,768 8	334,168 8	359,568 8	384,968 8	410,368 8	435,768 8	461,168 8	486,568 8	511,968 8	537,368 8	562,768 8	588,168 8
3/16	0,187 5	309,562 5	334,962 5	360,362 5	385,762 5	411,162 5	436,562 5	461,962 5	487,362 5	512,762 5	538,162 5	563,562 5	588,962 5
7/32	0,218 75	310,356 2	335,756 2	361,156 2	386,556 2	411,956 2	437,356 2	462,756 2	488,156 2	513,556 2	538,956 2	564,356 2	589,756 2
1/4	**0,25**	**311,150 0**	**336,550 0**	**361,950 0**	**387,350 0**	**412,750 0**	**438,150 0**	**463,550 0**	**488,950 0**	**514,350 0**	**539,750 0**	**565,150 0**	**590,550 0**
9/32	0,281 25	311,943 8	337,343 8	362,743 8	388,143 8	413,543 8	438,943 8	464,343 8	489,743 8	515,143 8	540,543 8	565,943 8	591,343 8
5/16	0,312 5	312,737 5	338,137 5	363,537 5	388,937 5	414,337 5	439,737 5	465,137 5	490,537 5	515,937 5	541,337 5	566,737 5	592,137 5
11/32	0,343 75	313,531 2	338,931 2	364,331 2	389,731 2	415,131 2	440,531 2	465,931 2	491,331 2	516,731 2	542,131 2	567,531 2	592,931 2
3/8	**0,375**	**314,325 0**	**339,725 0**	**365,125 0**	**390,525 0**	**415,925 0**	**441,325 0**	**466,725 0**	**492,125 0**	**517,525 0**	**542,925 0**	**568,325 0**	**593,725 0**
13/32	0,406 25	315,118 8	340,518 8	365,918 8	391,318 8	416,718 8	442,118 8	467,518 8	492,918 8	517,318 8	543,718 8	569,118 8	594,518 8
7/16	0,437 5	315,912 5	341,312 5	366,712 5	392,112 5	417,512 5	442,912 5	468,312 5	493,712 5	519,112 5	544,512 5	569,912 5	595,312 5
15/32	0,468 75	316,706 2	342,106 2	367,506 2	392,906 2	418,306 2	443,706 2	469,106 2	494,506 2	519,906 2	545,306 2	570,706 2	596,106 2
1/2	**0,5**	**317,500 0**	**342,900 0**	**368,300 0**	**393,700 0**	**419,100 0**	**444,500 0**	**469,900 0**	**495,300 0**	**520,700 0**	**546,100 0**	**571,500 0**	**596,900 0**
17/32	0,531 25	318,293 8	343,693 8	369,093 8	394,493 8	419,893 8	445,293 8	470,693 8	496,093 8	521,493 8	546,893 8	572,293 8	597,693 8
9/16	0,562 5	319,087 5	344,487 5	369,887 5	395,287 5	420,687 5	446,087 5	471,487 5	496,887 5	522,287 5	547,687 5	573,087 5	598,487 5
19/32	0,593 75	319,881 2	345,281 2	370,681 2	396,081 2	421,481 2	446,881 2	472,281 2	497,681 2	523,081 2	548,481 2	573,881 2	599,281 2
5/8	**0,625**	**320,675 0**	**346,075 0**	**371,475 0**	**396,875 0**	**422,275 0**	**447,675 0**	**473,075 0**	**498,475 0**	**523,875 0**	**549,275 0**	**574,675 0**	**600,075 0**
21/32	0,656 25	321,468 8	346,868 8	372,268 8	397,668 8	423,068 8	448,468 8	473,868 8	499,268 8	524,668 8	550,068 8	575,468 8	600,868 8
11/16	0,687 5	322,262 5	347,662 5	373,062 5	398,462 5	423,862 5	449,262 5	474,662 5	500,062 5	525,462 5	550,862 5	576,262 5	601,662 5
23/32	0,718 75	323,056 2	348,456 2	373,856 2	399,256 2	424,656 2	450,056 2	475,456 2	500,856 2	526,256 2	551,656 2	577,056 2	602,456 2
3/4	**0,75**	**323,850 0**	**349,250 0**	**374,650 0**	**400,050 0**	**425,450 0**	**450,850 0**	**476,250 0**	**501,650 0**	**527,050 0**	**552,450 0**	**577,850 0**	**603,250 0**
25/32	0,781 25	324,643 8	350,043 8	375,443 8	400,843 8	426,243 8	451,643 8	477,043 8	502,443 8	527,843 8	553,243 8	578,643 8	604,043 8
13/16	0,812 5	325,437 5	350,837 5	376,237 5	401,637 5	427,037 5	452,437 5	477,837 5	503,237 5	528,637 5	554,037 5	579,437 5	604,837 5
27/32	0,843 75	326,231 2	351,631 2	377,031 2	402,431 2	427,831 2	453,231 2	478,631 2	504,031 2	529,431 2	554,831 2	580,231 2	605,631 2
7/8	**0,875**	**327,025 0**	**352,425 0**	**377,825 0**	**403,225 0**	**428,625 0**	**454,025 0**	**479,425 0**	**504,825 0**	**530,225 0**	**555,625 0**	**581,025 0**	**606,425 0**
29/32	0,906 25	327,818 8	353,218 8	378,618 8	404,018 8	429,418 8	454,818 8	480,218 8	505,618 8	531,018 8	556,418 8	581,818 8	607,218 8
15/16	0,937 5	328,612 5	354,012 5	379,412 5	404,812 5	430,212 5	455,612 5	481,012 5	506,412 5	531,812 5	557,212 5	582,612 5	608,012 5
31/32	0,968 75	329,406 2	354,806 2	380,206 2	405,606 2	431,006 2	456,406 2	481,806 2	507,206 2	532,606 2	558,006 2	583,406 2	608,806 2

FABORY

STANDARD

ISO : 4964
EN : –
DIN : 50150

TABLES

Conversion of tensile strength, Vickers, Brinell and Rockwell hardnesses

Tensile strength N/mm²	Vickers hardness (F≥98N)	Brinell hardness ($0{,}102 \frac{F}{D^2 \cdot 30} \frac{N}{mm^2}$)	Rockwell hardness							
			HRB	HRF	HRC	HRA	HRD 1)	HR15N	HR30N	HR45N
255	80	76,0								
270	85	80,7	41,0							
285	90	85,5	48,0	82,6						
305	95	90,2	52,0							
320	100	95,0	56,2	87,0						
335	105	99,8								
350	110	105	62,3	90,5						
370	115	109								
385	120	114	66,7	93,6						
400	125	119								
415	130	124	71,2	96,4						
430	135	128								
450	140	133	75,0	99,0						
465	145	138								
480	150	143	78,7	101,4						
495	155	147								
510	160	152	81,7	103,6						
530	165	156								
545	170	162	85,0	105,5						
560	175	166								
575	180	171	87,1	107,2						
595	185	176								
610	190	181	89,5	108,7						
625	195	185								
640	200	190	91,5	110,1						
660	205	195	92,5							
675	210	199	93,5	111,3						
690	215	204	94,0							
705	220	209	95,0	112,4						
720	225	214	96,0							
740	230	219	96,7	113,4						
755	235	223								
770	240	228	98,1	114,3	20,3	60,7	40,3	69,6	41,7	19,9
785	245	233			21,3	61,2	41,1	70,1	42,5	21,1
800	250	238	99,5	115,1	22,2	61,6	41,7	70,6	43,4	22,2
820	255	242			23,1	62,0	42,2	71,1	44,2	23,2
835	260	247	(101)		24,0	62,4	43,1	71,6	45,0	24,3
850	265	252			24,8	62,7	43,7	72,1	45,7	25,2
865	270	257	(102)		25,6	63,1	44,3	72,6	46,4	26,2
880	275	261			26,4	63,5	44,9	73,0	47,2	27,1
900	280	266	(104)		27,1	63,8	45,3	73,4	47,8	27,9
915	285	271			27,8	64,2	46,0	73,8	48,4	28,7
930	290	276	(105)		28,5	64,5	46,5	74,2	49,0	29,5
950	295	280			29,2	64,8	47,1	74,6	49,7	30,4
965	300	285			29,8	65,2	47,5	74,9	50,2	31,1
995	310	295			31,0	65,8	48,4	75,6	51,3	32,5
1030	320	304			32,2	66,4	49,4	76,2	52,3	33,9
1060	330	314			33,3	67,0	50,2	76,8	53,6	35,2
1095	340	323			34,4	67,6	51,1	77,4	54,4	36,5
1125	350	333			35,5	68,1	51,9	78,0	55,4	37,8

Tensile strength N/mm²	Vickers hardness (F≥98N)	Brinell hardness ($0{,}102 \frac{F}{D^2 \cdot 30} \frac{N}{mm^2}$)	Rockwell hardness							
			HRB	HRF	HRC	HRA	HRD 1)	HR15N	HR30N	HR45N
1155	360	342			36,6	68,7	52,8	78,6	56,4	39,1
1190	370	352			37,7	69,2	53,6	79,2	57,4	40,4
1220	380	361			38,8	69,8	54,4	79,8	58,4	41,7
1255	390	371			39,8	70,3	55,3	80,3	59,3	42,9
1290	400	380			40,8	70,8	56,0	80,8	60,2	44,1
1320	410	390			41,8	71,4	56,8	81,4	61,1	45,3
1350	420	399			42,7	71,8	57,5	81,8	61,9	46,4
1385	430	409			43,6	72,3	58,2	82,3	62,7	47,4
1420	440	418			44,5	72,8	58,8	82,8	63,5	48,4
1455	450	428			45,3	73,3	59,4	83,2	64,3	49,4
1485	460	437			46,1	73,6	60,1	83,6	64,9	50,4
1520	470	447			46,9	74,1	60,7	83,9	65,7	51,3
1555	480	(456)			47,7	74,5	61,3	84,3	66,4	52,2
1595	490	(466)			48,4	74,9	61,6	84,7	67,1	53,1
1630	500	(475)			49,1	75,3	62,2	85,0	67,7	53,9
1665	510	(485)			49,8	75,7	62,9	85,4	68,3	54,7
1700	520	(494)			50,5	76,1	63,5	85,7	69,0	55,6
1740	530	(504)			51,1	76,4	63,9	86,0	69,5	56,2
1775	540	(513)			51,7	76,7	64,4	86,3	70,0	57,0
1810	550	(523)			52,3	77,0	64,8	86,6	70,5	57,8
1845	560	(532)			53,0	77,4	65,4	86,9	71,2	58,6
1880	570	(542)			53,6	77,8	65,8	87,2	71,7	59,3
1920	580	(551)			54,1	78,0	66,2	87,5	72,1	59,9
1955	590	(561)			54,7	78,4	66,7	87,8	72,7	60,5
1995	600	(570)			55,2	78,6	67,0	88,0	73,2	61,2
2030	610	(580)			55,7	78,9	67,5	88,2	73,7	61,7
2070	620	(589)			56,3	79,2	67,9	88,5	74,2	62,4
2105	630	(599)			56,8	79,5	68,3	88,8	74,6	63,0
2145	640	(608)			57,3	79,8	68,7	89,0	75,1	63,5
2180	650	(618)			57,8	80,0	69,0	89,2	75,5	64,1
	660				58,3	80,3	69,4	89,5	75,9	64,7
	670				58,8	80,6	69,8	89,7	76,4	65,3
	680				59,2	80,8	70,1	89,8	76,8	65,7
	690				59,7	81,1	70,5	90,1	77,2	66,2
	700				60,1	81,3	70,8	90,3	77,6	66,7
	720				61,0	81,8	71,5	90,7	78,4	67,7
	740				61,8	82,2	72,1	91,0	79,1	68,6
	760				62,5	82,6	72,6	91,2	79,7	69,4
	780				63,3	83,0	73,3	91,5	80,4	70,2
	800				64,0	83,4	73,8	91,8	81,1	71,0
	820				64,7	83,8	74,3	92,1	81,7	71,8
	840				65,3	84,1	74,8	92,3	82,2	72,2
	860				65,9	84,4	75,3	92,5	82,7	73,1
	880				66,4	84,7	75,7	92,7	83,1	73,6
	900				67,0	85,0	76,1	92,9	83,6	74,2
	920				67,5	85,3	76,5	93,0	84,0	74,8
	940				68,0	85,6	76,9	93,2	84,4	75,4

– This conversion table is applicable when the values have been determined as follows:
the tension strength according to DIN 50145, Vickers hardness according to DIN 50133, Brinell hardness according to DIN 50351 and the Rockwell hardness according to DIN 50103 and applies for unalloyed and low alloyed steels. Considerable deviations can usually be expected with alloy and/or cold-worked steel types.
– In principle, every conversion of hardness causes a certain inaccuracy and may only be used when a measuring method cannot be carried out. Conversion may not lead to rejection, unless a certain measuring method has been agreed at the time of ordering.
– A mutual conversion between tensile strength and hardness will cause an even larger deviation and therefore can only be used as an indication value. This can never replace the tensile strength found by tensile testing.

1) The Rockwell hardness HRD is not DIN standardised, but is stated for reference, because this is internationally used e.g. in the American standard ASTM E18.

FABORY

STANDARD

ISO : –
EN : –
DIN : –

TABLES

Contact and chemical corrosion

Contact corrosion table

S = heavy corrosion of the metal given in the horizontal column
G = little or no corrosion of the metal given in the horizontal column
M = moderate corrosion (in very humid atmosphere) of the metal given in the horizontal column

Metal	Surface*	Magnesium alloy	Zinc	Hot dip galv. steel	Aluminium alloy	Cadmium layers	Mild steel	Low alloyed steel	Malleable steel	Chromium steel	Lead	Tin	Copper	Stainless steel
Magnesium-alloy	small		S	S	S	S	S	S	S	S	S	S	S	S
	large		M	M	M	M	S	S	S	S	S	S	S	S
Zinc	small	M		G	S	S	S	S	S	S	S	S	S	S
	large	G		G	G	G	G	G	G	G	G	G	G	G
Hot dip galvanised steel	small	M	G		M	M	S	S	S	S	S	S	S	S
	large	G	G		G	G	G	G	G	G	G	G	G	G
Aluminium alloy	small	M	G	G		G	S		S		S		S	S
	large	G	G	M		G	G	G	M	M	S	S	S	S
Cadmium-layers	small	G	G	G	G		S	S	S	S	S	S	S	S
	large	M	G	M	G		G	G	G	G	G	G	G	G
Mild steel	small	G	G	G	G	G		M	S	S	S	S	S	S
	large	G	G	G	G	G		G	G	G	G	G	G	G
Low alloyed steel	small	G	G	G	G	G	G		G	S	S	S	S	S
	large	G	G	G	G	G	G		G	G	G	G	G	G
Malleable steel	small	G	G	G	G	G	G	M		S	S	S	S	S
	large	G	G	G	G	G	G	G		G	G	G		
Chromium steel	small	G	G	G	G	G	G	G			M	M	S	S
	large	G	G	G	G	G	G	G			G	G		G
Lead	small	G	G	G	G	G	G	G	G	G		G	G	
	large	G	G	G	G	G	G	G	M	G		G		G
Tin	small	G	G	G	G	G	G	G		G		G		
	large	G	G	G	G	G	G	G	G	M		G		
Copper	small	G	G	G	G	G	G	G		M	M	S		
	large	G	G	G	G	G	G	G	G		G	M		G
Stainless steel	small	G	G	G	G	G		G	G		G	G		
	large	G	G	M	G	G	G	G	G	M	M	M	G	

* Relative relationship of the area of this metal surface with respect to the area of the metals given in the adjacent columns.

Chemical corrosion table

CHEMICAL AGENT	Hot dip galv. steel	Stainless steel A2	Stainless steel A4	Brass	Aluminium Sopral	Plastic PA 6.6
Acetates		0-1	0	1-2	0	2-3
Acetone		0	0	0	0	0
Acetylene		0	0	3	0	
Alcohols	3	0	0	0	0-1	0
Alum		2	1	2	0	2
Ammonia gas		0	0	3	0	1
Ammonia	3	0	0	3	1	1
Benzene/Toluene/Xylene	0	0	0	0	0	0
Carbonic acid		0	0	2	0	0
Chlorides						
– sodium-/potassium chloride	0	1	1	2	2-3	0
– Ammonia-/zinc chloride		2	1	2	3	2
– Iron chloride		3	3	3	3	3
Chlorine gas		1	1	1	3	3
Chlorine water		1	1			
Citric acid		1	0	2	1	1
Formic acid		1	0	2	3	3
Glycerol	0	0	0	0-1	0	1
Glycol		0	0	1	1	1
Hydrogen chloride		2-3	2-3	3	3	3
Hydrocarbons	0	0	0	0-1	0	0
– Butane, petrol, tar						
hydrocarbons chlorided						
– Trichlore ethylene	0	0	0	0-1	0	0-1
– Tetrachloride	0	0	0	0-1	0	0-1
Hydrogen sulphide		0-1	0	2	0	1
Lacquers	0	0	0	1	0	1
Nitric acid		1	0-1	3	2	3
– Sodium/Ammonia nitrate	0	0	2-3	0	2	
Oil-fuel/vegetable	1	0	0	0	0	0
Palmatin/stearin acid		1	0	2	0	0
Phosphates	0	1	0	2	2-3	1-2
Phosphoric acid		2-3	0-1	3	2-3	2-3
Resins	2-3	1	1	2-3	0-1	0
Sodium carbonate		0	0	1-2	0	0
Sulphur dioxide dry		0	0	0-1	1	1
Sulphur dioxide wet		1	0	3	2	2
Sulphuric acid	3	3	2-3	3	3	3
– Sodium/Ammonia-sulphate	1	0	0	1	0-1	0
– Nickel/Copper sulphate		0-1	0	2-3	2-3	2-3
Water						
– drinking water		0	0	2	0	0
– acid water	1-2			3	2	1
– salt water	0	1	1	2	1	0

0 = GOOD RESISTANCE
1 = MODERATE RESISTANCE
2 = POOR RESISTANCE
3 = NO RESISTANCE

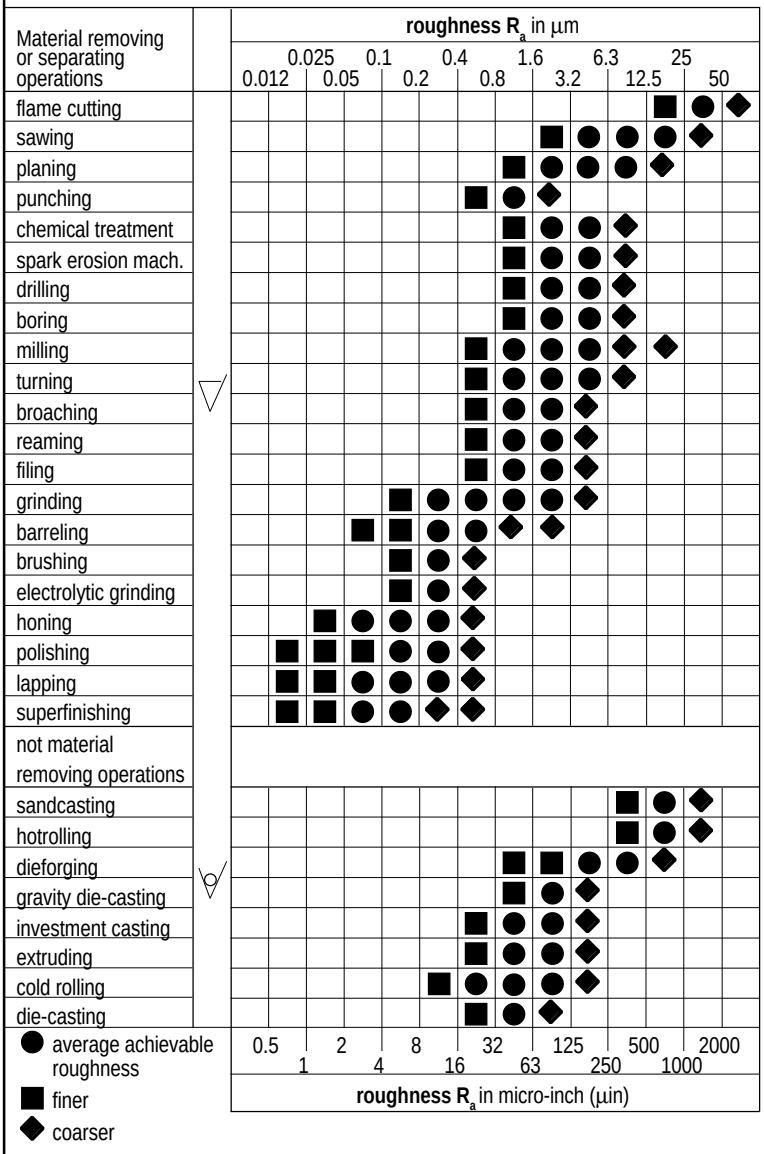
STANDARD

ISO : –
EN : –
DIN : –
NEN : 3638

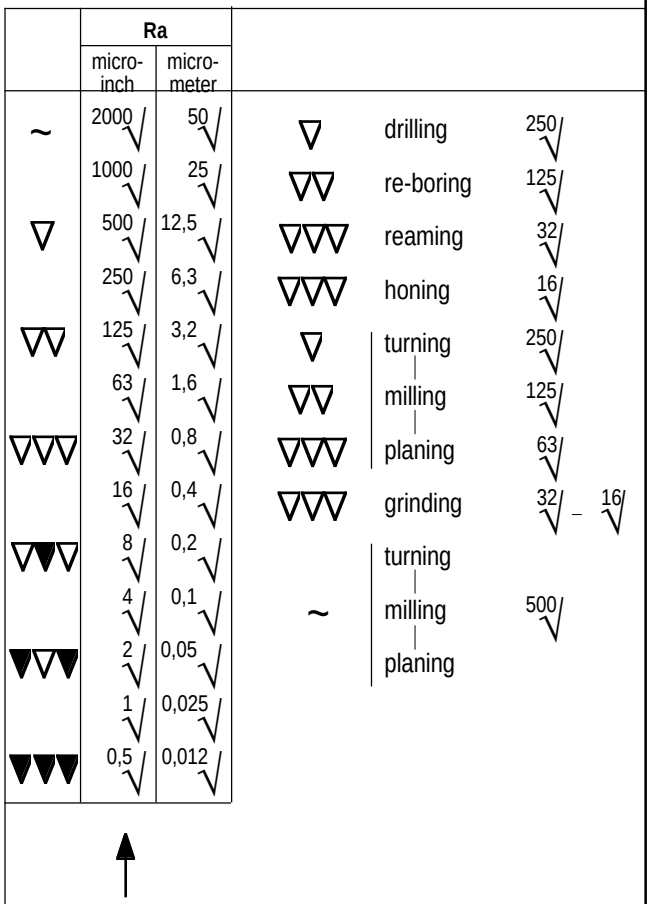
TABLES

Surface roughness

Guidelines for feasible roughness R_a for different processing methods



Comparison of roughness symbols



Roughness values in micro-inches are 40 times the values in micrometers.

These data are only for practical information and to give you an indea of the achievable values of the roughness R_a for different processing methods.
They do not apply to completeness and may not be used as a criterion for acceptance inspection.
They are principally to be used for metal surfaces; other materials may show deviations.