

Inspections, acceptance testings and certificates

Test method: Hardness measurement



Table 2: Hardness reevaluation*/comparison
Hardness ranges of screws, bolts, studs, nuts, washers and rings

Vickers hardness	Brinell hardness	Rockwell hardness		~ Tensile strength	Rough hardness range (based on Vickers Hardness) for														Washers/Rings			
					Screws					Nuts m ≧ 0.5 d**				Nuts m < 0.5 d Thread pins								
					HV 10	HB	HRB	HRC	MPa	4.6	5.6	8.8	10.9	12.9	5	6	8 04	10 05	12	14 H	17 H	22 H
80	76.0			255																		
85	80.7	41.0		270																		
90	85.5	48.0		285																		
95	90.2	52.0		305																		
100	95.0	56.2		320																		
105	99.8			335																		
110	105	62.3		350																		
115	109			370																		
120	114	66.7		385	120																	
125	119			400																		
130	124	71.2		415																		
135	128			430																		
140	133	75.0		450																		
145	138			465																		
150	143	78.7		480																		
155	147			495																		
160	152	81.7		510																		
165	156			530																		
170	162	85.0		545																		
175	166			560																		
180	171	87.1		575																		
185	176			595																		
190	181	89.5		610																		
195	185			625																		
200	190	91.5		640																		
205	195	92.5		660																		
210	199	93.5		675																		
215	204	94.0		690																		
220	209	95.0		705																		
225	214	96.0		720																		
230	219	96.7		740																		
235	223			755																		
240	228	98.1	20.3	770																		
245	233		21.3	785																		
250	238	99.5	22.2	800																		
255	242		23.1	820	250	250																
260	247	(101)	24.0	835																		
265	252		24.8	850																		
270	257	(102)	25.6	865																		
275	261		26.4	880																		
280	266	(104)	27.1	900																		
285	271		27.8	915																		
290	276	(105)	28.5	930																		
295	280		29.2	950																		
300	285		29.8	965																		
310	295		31.0	995																		
320	304		32.2	1030																		
330	314		33.3	1060																		
340	323		34.4	1095																		
350	333		35.5	1125																		
360	342		36.6	1155																		
370	352		37.7	1190																		
380	361		38.8	1220																		
390	371		39.8	1255																		
400	380		40.8	1290																		
410	390		41.8	1320																		
420	399		42.7	1350																		
430	409		43.6	1385																		
440	418		44.5	1420																		
450	428		45.3	1455																		
460	437		46.1	1485																		
470	447		46.9	1520																		
480	456		47.7	1555																		
490	466		48.4	1595																		
500	475		49.1	1630																		
ISO 18265 Table A.1					ISO 898-1					ISO 898-2					DIN 267-24 ISO 898-5				e.g. DIN 125-1	e.g. DIN 125-2	e.g. DIN 267-26	

* Limitations according to ISO 18265 need to be taken into consideration.
 ** Hardness ranges differ according to the dimension ranges in min./max. values