

Comparison of Different Strength Grades

SAE	B.S.	I.S. I.S.O. DIN	ULTIMATE TENSILE STRENGTH			HARDNESS		
			Tonnes/in ² (Kgf/mm ²)	Newtons/mm ² Min. (Kgf/mm ²)	Pounds/in ² Min. (Kgf/mm ²)	BHN	HRb	HRc
		4.6		400 (40.8)		114 209	67 95	
GRADE 1					60,000 (42.3)	(121) (241)	70 100	
		4.8		420 (42.8)		124 209	71 95	
		5.6		500 (51.0)		147 209	79 95	
GRADE 2					74,000 (52.1)	(154) (241)	80 100	
		5.8		520 (53.0)		152 209	82 95	
	P		35/45 (55.2/71.0)			152 207		
		6.8		600 (61.2)		181 238	89 99	
	R		45/55 (71.0/86.8)			201 285		
	S		50/60 (78.9/94.7)			223 310		(20/33)
		8.8		800≤M16 830>M16 (81.6) (84.6)		219/285 242/319		20/30 23/34
GRADE 5					1,20,000 (84.6)	(266) (318)		25/34
	T		55/65 (86.8/102.6)			248 335		(24/36)
	U		60/70 (94.7/110.5)			269 331		(28/36)
	V		65/75 (102.6/118.4)			293 370		(31/40)
GRADE 8					1,50,000 (105.7)	(311) (362)		33/39
		10.9		1,040 (106.0)		295 362		31/39
	W		70/80 (110.5/126.3)			311 375		(33/41)
	X		75/85 (118.4/134.2)			341 410		(37/44)
		12.9		1,220 (124.4)		353 412		38/44
	Y		80/90 (126.3/142.0)			363 429		(39/46)
	z		100 Min (157.8)			444		(47)

Note : 1. 1Kgf = 9.81 Newtons. 1 Kgf/mm² = 1421.7 Psi.
2. Values in brackets are approximate conversions.