

The writer often waffles on about the Metric versus SAE strength Classes / Grades, and the confusion between Product Class 8.8 and SAE Grade 8; but the confusion continues. ***They are not equivalent!***

The tables below, calculated from Stress Area and Tensile & Yield Strengths, may be worth hanging on to. They are the writer's attempt to simplify the selection or substitution of common grades of bolts.

Tensile Load Comparison

Thread Size		Tensile Load in kN							
Metric Coarse	UNC UNF	PC 4.6	PC 4.8	UNC SAE G.5	UNF SAE G.5	PC 8.8	UNC SAE G.8	UNF SAE G.8	PC 10.9
M6	1/4	8.04	8.44	16.97	19.42	16.08	21.21	24.28	20.90
M8	5/16	14.64	15.37	27.97	30.96	29.28	34.97	38.71	38.06
M10	3/8	23.20	24.36	41.38	46.88	46.40	51.72	58.59	60.32
	7/16			56.77	63.39		70.97	79.25	
M12	1/2	33.72	35.41	75.72	85.33	67.44	94.65	106.66	87.67
M14	9/16	46.00	48.30	96.83	108.00	92.00	121.03	134.99	119.60
M16	5/8	62.80	65.94	120.83	136.87	125.60	151.03	171.08	163.28
M20	3/4	98.00	102.90	178.76	199.63	203.35	223.45	249.54	254.80
M22	7/8	121.20	127.26	246.62	271.71	251.49	308.28	339.64	315.12
M24	1	141.20	148.26	323.58	354.02	292.99	404.48	442.53	367.12
M27		183.60	192.78			380.97			477.36
	1.1/8			356.27	399.69		508.96	570.99	
M30		224.40	235.62			465.63			583.44
	1.1/4			452.58	501.54		646.55	715.94	
	1.3/8			539.48	614.21		770.69	877.45	
M36		326.80	343.12			678.11			849.68
	1.1/2			656.79	739.06		938.27	1055.80	

Yield Load Comparison

Thread Size		Yield Load in kN							
Metric Coarse	UNC UNF	PC 4.6	PC 4.8	UNC SAE G.5	UNF SAE G.5	PC 8.8	UNC SAE G.8	UNF SAE G.8	PC 10.9
M6	1/4	4.82	6.83	13.01	14.89	12.86	18.38	21.04	18.89
M8	5/16	8.78	12.44	21.45	23.74	23.42	30.30	33.54	34.40
M10	3/8	13.92	19.72	31.72	35.94	37.12	44.83	50.79	54.52
	7/16			43.53	48.61		61.50	68.67	
M12	1/2	20.23	28.66	58.05	65.41	53.95	82.03	92.44	79.24
M14	9/16	27.60	39.10	74.23	82.79	73.60	104.90	117.00	108.10
M16	5/8	37.68	53.38	92.63	104.93	100.48	130.90	148.28	147.58
M20	3/4	58.80	83.30	137.05	153.05	161.70	193.65	216.26	230.30
M22	7/8	72.72	103.02	189.08	208.32	199.98	267.17	294.35	284.82
M24	1	84.72	120.02	248.08	271.41	232.98	350.55	383.52	331.82
M27		110.16	156.06			302.94			431.46
	1.1/8			274.84	308.34		441.10	494.86	
M30		134.64	190.74			370.26			527.34
	1.1/4			349.14	386.61		560.34	620.48	
	1.3/8			416.17	473.82		667.93	760.46	
M36		196.08	277.78			539.22			767.98
	1.1/2			506.67	570.14		813.17	915.03	

To convert kN to lbf, multiply Kn by 224.809

(E&OE)