

COMPARE TENSILE LOAD CAPACITY OF 5/16-18 UNC, 5/16-24 UNF, M8x1.25, M8x1 ISO, AND 5/16-14 ACME.

NOTE: $M8 = 8\text{ mm} = 0.3175\text{ in}$ ← STRONGER
 $5/16 = 0.3125\text{ in}$ ← WEAKER

SINCE $\sigma = \frac{F}{A_t}$, THE STRONGEST BOLT WILL BE THE ONE WITH THE LARGEST A_t .

BOLT	MATERIAL	A_t	MAX TENSILE LOAD, F (AT BREAKAGE)
5/16-18	GRADE 8.2	0.0524 in^2	(150 kpsi) 7,860 lb
5/16-24	GRADE 8.2	0.0581 in^2	(150 kpsi) 8,715 lb
M8x1.25	CLASS 10.9	36.61 mm^2	(1040 MPa) 38,074 N (8560 lb)
* M8x1	CLASS 10.9	39.17 mm^2	(1040 MPa) 40,737 N (9,158 lb) *
5/16 ACME	GRADE 8.2	0.053 in^2	(150 kpsi) 7,950 lb

TABLE 14.6
 & 14.7
 (ARBITRARY
 CLASS &
 GRADE CHOICE)

TABLE 14.1
 14.2
 & 14.3

M8x IS THE STRONGEST DUE TO LARGEST TENSILE AREA.

RATIO OF TENSILE AREAS EQUALS RATIO OF STRENGTHS,