

TENSILE STRENGTH OF MATERIALS

This table gives approximate tensile strengths for a range of materials. Note that spiders' thread is not the weakest material. Also note that wood is far stronger along the grain than across it.

Material	MN/m ²
steel piano wire	3000
high tensile steel	1500
titanium alloys	700 - 1400
mild steel	400
aluminium alloys	140 - 550
traditional wrought iron	140 - 280
modern cast iron	140 - 280
copper	140
brasses	120 - 400
pure cast aluminium	70
flax	700
cotton	350
silk	350
spider's thread	240
bone	140
wood (along grain)	100
tendon (muscle)	100
hemp rope	80
leather	40
glass window or wine glass	30-170
ordinary brick	5
cement and concrete	4
wood (across grain)	3

Although concrete is very weak in tension, it is among the stronger materials in compression. Together with steel reinforcing bars, concrete is used widely in buildings.