

Appendix 2 Properties of Several Materials

A-2-1. Physical properties of materials

Material	Young's Modulus		Poisson's ratio
	GPa	MPsi	
Aluminum and alloys	71.0	10.3	0.334
Brass	106.0	15.4	0.324
Carbon steel	207.0	30.0	0.292
Grey cast iron	100.0	14.5	0.211
Copper	119.0	117.2	0.326
Nickel steel	207.0	30.0	0.292
Stainless steel (18-8)	190.0	27.6	0.305

A-2-2. Mechanical properties of quenched and tempered carbon steels

AISI No	Tensile Strength		Yield strength		Brinell hardness
	MPa	KPsi	MPa	KPsi	
1030	848	123	648	94	495
	800	116	621	90	401
	731	106	579	84	302
	669	97	517	75	255
	586	85	441	64	207
	521	75	345	50	149
1040	779	113	593	86	262
	758	110	552	80	241
	643	92	434	63	192
	590	86	374	54	170
1050	1120	163	807	117	514
	1090	158	793	115	444
	717	104	538	78	235
	748	108	427	62	217

References

Shigley, J. and Mischke, C., 1989, 2001, *Mechanical Engineering Design*, McGraw Hills.