

## Nekatere mehanske lastnosti izbranih kamnin:

The uniaxial compressive strength,  $C_0$ , loading Young's modulus,  $E$ , and Poisson's ratio,  $\nu$ , for a number of rocks.

Rock	$C_0$ (kpsi)	$E$ ( $10^6$ psi)	$\nu$
Granite, Westerly	33.2	8.1	
Quartzite, Cheshire	66.7	11.4	0.11
Diabase, Frederick	70.6	14.4	
Marble, Tennessee	22.1	6.9	
Granite, Charcoal	25.1	6.4	
Shale, Witwatersrand	24.9	9.8	0.23
Granite Aplite (Cheri)	85.2	12.0	0.20
Quartzite, Witwatersrand	29.0	11.3	
Dolerite, Karroo	48.0	12.2	
Marble, Wombeyan	11.2	9.4	
Sandstone, Gosford	5.36	1.4	
Limestone, Solenhofen	32.5	7.7	

Note: 1 psi = 6895 Pa, 1 kpsi = 1000 psi

Vir: Jaeger J.C., Cook N.G.: Fundamentals of Rock Mechanics, Methuen & Co LTD, London, 1969.

**TABLE VIII.** Elastic and Strength Properties of Some Rocks and metals

Rock or metal	$E \times 10^{-5}$ kg/cm <sup>2</sup>	$\nu$ □	Ultimate compressive strength, kg/cm <sup>2</sup>	Ultimate tensile strength, kg/cm <sup>2</sup>	Ultimate shear strength, kg/cm <sup>2</sup>
Amphibolite	6.3	0.28-0.3	1,700-2,800	90-120	
Argillite	3.2	0.3	450-1,200	—	
Basalt	9.0-12.0	0.24	300-400	—	175-460
Gabbro	10.7	0.31	3,100	—	
Granite	5.0-9.0	0.10-0.31	1,000-2,500	100-150	100-300
Limestone	4.0-7.0	0.19-0.22	900-1,200	120	180
Quartzite	4-10	0.15-0.19	2,900-3,000	108-150	150-207
Marble	6.0-9.0	0.34-0.40	600-1,900	60-160	240-310
Sandstone	0.5-5	0.19-0.21	350-1,500	30-100	230
Quartzitic sandstone	3-4	0.09	1,200-2,000	30-120	—
Arkosic sandstone	5	0.13	1,300	30	—
Martite hornfels	8	—	2,900-3,000	30-90	—
Quartz-sericitic schist	1.2-3	0.16	670	70	
Coal	3.6-6.0	0.14-0.16	200-500	15-25	90
Aluminium	7.2	0.34		900-1,200	
Iron	26.7	0.28		2,900-4,500	
Copper	12.5	0.35		1,500-2,000	
Lead	1.66	0.45		120-200	

Vir: Rzhnevsky V., Novik G.: The Physics of Rock, MIR Publishers, Moscow, 1971

**TABLE IX.** Anisotropy of Mechanical Properties of Some Rocks

Rock	Young's modulus $E \times 10^{-5}$ kg/cm <sup>2</sup>		Poisson's ratio		Ultimate compressive strength, kg/cm <sup>2</sup>	
	=	⊥	=	⊥	=	⊥
Sandy shales	3.03	2.42	0.25	0.16	518	789
Limestones	6.36	7.25	0.28	0.30	1,510	1,250
Anthracites	0.42	0.54		0.13	105	160
Coarse-grained sandstones	1.93	1.73	0.45	0.36	1,185	1,423
Fine-grained sandstones	3.83	2.64	0.20	0.19	1,597	1,568
Siltstones	2.67	1.72	0.25	0.29	506	675
Brown coal					101	235

Note: = parallel to the stratification  
 ⊥ perpendicular to the stratification

Vir: Rzhnevsky V., Novik G.: The Physics of Rock, MIR Publishers, Moscow, 1971

**TABLE X.** Static and Dynamic Elastic Properties of Some Rocks

Rock	Static modulus of elasticity $E_{stat} \times 10^{-5}$ kg/cm <sup>2</sup>	Dynamic modulus of elasticity $E_{dyn} \times 10^{-5}$ kg/cm <sup>2</sup>	Ratio $E_{dyn}/E_{stat}$	Bulk modulus $K \times 10^{-5}$ kg/cm <sup>2</sup>	Rigidity or shear modulus $G \times 10^{-5}$ kg/cm <sup>2</sup>
Sandstone with chalcedonic cement	7.30	7.78	1.07	2.30	3.20
Equigranular dolomite	5.05	5.31	1.00	5.21	1.88
Limestone	1.88	2.42	1.29	4.35	0.66
Calcareous dolomite	3.49	4.72	1.35	3.70	1.30
Fine-grained detrital limestone	4.77	5.71	1.20	4.60	1.80
Granite	6.60	7.10	1.08	4.73	2.60
Gabbro	7.10	7.50	1.06	5.70	3.60
Dunite	14.90	16.40	1.03	10.73	5.90
Syenite	7.40	8.10	1.10	5.40	2.90

Vir: Rzhovsky V., Novik G.: The Physics of Rock, MIR Publishers, Moscow, 1971

**TABLE XI.** Angles of Internal Friction, Cohesion and Looseness Factor of Some Rocks

Rock	Angle of internal friction, degrees	Cohesion, kg/cm <sup>2</sup>	Looseness factor
Sand	32	0.9-5	1.05-1.2
Fat clay	20	0.85-3.3	1.2-1.25
Argillite	30	0.4-30.0	1.2-1.3
Brown coal	36	12-35.0	1.2-1.4
Hard rocks	45-60	up to 200-300	1.8-2.5

Vir: Rzhovsky V., Novik G.: The Physics of Rock, MIR Publishers, Moscow, 1971