

Table of Neutron Cross Sections

2200 [m/sec]
Dr. M. Ragheb
4-Apr

Element	Symbol	$\sigma(a)$ [b]	$\sigma(s)$ [b]	$\sigma(f)$ [b]	Density [gm/cm ³]
Actinium	Ac	515			
Aluminum	Al	0.23	1.49		2.699
Americium	Am	8			
Antimony	Sb	5.4	4.2		6.62
Argon	Ar	0.678	0.644		1.8x10 ⁻⁸
Arsenic	As	4.3	7		5.73
Barium	Ba	1.2			3.5
Beryllium	Be	0.0092	6.14		1.85
	BeO	0.01	6.8		3.025
Bismuth	Bi	0.033			9.8
Boron	B	759	3.6		2.3
	B-10	3837			
	B-11	0.0055			
Bromine	Br	6.8	6.1		3.12
Cadmium	Cd	2450	5.6		8.65
Calcium	Ca	0.43			1.55
Carbon	C	0.0034	4.75		
	Graphite	0.0048	4.75		1.6
	C-12	0.0034			
	C-13	0.0009			
Cerium	Ce	0.63	4.7		6.78
Cesium	Cs	29			1.9
Chlorine	Cl	33.2			3.2x10 ⁻⁸
Chromium	Cr	3.1	3.8		7.19
Cobalt	Co	37.2	6.7		8.8
Copper	Cu	3.79	7.9		8.96
Deuterium	D	0.00053	3.39		
Dysprosium	Dy	930	100		8.56
	Dy ₂ O ₃	2200	214		7.81
Erbium	Er	162	11		9.16
Europium	Eu	4600	8		5.22
	Eu ₂ O ₃	8740	30.2		7.42
Fluorine	F	0.0095	4		1.7x10 ⁻⁸
Gadolinium	Gd	49000			7.95
Gallium	Ga	2.9	6.5		5.91
Germanium	Ge	2.3	7.5		5.36
Gold	Au	98.8			19.32
Hafnium	Hf	102	8		13.36
Helium	He	< 0.05	0.76		17.8x10 ⁻⁵

Holmium	Ho	66.5	9.4		8.76
Hydrogen	H	0.332	20.436		8.9x10 ⁻⁵
	H2O	0.664	103		1
	D2O	0.00133	13.6		1.105
Indium	In	193.5			7.31
Iodine	I	6.2			4.93
Iridium	Ir	426	14		22.5
Iron	Fe	2.55	10.9		7.87
Krypton	Kr	25	7.5		
Lanthanum	La	9	9.3		6.19
Lead	Pb	0.17	11.4		11.34
Lithium	Li	70.7			0.53
	Li-6	940			
	Li-7	0.037			
Lutetium	Lu	77	8		9.74
Magnesium	Mg	0.063	3.42		1.74
Manganese	Mn	13.3	2.1		7.43
Mercury	Hg	375			13.55
Molybdenum	Mo	2.65	5.8		10.2
Neodymium	Nd	50.5	16		6.98
Neon	Ne	0.038	2.42		9.0x10 ⁻⁹
Nickel	Ni	4.43	17.3		8.9
Niobium	Nb	1.15			8.57
Nitrogen	N	1.85	10.6		1.3x10 ⁻⁸
	N-14	1.88			
	N-15	24x10 ⁻⁶			
Osmium	Os	15.3			22.5
Oxygen	O	0.00027	3.76		1.4x10 ⁻⁸
	O-16	0.000178			
	O-17	0.235			
	O-18	0.00016			
Palladium	Pd	6.9	5		12
Phosphorus	P	0.18			1.82
Platinum	Pt	10	11.2		21.45
Plutonium	Pu-239	1011.3	7.7	742.5	19.74
	Pu-240	289.5		0.03	
	Pu-241	1377		1009	
	Pu-242	18.5		< 0.2	
Polonium	Po	742.5		742.5	9.51
Potassium	K	2.1	1.5		0.86
Praseodymium	Pr	11.5	3.3		6.78
Protactinium	Pa	210			
Promethium	Pm				
Radium	Ra	11.5			5
Radon	Rn	0.72			9.7x10 ⁻⁸
Rhenium	Re	88	11.3		20
Rhodium	Rh	150			12.41
Rubidium	Rb	0.37	6.2		1.53
Ruthenium	Ru	2.56			12.2
Samarium	Sm	5800			6.93
	Sm-149	41000			

	Sm2O3	16,500	22.6		7.43
Scandium	Sc	26.5	24		2.5
Selenium	Se	11.7	9.7		4.81
Silicon	Si	0.16	2.2		2.33
Silver	Ag	63.6			10.49
Sodium	Na	0.53	3.2		0.97
Strontium	Sr	1.21	10		2.6
Sulfur	S	0.52	0.975		2.07
Tantalum	Ta	21	6.2		16.6
Technetium	Tc	19			
Tellurium	Te	4.7			6.24
Terbium	Tb	25.5	20		8.33
Thallium	Tl	3.4	9.7		11.85
Thorium	Th-232	7.4	12.67		11.71
	Th-233	1515		15	
Thulium	Tm	103	12		9.35
Tin	Sn	0.63			7.298
Titanium	Ti	6.1	4		4.51
Tungsten	W	18.5			19.2
Uranium	U	7.59	8.9	4.19	19.1
	U-233	578.8		531.1	
	U-234	100.2			
	U-235	680.8		582.2	
	U-236	5.2			
	U-238	2.7			
	U-239	36		14	
	UO2	7.6	16.7		10
Vanadium	V	5.04	4.93		6.1
Xenon	Xe	24.5	4.3		5.9x10-8
	Xe-135	2.65x10 +6			
Ytterbium	Yb	36.6	25		7.01
Yttrium	Yb	1.28	7.6		5.51
Zinc	Zn	1.1	4.2		7.133
Zirconium	Zr	0.185	6.4		6.5