

## Muons in neodymium (Nd)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
60 (Nd)	144.242(3)	7.008	546.0	0.23530	2.7050	0.1950	3.3029	5.8135	0.14
$T$	$p$ [MeV/c]	Ionization	Brems	Pair prod [MeV cm <sup>2</sup> /g]	Photonucl	Total	CSDA range [g/cm <sup>2</sup> ]		
10.0 MeV	$4.704 \times 10^1$	4.388				4.388	$1.303 \times 10^0$		
14.0 MeV	$5.616 \times 10^1$	3.477				3.477	$2.337 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	2.753				2.753	$4.297 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	2.164				2.164	$8.447 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	1.863				1.863	$1.346 \times 10^1$		
80.0 MeV	$1.527 \times 10^2$	1.421				1.421	$3.878 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.343				1.343	$5.330 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.269				1.269	$8.407 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.235				1.235	$1.322 \times 10^2$		
239. MeV	$3.285 \times 10^2$	1.231	0.000			1.231	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.236	0.000		0.000	1.236	$2.133 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.256	0.000		0.000	1.256	$2.936 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.341	0.001		0.000	1.342	$6.012 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.375	0.001		0.000	1.377	$7.482 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.429	0.002	0.000	0.001	1.432	$1.033 \times 10^3$		
2.00 GeV	$2.103 \times 10^3$	1.488	0.003	0.001	0.001	1.493	$1.443 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.554	0.006	0.003	0.001	1.564	$2.096 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	1.599	0.008	0.006	0.002	1.615	$2.725 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	1.702	0.020	0.019	0.003	1.744	$5.098 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	1.733	0.026	0.027	0.004	1.790	$6.230 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	1.777	0.040	0.043	0.005	1.866	$8.417 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	1.821	0.063	0.070	0.007	1.962	$1.155 \times 10^4$		
30.0 GeV	$3.011 \times 10^4$	1.867	0.102	0.123	0.011	2.104	$1.647 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	1.898	0.145	0.180	0.015	2.238	$2.107 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	1.965	0.327	0.434	0.029	2.755	$3.715 \times 10^4$		
100. GeV	$1.001 \times 10^5$	1.985	0.423	0.570	0.036	3.015	$4.408 \times 10^4$		
140. GeV	$1.401 \times 10^5$	2.015	0.622	0.851	0.050	3.538	$5.632 \times 10^4$		
180. GeV	$1.802 \times 10^5$	2.037	0.828	1.146	0.064	4.075	<i>Muon critical energy</i>		
200. GeV	$2.001 \times 10^5$	2.046	0.932	1.296	0.070	4.345	$7.161 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.080	1.461	2.039	0.106	5.687	$9.168 \times 10^4$		
400. GeV	$4.001 \times 10^5$	2.105	2.008	2.809	0.141	7.064	$1.074 \times 10^5$		
800. GeV	$8.001 \times 10^5$	2.164	4.266	5.966	0.285	12.682	$1.491 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.184	5.425	7.580	0.358	15.548	$1.633 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.213	7.750	10.801	0.507	21.272	$1.853 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.245	11.304	15.716	0.733	29.999	$2.089 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.281	17.238	23.882	1.120	44.523	$2.361 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.307	23.250	32.135	1.514	59.207	$2.555 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.372	47.485	65.308	3.145	118.311	$3.024 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.393	59.696	81.982	3.982	148.055	$3.175 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.426	84.051	115.253	5.700	207.431	$3.402 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.460	120.796	165.370	8.332	296.960	$3.642 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	2.501	181.968	248.756	12.879	446.105	$3.915 \times 10^5$		
40.0 TeV	$4.000 \times 10^7$	2.530	243.356	332.338	17.532	595.758	$4.109 \times 10^5$		
80.0 TeV	$8.000 \times 10^7$	2.602	489.264	666.903	36.958	1195.728	$4.573 \times 10^5$		
100. TeV	$1.000 \times 10^8$	2.625	612.420	834.340	46.990	1496.377	$4.722 \times 10^5$		