

**Muons in beryllium (Be)**

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
4 (Be)	9.0121831(5)	1.848	63.7	0.80392	2.4339	0.0592	1.6922	2.7847	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	$4.704 \times 10^1$	6.491				6.491	$8.504 \times 10^{-1}$
14.0 MeV	$5.616 \times 10^1$	5.058				5.058	$1.556 \times 10^0$
20.0 MeV	$6.802 \times 10^1$	3.945				3.945	$2.915 \times 10^0$
30.0 MeV	$8.509 \times 10^1$	3.054				3.054	$5.836 \times 10^0$
40.0 MeV	$1.003 \times 10^2$	2.603				2.603	$9.406 \times 10^0$
80.0 MeV	$1.527 \times 10^2$	1.940				1.940	$2.778 \times 10^1$
100. MeV	$1.764 \times 10^2$	1.818				1.818	$3.845 \times 10^1$
140. MeV	$2.218 \times 10^2$	1.694				1.694	$6.136 \times 10^1$
200. MeV	$2.868 \times 10^2$	1.622				1.622	$9.769 \times 10^1$
300. MeV	$3.917 \times 10^2$	1.595			0.000	1.595	$1.600 \times 10^2$
318. MeV	$4.105 \times 10^2$	1.595			0.000	1.595	<i>Minimum ionization</i>
400. MeV	$4.945 \times 10^2$	1.600			0.000	1.600	$2.227 \times 10^2$
800. MeV	$8.995 \times 10^2$	1.658			0.000	1.659	$4.683 \times 10^2$
1.00 GeV	$1.101 \times 10^3$	1.685	0.000		0.000	1.685	$5.879 \times 10^2$
1.40 GeV	$1.502 \times 10^3$	1.727	0.000		0.001	1.728	$8.221 \times 10^2$
2.00 GeV	$2.103 \times 10^3$	1.774	0.000	0.000	0.001	1.775	$1.164 \times 10^3$
3.00 GeV	$3.104 \times 10^3$	1.826	0.001	0.000	0.001	1.828	$1.719 \times 10^3$
4.00 GeV	$4.104 \times 10^3$	1.861	0.001	0.001	0.002	1.865	$2.260 \times 10^3$
8.00 GeV	$8.105 \times 10^3$	1.944	0.002	0.002	0.004	1.951	$4.352 \times 10^3$
10.0 GeV	$1.011 \times 10^4$	1.969	0.002	0.002	0.005	1.979	$5.369 \times 10^3$
14.0 GeV	$1.411 \times 10^4$	2.007	0.004	0.004	0.007	2.022	$7.367 \times 10^3$
20.0 GeV	$2.011 \times 10^4$	2.046	0.006	0.007	0.009	2.068	$1.030 \times 10^4$
30.0 GeV	$3.011 \times 10^4$	2.089	0.010	0.012	0.014	2.124	$1.507 \times 10^4$
40.0 GeV	$4.011 \times 10^4$	2.118	0.014	0.018	0.018	2.167	$1.972 \times 10^4$
80.0 GeV	$8.011 \times 10^4$	2.185	0.032	0.043	0.035	2.295	$3.763 \times 10^4$
100. GeV	$1.001 \times 10^5$	2.206	0.042	0.057	0.043	2.348	$4.624 \times 10^4$
140. GeV	$1.401 \times 10^5$	2.237	0.062	0.086	0.060	2.444	$6.294 \times 10^4$
200. GeV	$2.001 \times 10^5$	2.269	0.093	0.132	0.085	2.579	$8.683 \times 10^4$
300. GeV	$3.001 \times 10^5$	2.306	0.147	0.210	0.127	2.790	$1.241 \times 10^5$
400. GeV	$4.001 \times 10^5$	2.332	0.204	0.292	0.169	2.997	$1.587 \times 10^5$
800. GeV	$8.001 \times 10^5$	2.396	0.439	0.635	0.342	3.812	$2.767 \times 10^5$
1.00 TeV	$1.000 \times 10^6$	2.416	0.561	0.813	0.430	4.221	$3.265 \times 10^5$
1.33 TeV	$1.328 \times 10^6$	2.443	0.762	1.103	0.577	4.886	<i>Muon critical energy</i>
1.40 TeV	$1.400 \times 10^6$	2.448	0.807	1.168	0.610	5.033	$4.132 \times 10^5$
2.00 TeV	$2.000 \times 10^6$	2.482	1.186	1.713	0.884	6.265	$5.199 \times 10^5$
3.00 TeV	$3.000 \times 10^6$	2.520	1.823	2.622	1.355	8.320	$6.579 \times 10^5$
4.00 TeV	$4.000 \times 10^6$	2.548	2.471	3.545	1.834	10.398	$7.653 \times 10^5$
8.00 TeV	$8.000 \times 10^6$	2.617	5.099	7.266	3.830	18.813	$1.047 \times 10^6$
10.0 TeV	$1.000 \times 10^7$	2.640	6.430	9.142	4.859	23.071	$1.143 \times 10^6$
14.0 TeV	$1.400 \times 10^7$	2.675	9.086	12.878	6.980	31.619	$1.291 \times 10^6$
20.0 TeV	$2.000 \times 10^7$	2.712	13.106	18.518	10.240	44.576	$1.450 \times 10^6$
30.0 TeV	$3.000 \times 10^7$	2.755	19.801	27.896	15.903	66.355	$1.632 \times 10^6$
40.0 TeV	$4.000 \times 10^7$	2.786	26.536	37.308	21.718	88.348	$1.763 \times 10^6$
80.0 TeV	$8.000 \times 10^7$	2.862	53.530	74.993	46.136	177.521	$2.076 \times 10^6$
100. TeV	$1.000 \times 10^8$	2.888	67.060	93.860	58.800	222.608	$2.176 \times 10^6$