

## Muons in cerium (Ce)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
58 (Ce)	140.116 (1)	6.770	523.0	0.18885	2.8592	0.2676	3.3395	5.7669	0.14

  

T	p	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range
	[MeV/c]			[MeV cm <sup>2</sup> /g]			[g/cm <sup>2</sup> ]
10.0 MeV	$4.704 \times 10^1$	4.405				4.405	$1.296 \times 10^0$
14.0 MeV	$5.616 \times 10^1$	3.488				3.488	$2.327 \times 10^0$
20.0 MeV	$6.802 \times 10^1$	2.761				2.761	$4.281 \times 10^0$
30.0 MeV	$8.509 \times 10^1$	2.170				2.170	$8.421 \times 10^0$
40.0 MeV	$1.003 \times 10^2$	1.868				1.868	$1.342 \times 10^1$
80.0 MeV	$1.527 \times 10^2$	1.425				1.425	$3.867 \times 10^1$
100. MeV	$1.764 \times 10^2$	1.347				1.347	$5.314 \times 10^1$
140. MeV	$2.218 \times 10^2$	1.272				1.272	$8.385 \times 10^1$
200. MeV	$2.868 \times 10^2$	1.238				1.238	$1.318 \times 10^2$
239. MeV	$3.285 \times 10^2$	1.234				1.234	<i>Minimum ionization</i>
300. MeV	$3.917 \times 10^2$	1.239	0.000		0.000	1.239	$2.127 \times 10^2$
400. MeV	$4.945 \times 10^2$	1.259	0.000		0.000	1.259	$2.928 \times 10^2$
800. MeV	$8.995 \times 10^2$	1.344	0.001		0.000	1.345	$5.998 \times 10^2$
1.00 GeV	$1.101 \times 10^3$	1.378	0.001		0.000	1.379	$7.466 \times 10^2$
1.40 GeV	$1.502 \times 10^3$	1.431	0.002	0.000	0.001	1.434	$1.031 \times 10^3$
2.00 GeV	$2.103 \times 10^3$	1.489	0.003	0.001	0.001	1.494	$1.440 \times 10^3$
3.00 GeV	$3.104 \times 10^3$	1.554	0.005	0.003	0.001	1.564	$2.093 \times 10^3$
4.00 GeV	$4.104 \times 10^3$	1.598	0.008	0.006	0.002	1.614	$2.722 \times 10^3$
8.00 GeV	$8.105 \times 10^3$	1.700	0.019	0.018	0.003	1.741	$5.099 \times 10^3$
10.0 GeV	$1.011 \times 10^4$	1.730	0.025	0.026	0.004	1.785	$6.233 \times 10^3$
14.0 GeV	$1.411 \times 10^4$	1.773	0.039	0.042	0.005	1.860	$8.427 \times 10^3$
20.0 GeV	$2.011 \times 10^4$	1.816	0.060	0.068	0.008	1.953	$1.157 \times 10^4$
30.0 GeV	$3.011 \times 10^4$	1.861	0.099	0.119	0.011	2.091	$1.652 \times 10^4$
40.0 GeV	$4.011 \times 10^4$	1.892	0.139	0.175	0.015	2.221	$2.116 \times 10^4$
80.0 GeV	$8.011 \times 10^4$	1.958	0.315	0.420	0.029	2.723	$3.739 \times 10^4$
100. GeV	$1.001 \times 10^5$	1.978	0.408	0.552	0.036	2.975	$4.441 \times 10^4$
140. GeV	$1.401 \times 10^5$	2.008	0.599	0.823	0.050	3.481	$5.683 \times 10^4$
185. GeV	$1.851 \times 10^5$	2.032	0.822	1.144	0.065	4.065	<i>Muon critical energy</i>
200. GeV	$2.001 \times 10^5$	2.038	0.898	1.254	0.071	4.262	$7.239 \times 10^4$
300. GeV	$3.001 \times 10^5$	2.073	1.409	1.973	0.106	5.561	$9.289 \times 10^4$
400. GeV	$4.001 \times 10^5$	2.097	1.936	2.717	0.141	6.893	$1.090 \times 10^5$
800. GeV	$8.001 \times 10^5$	2.156	4.114	5.771	0.285	12.329	$1.518 \times 10^5$
1.00 TeV	$1.000 \times 10^6$	2.176	5.233	7.333	0.359	15.102	$1.665 \times 10^5$
1.40 TeV	$1.400 \times 10^6$	2.205	7.475	10.449	0.508	20.639	$1.890 \times 10^5$
2.00 TeV	$2.000 \times 10^6$	2.236	10.905	15.204	0.735	29.082	$2.134 \times 10^5$
3.00 TeV	$3.000 \times 10^6$	2.273	16.630	23.106	1.123	43.133	$2.415 \times 10^5$
4.00 TeV	$4.000 \times 10^6$	2.299	22.431	31.090	1.518	57.339	$2.615 \times 10^5$
8.00 TeV	$8.000 \times 10^6$	2.363	45.816	63.187	3.153	114.520	$3.099 \times 10^5$
10.0 TeV	$1.000 \times 10^7$	2.384	57.599	79.320	3.992	143.297	$3.255 \times 10^5$
14.0 TeV	$1.400 \times 10^7$	2.416	81.101	111.511	5.715	200.745	$3.490 \times 10^5$
20.0 TeV	$2.000 \times 10^7$	2.451	116.560	160.002	8.354	287.368	$3.738 \times 10^5$
30.0 TeV	$3.000 \times 10^7$	2.491	175.591	240.683	12.915	431.681	$4.020 \times 10^5$
40.0 TeV	$4.000 \times 10^7$	2.520	234.833	321.553	17.582	576.490	$4.220 \times 10^5$
80.0 TeV	$8.000 \times 10^7$	2.591	472.146	645.259	37.062	1157.061	$4.700 \times 10^5$
100. TeV	$1.000 \times 10^8$	2.615	591.000	807.260	47.120	1447.996	$4.854 \times 10^5$