

## Muons in lanthanum (La)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
57 (La)	138.90547(7)	6.145	501.0	0.18591	2.8828	0.3164	3.3296	5.7865	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	$4.704 \times 10^1$	4.404				4.404	$1.295 \times 10^0$		
14.0 MeV	$5.616 \times 10^1$	3.485				3.485	$2.326 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	2.757				2.757	$4.282 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	2.166				2.166	$8.428 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	1.864				1.864	$1.344 \times 10^1$		
80.0 MeV	$1.527 \times 10^2$	1.423				1.423	$3.874 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.344				1.344	$5.324 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.269				1.269	$8.400 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.235				1.235	$1.321 \times 10^2$		
239. MeV	$3.285 \times 10^2$	1.231				1.231	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.236	0.000		0.000	1.236	$2.132 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.255	0.000		0.000	1.256	$2.935 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.340	0.001		0.000	1.341	$6.013 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.373	0.001		0.000	1.375	$7.485 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.426	0.002	0.000	0.001	1.429	$1.034 \times 10^3$		
2.00 GeV	$2.103 \times 10^3$	1.484	0.003	0.001	0.001	1.489	$1.444 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.548	0.005	0.003	0.001	1.558	$2.100 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	1.592	0.008	0.006	0.002	1.608	$2.731 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	1.692	0.019	0.018	0.003	1.733	$5.119 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	1.722	0.025	0.025	0.004	1.777	$6.258 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	1.765	0.038	0.041	0.005	1.850	$8.463 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	1.808	0.059	0.067	0.008	1.941	$1.163 \times 10^4$		
30.0 GeV	$3.011 \times 10^4$	1.852	0.096	0.116	0.011	2.077	$1.660 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	1.882	0.136	0.171	0.015	2.204	$2.128 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	1.948	0.307	0.410	0.029	2.695	$3.765 \times 10^4$		
100. GeV	$1.001 \times 10^5$	1.968	0.398	0.539	0.036	2.942	$4.475 \times 10^4$		
140. GeV	$1.401 \times 10^5$	1.997	0.584	0.804	0.050	3.437	$5.733 \times 10^4$		
188. GeV	$1.881 \times 10^5$	2.022	0.817	1.139	0.066	4.045	<i>Muon critical energy</i>		
200. GeV	$2.001 \times 10^5$	2.027	0.876	1.225	0.071	4.200	$7.310 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.061	1.374	1.927	0.106	5.469	$9.392 \times 10^4$		
400. GeV	$4.001 \times 10^5$	2.086	1.888	2.655	0.141	6.771	$1.103 \times 10^5$		
800. GeV	$8.001 \times 10^5$	2.144	4.013	5.639	0.286	12.083	$1.540 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.163	5.104	7.165	0.359	14.793	$1.689 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.192	7.291	10.209	0.508	20.203	$1.920 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.224	10.637	14.855	0.735	28.452	$2.169 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.260	16.222	22.575	1.124	42.182	$2.456 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.285	21.881	30.377	1.519	56.064	$2.661 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.349	44.695	61.738	3.155	111.939	$3.156 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.370	56.191	77.502	3.995	140.059	$3.315 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.402	79.120	108.956	5.719	196.199	$3.555 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.436	113.714	156.338	8.362	280.852	$3.810 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	2.476	171.306	235.172	12.925	421.882	$4.098 \times 10^5$		
40.0 TeV	$4.000 \times 10^7$	2.505	229.104	314.192	17.595	563.398	$4.303 \times 10^5$		
80.0 TeV	$8.000 \times 10^7$	2.576	460.633	630.488	37.092	1130.791	$4.794 \times 10^5$		
100. TeV	$1.000 \times 10^8$	2.599	576.590	788.780	47.160	1415.130	$4.952 \times 10^5$		