

## Muons in ytterbium (Yb)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
70 (Yb)	173.054 (5)	6.903	684.0	0.25295	2.5141	0.1144	3.6191	6.3071	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	$4.704 \times 10^1$	4.071				4.071	$1.417 \times 10^0$		
14.0 MeV	$5.616 \times 10^1$	3.238				3.238	$2.529 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	2.572				2.572	$4.630 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	2.027				2.027	$9.066 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	1.747				1.747	$1.441 \times 10^1$		
80.0 MeV	$1.527 \times 10^2$	1.336				1.336	$4.138 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.264				1.264	$5.681 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.194				1.195	$8.950 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.162				1.163	$1.406 \times 10^2$		
237. MeV	$3.260 \times 10^2$	1.159	0.000			1.159	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.165	0.000		0.000	1.165	$2.267 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.184	0.000		0.000	1.185	$3.119 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.269	0.001		0.000	1.270	$6.375 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.303	0.001		0.000	1.304	$7.928 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.356	0.002	0.000	0.001	1.359	$1.093 \times 10^3$		
2.00 GeV	$2.103 \times 10^3$	1.415	0.004	0.001	0.001	1.420	$1.524 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.481	0.006	0.003	0.001	1.492	$2.210 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	1.527	0.009	0.006	0.002	1.544	$2.868 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	1.633	0.022	0.020	0.003	1.679	$5.342 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	1.664	0.029	0.029	0.004	1.727	$6.516 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	1.710	0.045	0.047	0.005	1.808	$8.778 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	1.756	0.070	0.077	0.007	1.911	$1.200 \times 10^4$		
30.0 GeV	$3.011 \times 10^4$	1.804	0.115	0.135	0.011	2.066	$1.703 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	1.837	0.162	0.198	0.014	2.212	$2.171 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	1.908	0.366	0.477	0.028	2.780	$3.780 \times 10^4$		
100. GeV	$1.001 \times 10^5$	1.929	0.474	0.628	0.035	3.067	$4.465 \times 10^4$		
140. GeV	$1.401 \times 10^5$	1.960	0.696	0.938	0.049	3.643	$5.660 \times 10^4$		
161. GeV	$1.607 \times 10^5$	1.972	0.813	1.103	0.056	3.945	<i>Muon critical energy</i>		
200. GeV	$2.001 \times 10^5$	1.991	1.043	1.429	0.069	4.533	$7.135 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.025	1.635	2.249	0.104	6.014	$9.045 \times 10^4$		
400. GeV	$4.001 \times 10^5$	2.049	2.246	3.099	0.139	7.534	$1.053 \times 10^5$		
800. GeV	$8.001 \times 10^5$	2.107	4.771	6.581	0.280	13.741	$1.440 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.126	6.067	8.362	0.352	16.909	$1.571 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.155	8.665	11.915	0.499	23.235	$1.772 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.186	12.637	17.335	0.721	32.880	$1.988 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.221	19.265	26.342	1.102	48.931	$2.236 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.247	25.979	35.443	1.489	65.160	$2.413 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.309	53.042	72.024	3.093	130.469	$2.838 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.330	66.675	90.410	3.916	163.333	$2.975 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.361	93.868	127.097	5.605	228.933	$3.181 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.395	134.888	182.360	8.192	327.837	$3.399 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	2.435	203.176	274.303	12.660	492.576	$3.646 \times 10^5$		
40.0 TeV	$4.000 \times 10^7$	2.463	271.700	366.460	17.231	657.856	$3.821 \times 10^5$		
80.0 TeV	$8.000 \times 10^7$	2.533	546.175	735.347	36.310	1320.367	$4.242 \times 10^5$		
100. TeV	$1.000 \times 10^8$	2.555	683.630	919.960	46.160	1652.307	$4.377 \times 10^5$		