

**Table 002: Muons in Helium gas**

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	a	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
2 (He)	4.002602 (2)	$1.663 \times 10^{-4}$	41.8	0.13443	5.8347	2.2017	3.6122	11.1393	0.00
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	$4.704 \times 10^1$	7.709				7.709	$7.138 \times 10^{-1}$		
14.0 MeV	$5.616 \times 10^1$	5.998				5.998	$1.308 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	4.673				4.673	$2.455 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	3.616				3.616	$4.922 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	3.082				3.083	$7.937 \times 10^0$		
80.0 MeV	$1.527 \times 10^2$	2.305				2.305	$2.343 \times 10^1$		
100. MeV	$1.764 \times 10^2$	2.165				2.165	$3.240 \times 10^1$		
140. MeV	$2.218 \times 10^2$	2.026				2.026	$5.159 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.954			0.000	1.954	$8.186 \times 10^1$		
267. MeV	$3.577 \times 10^2$	1.937			0.000	1.937	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.939			0.000	1.939	$1.334 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.961			0.000	1.961	$1.847 \times 10^2$		
800. MeV	$8.995 \times 10^2$	2.081			0.000	2.082	$3.826 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	2.133			0.001	2.134	$4.774 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	2.218	0.000		0.001	2.219	$6.611 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	2.314	0.000		0.001	2.315	$9.255 \times 10^2$		
3.00 GeV	$3.104 \times 10^3$	2.427	0.000	0.000	0.002	2.429	$1.347 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	2.508	0.000	0.000	0.002	2.511	$1.751 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	2.705	0.001	0.001	0.004	2.712	$3.277 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	2.768	0.002	0.002	0.005	2.776	$4.005 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	2.862	0.002	0.003	0.007	2.874	$5.420 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	2.954	0.004	0.004	0.010	2.972	$7.470 \times 10^3$		
30.0 GeV	$3.011 \times 10^4$	3.033	0.006	0.008	0.014	3.062	$1.078 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	3.077	0.009	0.012	0.019	3.117	$1.401 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	3.163	0.021	0.029	0.036	3.250	$2.656 \times 10^4$		
100. GeV	$1.001 \times 10^5$	3.188	0.028	0.039	0.045	3.299	$3.266 \times 10^4$		
140. GeV	$1.401 \times 10^5$	3.223	0.042	0.058	0.062	3.386	$4.463 \times 10^4$		
200. GeV	$2.001 \times 10^5$	3.260	0.063	0.090	0.088	3.501	$6.205 \times 10^4$		
300. GeV	$3.001 \times 10^5$	3.302	0.101	0.144	0.132	3.679	$8.990 \times 10^4$		
400. GeV	$4.001 \times 10^5$	3.331	0.140	0.201	0.175	3.848	$1.165 \times 10^5$		
800. GeV	$8.001 \times 10^5$	3.403	0.306	0.443	0.354	4.506	$2.124 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	3.426	0.392	0.569	0.445	4.832	$2.553 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	3.461	0.566	0.821	0.632	5.481	$3.329 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	3.499	0.836	1.210	0.916	6.461	$4.337 \times 10^5$		
2.35 TeV	$2.352 \times 10^6$	3.517	0.993	1.437	1.086	7.034	<i>Muon critical energy</i>		
3.00 TeV	$3.000 \times 10^6$	3.543	1.289	1.861	1.404	8.097	$5.717 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	3.575	1.751	2.524	1.902	9.753	$6.841 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	3.652	3.634	5.207	3.979	16.472	$9.963 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	3.678	4.589	6.563	5.050	19.880	$1.107 \times 10^6$		
14.0 TeV	$1.400 \times 10^7$	3.717	6.497	9.260	7.260	26.734	$1.280 \times 10^6$		
20.0 TeV	$2.000 \times 10^7$	3.758	9.390	13.338	10.660	37.147	$1.469 \times 10^6$		
30.0 TeV	$3.000 \times 10^7$	3.807	14.206	20.112	16.578	54.703	$1.690 \times 10^6$		
40.0 TeV	$4.000 \times 10^7$	3.842	19.055	26.915	22.660	72.473	$1.848 \times 10^6$		
80.0 TeV	$8.000 \times 10^7$	3.928	38.527	54.158	48.256	144.869	$2.231 \times 10^6$		
100. TeV	$1.000 \times 10^8$	3.956	48.300	67.800	61.550	181.607	$2.354 \times 10^6$		