

**Table 087: Muons in Carbon (graphite)**

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
6 (C)	12.0107 (8)	2.210	78.0	0.20762	2.9532	-0.0090	2.4817	2.8926	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	$4.704 \times 10^1$	7.114				7.114	$7.773 \times 10^{-1}$		
14.0 MeV	$5.616 \times 10^1$	5.548				5.548	$1.421 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	4.329				4.329	$2.659 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	3.353				3.353	$5.320 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	2.858				2.858	$8.571 \times 10^0$		
80.0 MeV	$1.527 \times 10^2$	2.124				2.124	$2.533 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.989				1.989	$3.508 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.851				1.851	$5.603 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.772				1.772	$8.928 \times 10^1$		
300. MeV	$3.917 \times 10^2$	1.742			0.000	1.743	$1.464 \times 10^2$		
317. MeV	$4.096 \times 10^2$	1.742			0.000	1.742	<i>Minimum ionization</i>		
400. MeV	$4.945 \times 10^2$	1.748			0.000	1.749	$2.037 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.817	0.000		0.000	1.817	$4.282 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.848	0.000		0.000	1.848	$5.373 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.898	0.000		0.001	1.899	$7.506 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	1.954	0.000	0.000	0.001	1.955	$1.062 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	2.017	0.001	0.001	0.001	2.020	$1.564 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	2.061	0.001	0.001	0.002	2.065	$2.054 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	2.161	0.003	0.003	0.004	2.171	$3.937 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	2.192	0.004	0.004	0.005	2.205	$4.851 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	2.236	0.006	0.007	0.007	2.255	$6.643 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	2.280	0.010	0.011	0.009	2.310	$9.270 \times 10^3$		
30.0 GeV	$3.011 \times 10^4$	2.328	0.016	0.019	0.013	2.376	$1.354 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	2.361	0.022	0.028	0.018	2.429	$1.770 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	2.436	0.050	0.068	0.034	2.589	$3.362 \times 10^4$		
100. GeV	$1.001 \times 10^5$	2.460	0.065	0.089	0.042	2.657	$4.125 \times 10^4$		
140. GeV	$1.401 \times 10^5$	2.495	0.097	0.134	0.059	2.785	$5.595 \times 10^4$		
200. GeV	$2.001 \times 10^5$	2.531	0.145	0.206	0.084	2.966	$7.682 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.573	0.230	0.327	0.125	3.255	$1.090 \times 10^5$		
400. GeV	$4.001 \times 10^5$	2.602	0.317	0.453	0.167	3.540	$1.384 \times 10^5$		
800. GeV	$8.001 \times 10^5$	2.674	0.681	0.981	0.338	4.673	$2.365 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.697	0.869	1.254	0.424	5.244	$2.768 \times 10^5$		
1.06 TeV	$1.057 \times 10^6$	2.703	0.923	1.331	0.449	5.406	<i>Muon critical energy</i>		
1.40 TeV	$1.400 \times 10^6$	2.732	1.248	1.797	0.602	6.379	$3.459 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.770	1.830	2.630	0.871	8.102	$4.292 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.814	2.806	4.016	1.335	10.972	$5.349 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.846	3.799	5.422	1.807	13.875	$6.158 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.923	7.821	11.088	3.773	25.605	$8.248 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.949	9.855	13.942	4.785	31.531	$8.951 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.987	13.913	19.628	6.871	43.400	$1.003 \times 10^6$		
20.0 TeV	$2.000 \times 10^7$	3.029	20.052	28.206	10.076	61.364	$1.118 \times 10^6$		
30.0 TeV	$3.000 \times 10^7$	3.078	30.273	42.478	15.640	91.469	$1.251 \times 10^6$		
40.0 TeV	$4.000 \times 10^7$	3.113	40.549	56.796	21.350	121.808	$1.346 \times 10^6$		
80.0 TeV	$8.000 \times 10^7$	3.199	81.720	114.122	45.316	244.358	$1.573 \times 10^6$		
100. TeV	$1.000 \times 10^8$	3.227	102.350	142.820	57.740	306.137	$1.646 \times 10^6$		