

**Table 176: Muons in Gypsum (plaster of Paris,  $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ )**

$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
0.51113	2.320	129.7	0.06949	3.5134	0.0995	3.1206	3.8382	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	$4.704 \times 10^1$	6.814				6.814	$8.155 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	5.331				5.331	$1.486 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	4.174				4.174	$2.772 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	3.248				3.248	$5.526 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	2.778				2.778	$8.877 \times 10^0$	
80.0 MeV	$1.527 \times 10^2$	2.090				2.090	$2.599 \times 10^1$	
100. MeV	$1.764 \times 10^2$	1.962				1.962	$3.589 \times 10^1$	
140. MeV	$2.218 \times 10^2$	1.833				1.833	$5.709 \times 10^1$	
200. MeV	$2.868 \times 10^2$	1.761				1.761	$9.061 \times 10^1$	
297. MeV	$3.884 \times 10^2$	1.738			0.000	1.738	<i>Minimum ionization</i>	
300. MeV	$3.917 \times 10^2$	1.738			0.000	1.739	$1.479 \times 10^2$	
400. MeV	$4.945 \times 10^2$	1.749			0.000	1.749	$2.053 \times 10^2$	
800. MeV	$8.995 \times 10^2$	1.826	0.000		0.000	1.827	$4.291 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	1.860	0.000		0.000	1.861	$5.375 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	1.915	0.001	0.000	0.001	1.917	$7.491 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	1.975	0.001	0.000	0.001	1.978	$1.057 \times 10^3$	
3.00 GeV	$3.104 \times 10^3$	2.043	0.002	0.001	0.001	2.047	$1.553 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	2.090	0.002	0.002	0.002	2.096	$2.036 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	2.198	0.006	0.005	0.004	2.213	$3.887 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	2.230	0.007	0.008	0.005	2.250	$4.783 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	2.277	0.011	0.012	0.006	2.308	$6.537 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	2.325	0.018	0.020	0.009	2.372	$9.100 \times 10^3$	
30.0 GeV	$3.011 \times 10^4$	2.375	0.029	0.035	0.013	2.453	$1.324 \times 10^4$	
40.0 GeV	$4.011 \times 10^4$	2.409	0.041	0.052	0.017	2.519	$1.726 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	2.487	0.092	0.125	0.033	2.738	$3.247 \times 10^4$	
100. GeV	$1.001 \times 10^5$	2.511	0.120	0.165	0.041	2.837	$3.964 \times 10^4$	
140. GeV	$1.401 \times 10^5$	2.547	0.176	0.246	0.057	3.027	$5.329 \times 10^4$	
200. GeV	$2.001 \times 10^5$	2.584	0.265	0.376	0.081	3.306	$7.225 \times 10^4$	
300. GeV	$3.001 \times 10^5$	2.627	0.416	0.595	0.121	3.760	$1.006 \times 10^5$	
400. GeV	$4.001 \times 10^5$	2.657	0.574	0.824	0.162	4.216	$1.257 \times 10^5$	
663. GeV	$6.634 \times 10^5$	2.710	1.000	1.440	0.270	5.421	<i>Muon critical energy</i>	
800. GeV	$8.001 \times 10^5$	2.730	1.226	1.766	0.327	6.050	$2.045 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	2.754	1.562	2.251	0.411	6.978	$2.352 \times 10^5$	
1.40 TeV	$1.400 \times 10^6$	2.790	2.239	3.217	0.582	8.829	$2.861 \times 10^5$	
2.00 TeV	$2.000 \times 10^6$	2.829	3.276	4.696	0.843	11.644	$3.451 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	2.874	5.011	7.155	1.291	16.331	$4.173 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	2.906	6.774	9.645	1.746	21.071	$4.711 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	2.985	13.899	19.666	3.641	40.192	$6.062 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	3.011	17.498	24.710	4.616	49.835	$6.508 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	3.051	24.680	34.765	6.624	69.120	$7.187 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	3.094	35.535	49.923	9.706	98.258	$7.911 \times 10^5$	
30.0 TeV	$3.000 \times 10^7$	3.143	53.593	75.147	15.050	146.934	$8.738 \times 10^5$	
40.0 TeV	$4.000 \times 10^7$	3.179	71.733	100.445	20.530	195.888	$9.326 \times 10^5$	
80.0 TeV	$8.000 \times 10^7$	3.267	144.466	201.717	43.500	392.950	$1.074 \times 10^6$	
100. TeV	$1.000 \times 10^8$	3.296	180.922	252.408	55.395	492.022	$1.119 \times 10^6$	