

## Muons in calcium sulfate (CaSO<sub>4</sub>)

$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
0.49950	2.960	152.3	0.07708	3.4495	0.0587	3.1229	3.9388	0.00
$T$	$p$ [MeV/c]	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range [g/cm <sup>2</sup> ]	
10.0 MeV	$4.704 \times 10^1$	6.510				6.510	$8.551 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	5.098				5.098	$1.557 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	3.995				3.995	$2.901 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	3.111				3.111	$5.777 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	2.663				2.663	$9.273 \times 10^0$	
80.0 MeV	$1.527 \times 10^2$	2.003				2.004	$2.712 \times 10^1$	
100. MeV	$1.764 \times 10^2$	1.882				1.882	$3.745 \times 10^1$	
140. MeV	$2.218 \times 10^2$	1.760				1.760	$5.953 \times 10^1$	
200. MeV	$2.868 \times 10^2$	1.693				1.693	$9.441 \times 10^1$	
290. MeV	$3.813 \times 10^2$	1.673			0.000	1.673	<i>Minimum ionization</i>	
300. MeV	$3.917 \times 10^2$	1.673			0.000	1.673	$1.540 \times 10^2$	
400. MeV	$4.945 \times 10^2$	1.685			0.000	1.685	$2.136 \times 10^2$	
800. MeV	$8.995 \times 10^2$	1.763	0.000		0.000	1.763	$4.456 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	1.796	0.000		0.000	1.797	$5.579 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	1.851	0.001	0.000	0.001	1.852	$7.770 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	1.910	0.001	0.000	0.001	1.913	$1.095 \times 10^3$	
3.00 GeV	$3.104 \times 10^3$	1.977	0.002	0.001	0.001	1.982	$1.608 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	2.024	0.003	0.002	0.002	2.030	$2.107 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	2.130	0.006	0.006	0.004	2.146	$4.017 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	2.162	0.008	0.008	0.005	2.183	$4.940 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	2.208	0.012	0.014	0.006	2.241	$6.748 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	2.254	0.019	0.022	0.009	2.305	$9.386 \times 10^3$	
30.0 GeV	$3.011 \times 10^4$	2.304	0.032	0.039	0.013	2.387	$1.365 \times 10^4$	
40.0 GeV	$4.011 \times 10^4$	2.337	0.045	0.057	0.017	2.456	$1.777 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	2.413	0.101	0.137	0.033	2.684	$3.333 \times 10^4$	
100. GeV	$1.001 \times 10^5$	2.437	0.131	0.180	0.041	2.788	$4.064 \times 10^4$	
140. GeV	$1.401 \times 10^5$	2.472	0.192	0.269	0.057	2.990	$5.449 \times 10^4$	
200. GeV	$2.001 \times 10^5$	2.509	0.289	0.410	0.080	3.288	$7.361 \times 10^4$	
300. GeV	$3.001 \times 10^5$	2.550	0.454	0.649	0.120	3.774	$1.020 \times 10^5$	
400. GeV	$4.001 \times 10^5$	2.580	0.625	0.898	0.160	4.263	$1.269 \times 10^5$	
599. GeV	$5.993 \times 10^5$	2.621	0.975	1.405	0.241	5.243	<i>Muon critical energy</i>	
800. GeV	$8.001 \times 10^5$	2.651	1.335	1.924	0.324	6.235	$2.040 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	2.674	1.701	2.451	0.407	7.234	$2.338 \times 10^5$	
1.40 TeV	$1.400 \times 10^6$	2.710	2.436	3.502	0.577	9.226	$2.826 \times 10^5$	
2.00 TeV	$2.000 \times 10^6$	2.748	3.564	5.110	0.836	12.258	$3.389 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	2.791	5.450	7.783	1.280	17.305	$4.072 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	2.823	7.366	10.490	1.731	22.410	$4.579 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	2.900	15.106	21.382	3.608	42.998	$5.845 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	2.926	19.014	26.863	4.575	53.378	$6.262 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	2.965	26.815	37.791	6.563	74.134	$6.895 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	3.007	38.603	54.263	9.614	105.488	$7.570 \times 10^5$	
30.0 TeV	$3.000 \times 10^7$	3.055	58.210	81.676	14.904	157.845	$8.340 \times 10^5$	
40.0 TeV	$4.000 \times 10^7$	3.090	77.902	109.168	20.328	210.488	$8.887 \times 10^5$	
80.0 TeV	$8.000 \times 10^7$	3.176	156.854	219.222	43.050	422.302	$1.020 \times 10^6$	
100. TeV	$1.000 \times 10^8$	3.204	196.424	274.308	54.814	528.750	$1.062 \times 10^6$	