

## Muons in ethylene (C<sub>2</sub>H<sub>4</sub>)

$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
0.57034	$1.175 \times 10^{-3}$	50.7	0.10636	3.5387	1.5528	3.9327	9.4380	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	$4.704 \times 10^1$	8.598				8.598	$6.406 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	6.695				6.695	$1.173 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	5.219				5.220	$2.200 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	4.042				4.042	$4.408 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	3.447				3.447	$7.105 \times 10^0$	
80.0 MeV	$1.527 \times 10^2$	2.581				2.581	$2.095 \times 10^1$	
100. MeV	$1.764 \times 10^2$	2.425				2.425	$2.896 \times 10^1$	
140. MeV	$2.218 \times 10^2$	2.271				2.272	$4.608 \times 10^1$	
200. MeV	$2.868 \times 10^2$	2.192				2.192	$7.307 \times 10^1$	
266. MeV	$3.567 \times 10^2$	2.174			0.000	2.175	<i>Minimum ionization</i>	
300. MeV	$3.917 \times 10^2$	2.177			0.000	2.177	$1.190 \times 10^2$	
400. MeV	$4.945 \times 10^2$	2.203			0.000	2.203	$1.647 \times 10^2$	
800. MeV	$8.995 \times 10^2$	2.341	0.000		0.000	2.342	$3.407 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	2.401	0.000		0.000	2.401	$4.250 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	2.498	0.000		0.001	2.499	$5.881 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	2.607	0.000	0.000	0.001	2.609	$8.228 \times 10^2$	
3.00 GeV	$3.104 \times 10^3$	2.736	0.001	0.000	0.001	2.739	$1.196 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	2.825	0.001	0.001	0.002	2.829	$1.555 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	3.003	0.003	0.003	0.004	3.012	$2.919 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	3.054	0.004	0.004	0.005	3.066	$3.577 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	3.127	0.006	0.006	0.007	3.145	$4.864 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	3.197	0.009	0.010	0.009	3.225	$6.746 \times 10^3$	
30.0 GeV	$3.011 \times 10^4$	3.270	0.015	0.018	0.014	3.316	$9.801 \times 10^3$	
40.0 GeV	$4.011 \times 10^4$	3.317	0.021	0.026	0.018	3.382	$1.279 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	3.419	0.047	0.063	0.035	3.564	$2.429 \times 10^4$	
100. GeV	$1.001 \times 10^5$	3.449	0.061	0.084	0.043	3.637	$2.984 \times 10^4$	
140. GeV	$1.401 \times 10^5$	3.492	0.091	0.126	0.060	3.769	$4.064 \times 10^4$	
200. GeV	$2.001 \times 10^5$	3.537	0.137	0.193	0.085	3.951	$5.618 \times 10^4$	
300. GeV	$3.001 \times 10^5$	3.585	0.216	0.307	0.127	4.236	$8.061 \times 10^4$	
400. GeV	$4.001 \times 10^5$	3.619	0.299	0.427	0.170	4.515	$1.035 \times 10^5$	
800. GeV	$8.001 \times 10^5$	3.701	0.644	0.925	0.343	5.613	$1.828 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	3.728	0.822	1.183	0.430	6.164	$2.168 \times 10^5$	
1.40 TeV	$1.400 \times 10^6$	3.768	1.182	1.697	0.611	7.258	$2.765 \times 10^5$	
1.51 TeV	$1.508 \times 10^6$	3.777	1.281	1.837	0.659	7.554	<i>Muon critical energy</i>	
2.00 TeV	$2.000 \times 10^6$	3.811	1.736	2.485	0.884	8.917	$3.510 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	3.861	2.665	3.799	1.355	11.681	$4.487 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	3.897	3.612	5.132	1.834	14.476	$5.254 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	3.986	7.450	10.502	3.831	25.770	$7.298 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	4.015	9.393	13.208	4.860	31.477	$7.999 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	4.059	13.272	18.599	6.982	42.912	$9.083 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	4.107	19.144	26.732	10.243	60.227	$1.026 \times 10^6$	
30.0 TeV	$3.000 \times 10^7$	4.163	28.924	40.262	15.907	89.256	$1.161 \times 10^6$	
40.0 TeV	$4.000 \times 10^7$	4.202	38.762	53.838	21.722	118.524	$1.258 \times 10^6$	
80.0 TeV	$8.000 \times 10^7$	4.301	78.203	108.188	46.153	236.845	$1.493 \times 10^6$	
100. TeV	$1.000 \times 10^8$	4.333	97.977	135.397	58.825	296.533	$1.568 \times 10^6$	