

## Muons in propane (C<sub>3</sub>H<sub>8</sub>)

$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
0.58962	$1.868 \times 10^{-3}$	47.1	0.09916	3.5920	1.4339	3.8011	8.7939	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	$4.704 \times 10^1$	8.969				8.969	$6.137 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	6.982				6.982	$1.125 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	5.441				5.441	$2.109 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	4.212				4.213	$4.228 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	3.592				3.592	$6.815 \times 10^0$	
80.0 MeV	$1.527 \times 10^2$	2.688				2.688	$2.010 \times 10^1$	
100. MeV	$1.764 \times 10^2$	2.525				2.526	$2.780 \times 10^1$	
140. MeV	$2.218 \times 10^2$	2.365				2.365	$4.424 \times 10^1$	
200. MeV	$2.868 \times 10^2$	2.281				2.281	$7.018 \times 10^1$	
267. MeV	$3.577 \times 10^2$	2.262			0.000	2.263	<i>Minimum ionization</i>	
300. MeV	$3.917 \times 10^2$	2.265			0.000	2.265	$1.143 \times 10^2$	
400. MeV	$4.945 \times 10^2$	2.291			0.000	2.291	$1.582 \times 10^2$	
800. MeV	$8.995 \times 10^2$	2.434	0.000		0.000	2.435	$3.275 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	2.495	0.000		0.000	2.496	$4.086 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	2.596	0.000		0.001	2.597	$5.656 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	2.709	0.000	0.000	0.001	2.710	$7.915 \times 10^2$	
3.00 GeV	$3.104 \times 10^3$	2.838	0.001	0.000	0.001	2.841	$1.151 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	2.916	0.001	0.001	0.002	2.921	$1.498 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	3.088	0.003	0.003	0.004	3.097	$2.822 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	3.138	0.004	0.004	0.005	3.150	$3.462 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	3.208	0.006	0.006	0.007	3.226	$4.716 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	3.276	0.009	0.010	0.009	3.305	$6.552 \times 10^3$	
30.0 GeV	$3.011 \times 10^4$	3.347	0.014	0.017	0.014	3.393	$9.536 \times 10^3$	
40.0 GeV	$4.011 \times 10^4$	3.394	0.020	0.026	0.018	3.458	$1.245 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	3.494	0.046	0.062	0.035	3.638	$2.371 \times 10^4$	
100. GeV	$1.001 \times 10^5$	3.524	0.060	0.082	0.043	3.710	$2.915 \times 10^4$	
140. GeV	$1.401 \times 10^5$	3.568	0.089	0.124	0.060	3.841	$3.975 \times 10^4$	
200. GeV	$2.001 \times 10^5$	3.612	0.134	0.190	0.085	4.022	$5.501 \times 10^4$	
300. GeV	$3.001 \times 10^5$	3.662	0.213	0.302	0.128	4.305	$7.903 \times 10^4$	
400. GeV	$4.001 \times 10^5$	3.697	0.294	0.419	0.170	4.581	$1.015 \times 10^5$	
800. GeV	$8.001 \times 10^5$	3.781	0.634	0.910	0.344	5.669	$1.799 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	3.809	0.810	1.164	0.432	6.215	$2.136 \times 10^5$	
1.40 TeV	$1.400 \times 10^6$	3.851	1.164	1.670	0.613	7.298	$2.729 \times 10^5$	
1.56 TeV	$1.558 \times 10^6$	3.864	1.307	1.872	0.685	7.728	<i>Muon critical energy</i>	
2.00 TeV	$2.000 \times 10^6$	3.895	1.710	2.446	0.888	8.940	$3.471 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	3.947	2.627	3.739	1.361	11.674	$4.447 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	3.984	3.561	5.052	1.842	14.439	$5.216 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	4.076	7.349	10.343	3.847	25.615	$7.268 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	4.106	9.267	13.009	4.881	31.263	$7.974 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	4.152	13.097	18.319	7.012	42.580	$9.066 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	4.201	18.897	26.331	10.288	59.717	$1.025 \times 10^6$	
30.0 TeV	$3.000 \times 10^7$	4.258	28.556	39.659	15.979	88.453	$1.162 \times 10^6$	
40.0 TeV	$4.000 \times 10^7$	4.299	38.275	53.032	21.824	117.430	$1.260 \times 10^6$	
80.0 TeV	$8.000 \times 10^7$	4.401	77.245	106.572	46.380	234.599	$1.496 \times 10^6$	
100. TeV	$1.000 \times 10^8$	4.435	96.786	133.376	59.121	293.717	$1.572 \times 10^6$	