

## Muons in alanine (C<sub>3</sub>H<sub>7</sub>NO<sub>2</sub>)

	$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
	0.53976	1.420	71.9	0.11484	3.3526	0.1354	2.6336	3.0965	0.00
$T$	$p$ [MeV/c]	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range [g/cm <sup>2</sup> ]		
				[MeV cm <sup>2</sup> /g]					
10.0 MeV	$4.704 \times 10^1$	7.787				7.787		$7.094 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	6.073				6.073		$1.297 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	4.742				4.742		$2.428 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	3.678				3.678		$4.856 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	3.140				3.140		$7.818 \times 10^0$	
80.0 MeV	$1.527 \times 10^2$	2.353				2.353		$2.299 \times 10^1$	
100. MeV	$1.764 \times 10^2$	2.203				2.203		$3.180 \times 10^1$	
140. MeV	$2.218 \times 10^2$	2.049				2.049		$5.072 \times 10^1$	
200. MeV	$2.868 \times 10^2$	1.960				1.960		$8.078 \times 10^1$	
300. MeV	$3.917 \times 10^2$	1.925			0.000	1.925		$1.324 \times 10^2$	
325. MeV	$4.171 \times 10^2$	1.924			0.000	1.924			<i>Minimum ionization</i>
400. MeV	$4.945 \times 10^2$	1.929			0.000	1.930		$1.844 \times 10^2$	
800. MeV	$8.995 \times 10^2$	2.000	0.000		0.000	2.000		$3.880 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	2.032	0.000		0.000	2.033		$4.872 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	2.086	0.000		0.001	2.087		$6.813 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	2.145	0.001	0.000	0.001	2.146		$9.645 \times 10^2$	
3.00 GeV	$3.104 \times 10^3$	2.212	0.001	0.001	0.001	2.215		$1.423 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	2.259	0.001	0.001	0.002	2.263		$1.869 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	2.366	0.003	0.003	0.004	2.376		$3.589 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	2.399	0.004	0.004	0.005	2.412		$4.424 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	2.446	0.007	0.007	0.007	2.467		$6.063 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	2.494	0.010	0.012	0.009	2.525		$8.465 \times 10^3$	
30.0 GeV	$3.011 \times 10^4$	2.546	0.017	0.021	0.014	2.597		$1.237 \times 10^4$	
40.0 GeV	$4.011 \times 10^4$	2.581	0.024	0.030	0.018	2.654		$1.617 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	2.663	0.055	0.074	0.034	2.826		$3.076 \times 10^4$	
100. GeV	$1.001 \times 10^5$	2.688	0.071	0.097	0.043	2.899		$3.774 \times 10^4$	
140. GeV	$1.401 \times 10^5$	2.726	0.105	0.146	0.059	3.036		$5.122 \times 10^4$	
200. GeV	$2.001 \times 10^5$	2.765	0.158	0.224	0.084	3.231		$7.037 \times 10^4$	
300. GeV	$3.001 \times 10^5$	2.810	0.250	0.355	0.126	3.541		$9.992 \times 10^4$	
400. GeV	$4.001 \times 10^5$	2.842	0.345	0.493	0.167	3.847		$1.270 \times 10^5$	
800. GeV	$8.001 \times 10^5$	2.919	0.740	1.065	0.338	5.063		$2.174 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	2.944	0.945	1.361	0.425	5.676		$2.546 \times 10^5$	
1.08 TeV	$1.076 \times 10^6$	2.953	1.022	1.472	0.458	5.906			<i>Muon critical energy</i>
1.40 TeV	$1.400 \times 10^6$	2.983	1.357	1.950	0.603	6.892		$3.185 \times 10^5$	
2.00 TeV	$2.000 \times 10^6$	3.024	1.990	2.853	0.873	8.740		$3.957 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	3.071	3.052	4.357	1.337	11.817		$4.937 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	3.105	4.132	5.882	1.810	14.929		$5.688 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	3.189	8.507	12.024	3.778	27.498		$7.633 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	3.216	10.721	15.118	4.791	33.847		$8.288 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	3.258	15.138	21.283	6.881	46.559		$9.291 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	3.304	21.820	30.581	10.091	65.795		$1.037 \times 10^6$	
30.0 TeV	$3.000 \times 10^7$	3.356	32.947	46.052	15.664	98.019		$1.161 \times 10^6$	
40.0 TeV	$4.000 \times 10^7$	3.394	44.135	61.573	21.384	130.486		$1.249 \times 10^6$	
80.0 TeV	$8.000 \times 10^7$	3.487	88.997	123.711	45.395	261.590		$1.461 \times 10^6$	
100. TeV	$1.000 \times 10^8$	3.517	111.489	154.818	57.843	327.667		$1.529 \times 10^6$	