

**Table 015: Muons in Phosphorus**

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	a	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
15 (P)	30.973762 (2)	2.200	173.0	0.23610	2.9158	0.1696	2.7815	4.5214	0.14
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	$4.704 \times 10^1$	6.182				6.182	$9.035 \times 10^{-1}$		
14.0 MeV	$5.616 \times 10^1$	4.845				4.845	$1.642 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	3.800				3.800	$3.056 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	2.959				2.959	$6.079 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	2.532				2.532	$9.756 \times 10^0$		
80.0 MeV	$1.527 \times 10^2$	1.907				1.907	$2.853 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.795				1.795	$3.937 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.685				1.685	$6.247 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.627				1.627	$9.885 \times 10^1$		
273. MeV	$3.633 \times 10^2$	1.613			0.000	1.613	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.614			0.000	1.614	$1.607 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.629			0.000	1.629	$2.224 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.714	0.000		0.000	1.714	$4.617 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.749	0.000		0.000	1.750	$5.771 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.805	0.001	0.000	0.001	1.807	$8.018 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	1.867	0.001	0.001	0.001	1.869	$1.128 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.935	0.002	0.001	0.001	1.940	$1.652 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	1.982	0.003	0.002	0.002	1.989	$2.161 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	2.089	0.007	0.006	0.004	2.105	$4.109 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	2.120	0.009	0.009	0.005	2.143	$5.050 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	2.166	0.013	0.015	0.006	2.200	$6.891 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	2.211	0.021	0.024	0.009	2.265	$9.577 \times 10^3$		
30.0 GeV	$3.011 \times 10^4$	2.259	0.034	0.042	0.013	2.348	$1.391 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	2.291	0.048	0.061	0.017	2.417	$1.811 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	2.364	0.108	0.147	0.032	2.652	$3.388 \times 10^4$		
100. GeV	$1.001 \times 10^5$	2.387	0.140	0.194	0.040	2.762	$4.127 \times 10^4$		
140. GeV	$1.401 \times 10^5$	2.421	0.206	0.289	0.056	2.972	$5.522 \times 10^4$		
200. GeV	$2.001 \times 10^5$	2.457	0.310	0.440	0.079	3.286	$7.441 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.497	0.487	0.697	0.119	3.800	$1.027 \times 10^5$		
400. GeV	$4.001 \times 10^5$	2.525	0.671	0.965	0.158	4.320	$1.274 \times 10^5$		
552. GeV	$5.519 \times 10^5$	2.557	0.957	1.382	0.219	5.115	<i>Muon critical energy</i>		
800. GeV	$8.001 \times 10^5$	2.595	1.432	2.067	0.320	6.415	$2.029 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.617	1.825	2.632	0.402	7.476	$2.317 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.651	2.613	3.761	0.570	9.595	$2.788 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.688	3.821	5.486	0.824	12.821	$3.328 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.731	5.843	8.355	1.262	18.191	$3.979 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.761	7.895	11.258	1.707	23.623	$4.460 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.836	16.187	22.941	3.557	45.522	$5.659 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.861	20.373	28.819	4.508	56.562	$6.052 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.899	28.730	40.538	6.465	78.633	$6.650 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.939	41.358	58.202	9.468	111.968	$7.286 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	2.986	62.356	87.604	14.672	167.619	$8.011 \times 10^5$		
40.0 TeV	$4.000 \times 10^7$	3.020	83.442	117.091	20.007	223.561	$8.526 \times 10^5$		
80.0 TeV	$8.000 \times 10^7$	3.104	167.987	235.128	42.342	448.562	$9.764 \times 10^5$		
100. TeV	$1.000 \times 10^8$	3.131	210.360	294.210	53.900	561.602	$1.016 \times 10^6$		