

## Muons in nitrogen gas (N<sub>2</sub>)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
7 (N)	14.007(2)	$1.165 \times 10^{-3}$	82.0	0.15349	3.2125	1.7378	4.1323	10.5400	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	$4.704 \times 10^1$	7.084				7.084	$7.814 \times 10^{-1}$		
14.0 MeV	$5.616 \times 10^1$	5.530				5.530	$1.427 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	4.321				4.321	$2.669 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	3.354				3.354	$5.333 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	2.865				2.865	$8.580 \times 10^0$		
80.0 MeV	$1.527 \times 10^2$	2.152				2.152	$2.520 \times 10^1$		
100. MeV	$1.764 \times 10^2$	2.025				2.025	$3.481 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.900				1.900	$5.529 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.837				1.837	$8.753 \times 10^1$		
257. MeV	$3.471 \times 10^2$	1.825			0.000	1.825	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.829			0.000	1.829	$1.422 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.853			0.000	1.853	$1.966 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.977	0.000		0.000	1.977	$4.054 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	2.029	0.000		0.000	2.030	$5.052 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	2.114	0.000		0.001	2.116	$6.980 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	2.211	0.001	0.000	0.001	2.212	$9.750 \times 10^2$		
3.00 GeV	$3.104 \times 10^3$	2.324	0.001	0.001	0.001	2.327	$1.415 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	2.405	0.001	0.001	0.002	2.410	$1.837 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	2.586	0.003	0.003	0.004	2.597	$3.426 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	2.636	0.005	0.005	0.005	2.650	$4.188 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	2.706	0.007	0.007	0.007	2.727	$5.675 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	2.775	0.011	0.012	0.009	2.808	$7.841 \times 10^3$		
30.0 GeV	$3.011 \times 10^4$	2.846	0.018	0.022	0.013	2.899	$1.134 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	2.892	0.025	0.032	0.018	2.967	$1.475 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	2.992	0.057	0.077	0.034	3.161	$2.778 \times 10^4$		
100. GeV	$1.001 \times 10^5$	3.021	0.074	0.102	0.042	3.240	$3.403 \times 10^4$		
140. GeV	$1.401 \times 10^5$	3.063	0.110	0.153	0.059	3.384	$4.611 \times 10^4$		
200. GeV	$2.001 \times 10^5$	3.104	0.165	0.234	0.083	3.587	$6.332 \times 10^4$		
300. GeV	$3.001 \times 10^5$	3.150	0.261	0.372	0.124	3.907	$9.002 \times 10^4$		
400. GeV	$4.001 \times 10^5$	3.181	0.360	0.515	0.166	4.222	$1.146 \times 10^5$		
800. GeV	$8.001 \times 10^5$	3.254	0.772	1.113	0.335	5.474	$1.976 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	3.277	0.985	1.422	0.421	6.105	$2.322 \times 10^5$		
1.15 TeV	$1.154 \times 10^6$	3.292	1.149	1.655	0.488	6.585	<i>Muon critical energy</i>		
1.40 TeV	$1.400 \times 10^6$	3.313	1.414	2.036	0.597	7.359	$2.918 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	3.351	2.073	2.977	0.864	9.265	$3.643 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	3.394	3.176	4.543	1.324	12.439	$4.572 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	3.426	4.299	6.132	1.792	15.649	$5.287 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	3.503	8.841	12.530	3.740	28.615	$7.150 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	3.529	11.138	15.752	4.743	35.162	$7.779 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	3.568	15.720	22.172	6.809	48.270	$8.746 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	3.610	22.650	31.856	9.982	68.098	$9.788 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	3.658	34.187	47.969	15.491	101.305	$1.098 \times 10^6$		
40.0 TeV	$4.000 \times 10^7$	3.693	45.784	64.133	21.144	134.754	$1.184 \times 10^6$		
80.0 TeV	$8.000 \times 10^7$	3.779	92.292	128.845	44.860	269.777	$1.390 \times 10^6$		
100. TeV	$1.000 \times 10^8$	3.808	115.610	161.240	57.150	337.808	$1.456 \times 10^6$		