

## Muons in deuterium gas (D<sub>2</sub>)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
1 (D)	2.014101764 (13)	$0.677 \times 10^{-4}$	19.2	0.14092	5.7273	1.8793	3.2872	9.6543	0.00

  

T	p	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range
	[MeV/c]			[MeV cm <sup>2</sup> /g]			[g/cm <sup>2</sup> ]
10.0 MeV	$4.704 \times 10^1$	8.379				8.379	$6.528 \times 10^{-1}$
14.0 MeV	$5.616 \times 10^1$	6.500				6.500	$1.201 \times 10^0$
20.0 MeV	$6.802 \times 10^1$	5.049				5.049	$2.261 \times 10^0$
30.0 MeV	$8.509 \times 10^1$	3.895				3.895	$4.548 \times 10^0$
40.0 MeV	$1.003 \times 10^2$	3.313				3.313	$7.350 \times 10^0$
80.0 MeV	$1.527 \times 10^2$	2.466				2.466	$2.180 \times 10^1$
100. MeV	$1.764 \times 10^2$	2.312				2.312	$3.020 \times 10^1$
140. MeV	$2.218 \times 10^2$	2.159				2.159	$4.819 \times 10^1$
200. MeV	$2.868 \times 10^2$	2.076			0.000	2.076	$7.663 \times 10^1$
284. MeV	$3.748 \times 10^2$	2.053			0.000	2.054	<i>Minimum ionization</i>
300. MeV	$3.917 \times 10^2$	2.054			0.000	2.054	$1.252 \times 10^2$
400. MeV	$4.945 \times 10^2$	2.072			0.000	2.073	$1.737 \times 10^2$
800. MeV	$8.995 \times 10^2$	2.188			0.000	2.189	$3.615 \times 10^2$
1.00 GeV	$1.101 \times 10^3$	2.239			0.001	2.240	$4.518 \times 10^2$
1.40 GeV	$1.502 \times 10^3$	2.323	0.000		0.001	2.324	$6.269 \times 10^2$
2.00 GeV	$2.103 \times 10^3$	2.418	0.000		0.001	2.420	$8.797 \times 10^2$
3.00 GeV	$3.104 \times 10^3$	2.530	0.000	0.000	0.002	2.533	$1.283 \times 10^3$
4.00 GeV	$4.104 \times 10^3$	2.611	0.001	0.000	0.002	2.615	$1.671 \times 10^3$
8.00 GeV	$8.105 \times 10^3$	2.806	0.001	0.001	0.005	2.814	$3.140 \times 10^3$
10.0 GeV	$1.011 \times 10^4$	2.860	0.002	0.002	0.006	2.870	$3.843 \times 10^3$
14.0 GeV	$1.411 \times 10^4$	2.927	0.003	0.003	0.008	2.941	$5.218 \times 10^3$
20.0 GeV	$2.011 \times 10^4$	2.984	0.005	0.006	0.011	3.005	$7.235 \times 10^3$
30.0 GeV	$3.011 \times 10^4$	3.039	0.008	0.010	0.015	3.073	$1.052 \times 10^4$
40.0 GeV	$4.011 \times 10^4$	3.074	0.012	0.015	0.020	3.121	$1.375 \times 10^4$
80.0 GeV	$8.011 \times 10^4$	3.150	0.028	0.038	0.038	3.255	$2.628 \times 10^4$
100. GeV	$1.001 \times 10^5$	3.174	0.037	0.050	0.047	3.309	$3.238 \times 10^4$
140. GeV	$1.401 \times 10^5$	3.209	0.055	0.076	0.066	3.406	$4.429 \times 10^4$
200. GeV	$2.001 \times 10^5$	3.245	0.085	0.118	0.093	3.541	$6.156 \times 10^4$
300. GeV	$3.001 \times 10^5$	3.286	0.137	0.191	0.139	3.753	$8.898 \times 10^4$
400. GeV	$4.001 \times 10^5$	3.315	0.191	0.268	0.185	3.960	$1.149 \times 10^5$
800. GeV	$8.001 \times 10^5$	3.387	0.423	0.592	0.373	4.774	$2.068 \times 10^5$
1.00 TeV	$1.000 \times 10^6$	3.410	0.544	0.761	0.468	5.183	$2.470 \times 10^5$
1.40 TeV	$1.400 \times 10^6$	3.445	0.791	1.101	0.663	6.001	$3.186 \times 10^5$
1.86 TeV	$1.858 \times 10^6$	3.475	1.083	1.501	0.890	6.950	<i>Muon critical energy</i>
2.00 TeV	$2.000 \times 10^6$	3.483	1.175	1.627	0.961	7.246	$4.095 \times 10^5$
3.00 TeV	$3.000 \times 10^6$	3.526	1.827	2.504	1.474	9.331	$5.309 \times 10^5$
4.00 TeV	$4.000 \times 10^6$	3.557	2.496	3.399	1.996	11.448	$6.275 \times 10^5$
8.00 TeV	$8.000 \times 10^6$	3.634	5.240	7.012	4.180	20.067	$8.882 \times 10^5$
10.0 TeV	$1.000 \times 10^7$	3.660	6.642	8.837	5.308	24.447	$9.783 \times 10^5$
14.0 TeV	$1.400 \times 10^7$	3.698	9.452	12.466	7.642	33.258	$1.118 \times 10^6$
20.0 TeV	$2.000 \times 10^7$	3.740	13.734	17.952	11.236	46.662	$1.270 \times 10^6$
30.0 TeV	$3.000 \times 10^7$	3.788	20.884	27.062	17.498	69.232	$1.445 \times 10^6$
40.0 TeV	$4.000 \times 10^7$	3.823	28.113	36.210	23.940	92.085	$1.570 \times 10^6$
80.0 TeV	$8.000 \times 10^7$	3.908	57.248	72.833	51.135	185.124	$1.870 \times 10^6$
100. TeV	$1.000 \times 10^8$	3.937	71.920	91.170	65.290	232.317	$1.966 \times 10^6$