

## Muons in liquid fluorine (F<sub>2</sub>)

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
9 (F)	18.998403163(6)	1.507	115.0	0.14504	3.0000	0.2000	3.0000	4.1050	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	$4.704 \times 10^1$	6.415				6.415	$8.662 \times 10^{-1}$		
14.0 MeV	$5.616 \times 10^1$	5.017				5.017	$1.579 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	3.927				3.927	$2.946 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	3.054				3.054	$5.874 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	2.611				2.611	$9.438 \times 10^0$		
80.0 MeV	$1.527 \times 10^2$	1.967				1.967	$2.764 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.850				1.850	$3.815 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.726				1.726	$6.064 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.657				1.657	$9.626 \times 10^1$		
298. MeV	$3.894 \times 10^2$	1.634			0.000	1.634	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.634			0.000	1.634	$1.572 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.643			0.000	1.643	$2.183 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.716	0.000		0.000	1.717	$4.565 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.748	0.000		0.000	1.749	$5.719 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.800	0.000	0.000	0.001	1.801	$7.971 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	1.857	0.001	0.000	0.001	1.859	$1.125 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.922	0.001	0.001	0.001	1.926	$1.653 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	1.967	0.002	0.001	0.002	1.972	$2.165 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	2.070	0.004	0.004	0.004	2.082	$4.133 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	2.101	0.005	0.005	0.005	2.117	$5.085 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	2.146	0.008	0.009	0.006	2.169	$6.951 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	2.190	0.013	0.015	0.009	2.227	$9.679 \times 10^3$		
30.0 GeV	$3.011 \times 10^4$	2.238	0.021	0.026	0.013	2.298	$1.410 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	2.270	0.030	0.038	0.017	2.354	$1.839 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	2.342	0.067	0.091	0.033	2.534	$3.474 \times 10^4$		
100. GeV	$1.001 \times 10^5$	2.364	0.087	0.120	0.041	2.613	$4.251 \times 10^4$		
140. GeV	$1.401 \times 10^5$	2.397	0.129	0.180	0.057	2.764	$5.739 \times 10^4$		
200. GeV	$2.001 \times 10^5$	2.432	0.194	0.275	0.082	2.983	$7.828 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.471	0.305	0.436	0.122	3.336	$1.100 \times 10^5$		
400. GeV	$4.001 \times 10^5$	2.499	0.421	0.604	0.163	3.687	$1.385 \times 10^5$		
800. GeV	$8.001 \times 10^5$	2.567	0.901	1.301	0.329	5.099	$2.303 \times 10^5$		
811. GeV	$8.109 \times 10^5$	2.568	0.914	1.320	0.334	5.137	<i>Muon critical energy</i>		
1.00 TeV	$1.000 \times 10^6$	2.589	1.149	1.661	0.414	5.813	$2.670 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.623	1.648	2.375	0.587	7.233	$3.286 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.659	2.413	3.470	0.850	9.392	$4.012 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.700	3.695	5.292	1.301	12.989	$4.914 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.730	4.998	7.138	1.761	16.627	$5.593 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.804	10.269	14.569	3.672	31.314	$7.318 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.828	12.932	18.311	4.656	38.727	$7.891 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.865	18.245	25.768	6.682	53.559	$8.766 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.904	26.276	37.012	9.792	75.985	$9.702 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	2.950	39.648	55.724	15.187	113.509	$1.077 \times 10^6$		
40.0 TeV	$4.000 \times 10^7$	2.983	53.085	74.493	20.722	151.283	$1.153 \times 10^6$		
80.0 TeV	$8.000 \times 10^7$	3.065	106.962	149.635	43.923	303.586	$1.336 \times 10^6$		
100. TeV	$1.000 \times 10^8$	3.092	133.970	187.250	55.940	380.252	$1.395 \times 10^6$		