

**Table 164: Muons in Freon-13B1 (CF<sub>3</sub>Br)**

$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
0.45665	1.500	210.5	0.03925	3.7194	0.3522	3.7554	5.3555	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	$4.704 \times 10^1$	5.678				5.678	$9.844 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	4.454				4.454	$1.788 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	3.498				3.498	$3.325 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	2.729				2.729	$6.606 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	2.339				2.339	$1.059 \times 10^1$	
80.0 MeV	$1.527 \times 10^2$	1.771				1.771	$3.086 \times 10^1$	
100. MeV	$1.764 \times 10^2$	1.671				1.671	$4.251 \times 10^1$	
140. MeV	$2.218 \times 10^2$	1.574				1.574	$6.729 \times 10^1$	
200. MeV	$2.868 \times 10^2$	1.524				1.524	$1.062 \times 10^2$	
266. MeV	$3.567 \times 10^2$	1.513			0.000	1.513	<i>Minimum ionization</i>	
300. MeV	$3.917 \times 10^2$	1.515			0.000	1.515	$1.721 \times 10^2$	
400. MeV	$4.945 \times 10^2$	1.531	0.000		0.000	1.532	$2.378 \times 10^2$	
800. MeV	$8.995 \times 10^2$	1.616	0.000		0.000	1.616	$4.919 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	1.650	0.001		0.000	1.651	$6.142 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	1.705	0.001	0.000	0.001	1.707	$8.523 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	1.765	0.001	0.001	0.001	1.768	$1.197 \times 10^3$	
3.00 GeV	$3.104 \times 10^3$	1.833	0.002	0.002	0.001	1.838	$1.751 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	1.879	0.004	0.003	0.002	1.887	$2.288 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	1.984	0.009	0.009	0.004	2.005	$4.336 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	2.016	0.012	0.012	0.004	2.044	$5.324 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	2.061	0.018	0.019	0.006	2.104	$7.251 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	2.106	0.027	0.032	0.008	2.174	$1.005 \times 10^4$	
30.0 GeV	$3.011 \times 10^4$	2.154	0.045	0.055	0.012	2.267	$1.455 \times 10^4$	
40.0 GeV	$4.011 \times 10^4$	2.187	0.063	0.081	0.016	2.347	$1.889 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	2.259	0.143	0.194	0.032	2.628	$3.496 \times 10^4$	
100. GeV	$1.001 \times 10^5$	2.281	0.185	0.256	0.039	2.761	$4.239 \times 10^4$	
140. GeV	$1.401 \times 10^5$	2.313	0.272	0.382	0.055	3.023	$5.623 \times 10^4$	
200. GeV	$2.001 \times 10^5$	2.347	0.408	0.582	0.078	3.416	$7.489 \times 10^4$	
300. GeV	$3.001 \times 10^5$	2.385	0.641	0.918	0.116	4.061	$1.017 \times 10^5$	
400. GeV	$4.001 \times 10^5$	2.412	0.882	1.267	0.155	4.717	$1.245 \times 10^5$	
418. GeV	$4.177 \times 10^5$	2.416	0.925	1.329	0.162	4.833	<i>Muon critical energy</i>	
800. GeV	$8.001 \times 10^5$	2.478	1.880	2.702	0.314	7.373	$1.918 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	2.499	2.393	3.438	0.394	8.724	$2.167 \times 10^5$	
1.40 TeV	$1.400 \times 10^6$	2.531	3.424	4.905	0.559	11.419	$2.567 \times 10^5$	
2.00 TeV	$2.000 \times 10^6$	2.566	5.002	7.147	0.809	15.524	$3.016 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	2.606	7.640	10.874	1.238	22.358	$3.550 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	2.635	10.317	14.644	1.674	29.270	$3.940 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	2.706	21.120	29.807	3.486	57.120	$4.901 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	2.729	26.570	37.433	4.418	71.151	$5.214 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	2.764	37.441	52.645	6.334	99.185	$5.688 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	2.803	53.855	75.567	9.275	141.501	$6.192 \times 10^5$	
30.0 TeV	$3.000 \times 10^7$	2.847	81.181	113.708	14.368	212.105	$6.765 \times 10^5$	
40.0 TeV	$4.000 \times 10^7$	2.879	108.618	151.949	19.587	283.035	$7.172 \times 10^5$	
80.0 TeV	$8.000 \times 10^7$	2.958	218.569	305.033	41.431	567.991	$8.150 \times 10^5$	
100. TeV	$1.000 \times 10^8$	2.983	273.654	381.653	52.731	711.022	$8.464 \times 10^5$	