

**Table 121: Muons in Boron carbide ( $B_4C$ )**

$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
0.47059	2.520	84.7	0.37087	2.8076	0.0093	2.1006	2.9859	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	$4.704 \times 10^1$	6.646				6.646	$8.325 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	5.187				5.187	$1.521 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	4.053				4.054	$2.844 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	3.147				3.147	$5.684 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	2.688				2.688	$9.145 \times 10^0$	
80.0 MeV	$1.527 \times 10^2$	2.005				2.005	$2.692 \times 10^1$	
100. MeV	$1.764 \times 10^2$	1.879				1.879	$3.725 \times 10^1$	
140. MeV	$2.218 \times 10^2$	1.751				1.751	$5.940 \times 10^1$	
200. MeV	$2.868 \times 10^2$	1.677				1.678	$9.455 \times 10^1$	
300. MeV	$3.917 \times 10^2$	1.650			0.000	1.650	$1.548 \times 10^2$	
313. MeV	$4.055 \times 10^2$	1.650			0.000	1.650	<i>Minimum ionization</i>	
400. MeV	$4.945 \times 10^2$	1.656			0.000	1.656	$2.154 \times 10^2$	
800. MeV	$8.995 \times 10^2$	1.719	0.000		0.000	1.720	$4.524 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	1.748	0.000		0.000	1.749	$5.677 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	1.794	0.000		0.001	1.796	$7.933 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	1.845	0.000	0.000	0.001	1.847	$1.123 \times 10^3$	
3.00 GeV	$3.104 \times 10^3$	1.903	0.001	0.000	0.001	1.906	$1.655 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	1.943	0.001	0.001	0.002	1.947	$2.174 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	2.034	0.003	0.002	0.004	2.043	$4.174 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	2.061	0.003	0.003	0.005	2.073	$5.145 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	2.102	0.005	0.005	0.007	2.119	$7.053 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	2.143	0.008	0.009	0.009	2.169	$9.849 \times 10^3$	
30.0 GeV	$3.011 \times 10^4$	2.188	0.013	0.016	0.014	2.231	$1.439 \times 10^4$	
40.0 GeV	$4.011 \times 10^4$	2.219	0.018	0.023	0.018	2.278	$1.883 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	2.290	0.042	0.057	0.034	2.424	$3.582 \times 10^4$	
100. GeV	$1.001 \times 10^5$	2.312	0.055	0.075	0.043	2.485	$4.397 \times 10^4$	
140. GeV	$1.401 \times 10^5$	2.345	0.081	0.113	0.059	2.598	$5.970 \times 10^4$	
200. GeV	$2.001 \times 10^5$	2.379	0.122	0.173	0.084	2.759	$8.211 \times 10^4$	
300. GeV	$3.001 \times 10^5$	2.418	0.193	0.275	0.126	3.013	$1.168 \times 10^5$	
400. GeV	$4.001 \times 10^5$	2.446	0.267	0.382	0.168	3.263	$1.487 \times 10^5$	
800. GeV	$8.001 \times 10^5$	2.513	0.574	0.828	0.339	4.254	$2.557 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	2.535	0.732	1.059	0.426	4.753	$3.002 \times 10^5$	
1.14 TeV	$1.139 \times 10^6$	2.548	0.843	1.218	0.488	5.097	<i>Muon critical energy</i>	
1.40 TeV	$1.400 \times 10^6$	2.569	1.053	1.519	0.604	5.744	$3.766 \times 10^5$	
2.00 TeV	$2.000 \times 10^6$	2.605	1.545	2.224	0.875	7.248	$4.694 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	2.646	2.370	3.399	1.341	9.756	$5.879 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	2.675	3.210	4.591	1.815	12.292	$6.791 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	2.748	6.613	9.395	3.790	22.547	$9.158 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	2.772	8.335	11.816	4.807	27.730	$9.957 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	2.809	11.771	16.638	6.903	38.121	$1.118 \times 10^6$	
20.0 TeV	$2.000 \times 10^7$	2.849	16.969	23.914	10.123	53.854	$1.250 \times 10^6$	
30.0 TeV	$3.000 \times 10^7$	2.894	25.624	36.017	15.715	80.251	$1.401 \times 10^6$	
40.0 TeV	$4.000 \times 10^7$	2.927	34.327	48.161	21.456	106.871	$1.509 \times 10^6$	
80.0 TeV	$8.000 \times 10^7$	3.008	69.204	96.783	45.552	214.548	$1.768 \times 10^6$	
100. TeV	$1.000 \times 10^8$	3.035	86.682	121.126	58.045	268.889	$1.851 \times 10^6$	