

**Table 023: Muons in Vanadium**

Z	A [g/mol]	$\rho$ [g/cm <sup>3</sup> ]	I [eV]	a	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
23 (V)	50.9415 (1)	6.110	245.0	0.15436	3.0163	0.0691	3.0322	4.2659	0.14
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	$4.704 \times 10^1$	5.463				5.463	$1.028 \times 10^0$		
14.0 MeV	$5.616 \times 10^1$	4.292				4.292	$1.862 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	3.372				3.373	$3.457 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	2.631				2.631	$6.859 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	2.253				2.254	$1.099 \times 10^1$		
80.0 MeV	$1.527 \times 10^2$	1.700				1.700	$3.207 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.600				1.600	$4.422 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.501				1.501	$7.015 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.449				1.449	$1.110 \times 10^2$		
273. MeV	$3.633 \times 10^2$	1.436			0.000	1.437	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.437			0.000	1.438	$1.805 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.451	0.000		0.000	1.452	$2.497 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.529	0.000		0.000	1.530	$5.180 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.561	0.001		0.000	1.562	$6.473 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.613	0.001	0.000	0.001	1.615	$8.990 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	1.669	0.001	0.001	0.001	1.673	$1.264 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.733	0.003	0.002	0.001	1.739	$1.849 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	1.777	0.004	0.003	0.002	1.786	$2.416 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	1.877	0.009	0.009	0.003	1.899	$4.581 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	1.907	0.012	0.013	0.004	1.936	$5.624 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	1.950	0.018	0.020	0.006	1.995	$7.658 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	1.993	0.028	0.033	0.008	2.063	$1.061 \times 10^4$		
30.0 GeV	$3.011 \times 10^4$	2.039	0.046	0.058	0.012	2.155	$1.535 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	2.069	0.065	0.084	0.016	2.236	$1.991 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	2.138	0.148	0.202	0.031	2.520	$3.673 \times 10^4$		
100. GeV	$1.001 \times 10^5$	2.160	0.192	0.266	0.039	2.656	$4.446 \times 10^4$		
140. GeV	$1.401 \times 10^5$	2.191	0.282	0.397	0.054	2.925	$5.880 \times 10^4$		
200. GeV	$2.001 \times 10^5$	2.224	0.423	0.606	0.077	3.330	$7.802 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.262	0.664	0.956	0.115	3.997	$1.054 \times 10^5$		
385. GeV	$3.848 \times 10^5$	2.285	0.875	1.263	0.147	4.570	<i>Muon critical energy</i>		
400. GeV	$4.001 \times 10^5$	2.288	0.913	1.319	0.153	4.674	$1.285 \times 10^5$		
800. GeV	$8.001 \times 10^5$	2.353	1.947	2.812	0.309	7.421	$1.959 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.374	2.478	3.577	0.388	8.818	$2.205 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.406	3.546	5.104	0.550	11.607	$2.600 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.440	5.181	7.437	0.797	15.856	$3.040 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.480	7.914	11.316	1.219	22.930	$3.562 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.508	10.687	15.239	1.648	30.084	$3.942 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.578	21.882	31.019	3.431	58.910	$4.875 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.601	27.529	38.955	4.347	73.433	$5.178 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.637	38.795	54.786	6.230	102.448	$5.637 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.674	55.806	78.644	9.118	146.243	$6.125 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	2.718	84.125	118.339	14.115	219.298	$6.680 \times 10^5$		
40.0 TeV	$4.000 \times 10^7$	2.750	112.559	158.138	19.235	292.682	$7.073 \times 10^5$		
80.0 TeV	$8.000 \times 10^7$	2.828	226.515	317.459	40.647	587.449	$8.019 \times 10^5$		
100. TeV	$1.000 \times 10^8$	2.853	283.610	397.200	51.720	735.384	$8.322 \times 10^5$		