

## Muons in yttrium aluminum oxide (2) ( $Y_3Al_5O_{12}$ )

	$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
	0.46831	4.560	218.0	0.15340	3.0000	0.2000	3.0000	4.2884	0.00
$T$	$p$ [MeV/c]	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range [g/cm <sup>2</sup> ]		
				[MeV cm <sup>2</sup> /g]					
10.0 MeV	$4.704 \times 10^1$	5.792				5.792		$9.654 \times 10^{-1}$	
14.0 MeV	$5.616 \times 10^1$	4.545				4.545		$1.753 \times 10^0$	
20.0 MeV	$6.802 \times 10^1$	3.570				3.570		$3.259 \times 10^0$	
30.0 MeV	$8.509 \times 10^1$	2.786				2.786		$6.474 \times 10^0$	
40.0 MeV	$1.003 \times 10^2$	2.388				2.388		$1.038 \times 10^1$	
80.0 MeV	$1.527 \times 10^2$	1.809				1.809		$3.022 \times 10^1$	
100. MeV	$1.764 \times 10^2$	1.704				1.704		$4.163 \times 10^1$	
140. MeV	$2.218 \times 10^2$	1.595				1.595		$6.601 \times 10^1$	
200. MeV	$2.868 \times 10^2$	1.537				1.537		$1.045 \times 10^2$	
284. MeV	$3.748 \times 10^2$	1.521			0.000	1.521			<i>Minimum ionization</i>
300. MeV	$3.917 \times 10^2$	1.521			0.000	1.522		$1.700 \times 10^2$	
400. MeV	$4.945 \times 10^2$	1.534	0.000		0.000	1.534		$2.355 \times 10^2$	
800. MeV	$8.995 \times 10^2$	1.611	0.000		0.000	1.612		$4.898 \times 10^2$	
1.00 GeV	$1.101 \times 10^3$	1.644	0.001		0.000	1.645		$6.126 \times 10^2$	
1.40 GeV	$1.502 \times 10^3$	1.696	0.001	0.000	0.001	1.698		$8.517 \times 10^2$	
2.00 GeV	$2.103 \times 10^3$	1.754	0.001	0.001	0.001	1.757		$1.199 \times 10^3$	
3.00 GeV	$3.104 \times 10^3$	1.819	0.003	0.002	0.001	1.825		$1.756 \times 10^3$	
4.00 GeV	$4.104 \times 10^3$	1.864	0.004	0.003	0.002	1.873		$2.297 \times 10^3$	
8.00 GeV	$8.105 \times 10^3$	1.967	0.009	0.009	0.004	1.988		$4.363 \times 10^3$	
10.0 GeV	$1.011 \times 10^4$	1.998	0.012	0.012	0.004	2.026		$5.359 \times 10^3$	
14.0 GeV	$1.411 \times 10^4$	2.042	0.018	0.020	0.006	2.086		$7.303 \times 10^3$	
20.0 GeV	$2.011 \times 10^4$	2.086	0.028	0.033	0.008	2.156		$1.013 \times 10^4$	
30.0 GeV	$3.011 \times 10^4$	2.133	0.046	0.057	0.012	2.249		$1.467 \times 10^4$	
40.0 GeV	$4.011 \times 10^4$	2.165	0.065	0.083	0.016	2.330		$1.904 \times 10^4$	
80.0 GeV	$8.011 \times 10^4$	2.236	0.147	0.199	0.032	2.615		$3.522 \times 10^4$	
100. GeV	$1.001 \times 10^5$	2.258	0.190	0.262	0.039	2.751		$4.267 \times 10^4$	
140. GeV	$1.401 \times 10^5$	2.291	0.280	0.391	0.055	3.018		$5.655 \times 10^4$	
200. GeV	$2.001 \times 10^5$	2.326	0.420	0.597	0.078	3.420		$7.522 \times 10^4$	
300. GeV	$3.001 \times 10^5$	2.364	0.659	0.941	0.117	4.082		$1.020 \times 10^5$	
400. GeV	$4.001 \times 10^5$	2.392	0.907	1.299	0.155	4.754		$1.246 \times 10^5$	
405. GeV	$4.050 \times 10^5$	2.393	0.919	1.317	0.157	4.787			<i>Muon critical energy</i>
800. GeV	$8.001 \times 10^5$	2.459	1.932	2.771	0.314	7.477		$1.912 \times 10^5$	
1.00 TeV	$1.000 \times 10^6$	2.481	2.460	3.526	0.395	8.862		$2.157 \times 10^5$	
1.40 TeV	$1.400 \times 10^6$	2.514	3.519	5.031	0.559	11.624		$2.550 \times 10^5$	
2.00 TeV	$2.000 \times 10^6$	2.550	5.142	7.331	0.810	15.832		$2.991 \times 10^5$	
3.00 TeV	$3.000 \times 10^6$	2.591	7.853	11.154	1.239	22.837		$3.514 \times 10^5$	
4.00 TeV	$4.000 \times 10^6$	2.620	10.604	15.020	1.676	29.921		$3.896 \times 10^5$	
8.00 TeV	$8.000 \times 10^6$	2.693	21.707	30.573	3.490	58.464		$4.835 \times 10^5$	
10.0 TeV	$1.000 \times 10^7$	2.717	27.308	38.395	4.423	72.844		$5.141 \times 10^5$	
14.0 TeV	$1.400 \times 10^7$	2.753	38.481	53.997	6.342	101.574		$5.604 \times 10^5$	
20.0 TeV	$2.000 \times 10^7$	2.792	55.353	77.507	9.286	144.940		$6.096 \times 10^5$	
30.0 TeV	$3.000 \times 10^7$	2.838	83.436	116.628	14.385	217.288		$6.655 \times 10^5$	
40.0 TeV	$4.000 \times 10^7$	2.871	111.632	155.852	19.611	289.966		$7.052 \times 10^5$	
80.0 TeV	$8.000 \times 10^7$	2.951	224.630	312.866	41.484	581.932		$8.007 \times 10^5$	
100. TeV	$1.000 \times 10^8$	2.978	281.244	391.453	52.800	728.475		$8.313 \times 10^5$	