

Muons in thulium (Tm)

Z	A [g/mol]	ρ [g/cm ³]	I [eV]	a	k = m _s	x ₀	x ₁	$\overline{C}$	δ_0
69 (Tm)	168.93422(2)	9.321	674.0	0.24889	2.5469	0.0812	3.5085	5.9677	0.14
T	p [MeV/c]	Ionization	Brems	Pair prod [MeV cm ² /g]	Photonucl	Total	CSDA range [g/cm ²]		
10.0 MeV	4.704 × 10 ¹	4.123				4.123	1.398 × 10 ⁰		
14.0 MeV	5.616 × 10 ¹	3.277				3.277	2.497 × 10 ⁰		
20.0 MeV	6.802 × 10 ¹	2.602				2.603	4.572 × 10 ⁰		
30.0 MeV	8.509 × 10 ¹	2.050				2.050	8.957 × 10 ⁰		
40.0 MeV	1.003 × 10 ²	1.767				1.767	1.424 × 10 ¹		
80.0 MeV	1.527 × 10 ²	1.351				1.351	4.092 × 10 ¹		
100. MeV	1.764 × 10 ²	1.277				1.277	5.619 × 10 ¹		
140. MeV	2.218 × 10 ²	1.206				1.207	8.855 × 10 ¹		
200. MeV	2.868 × 10 ²	1.174				1.174	1.391 × 10 ²		
237. MeV	3.260 × 10 ²	1.170	0.000			1.170	Minimum ionization		
300. MeV	3.917 × 10 ²	1.175	0.000		0.000	1.175			
400. MeV	4.945 × 10 ²	1.194	0.000		0.000	1.195	3.089 × 10 ²		
800. MeV	8.995 × 10 ²	1.278	0.001		0.000	1.280	6.319 × 10 ²		
1.00 GeV	1.101 × 10 ³	1.312	0.001		0.000	1.314	7.862 × 10 ²		
1.40 GeV	1.502 × 10 ³	1.365	0.002	0.000	0.001	1.368	1.084 × 10 ³		
2.00 GeV	2.103 × 10 ³	1.423	0.004	0.001	0.001	1.429	1.513 × 10 ³		
3.00 GeV	3.104 × 10 ³	1.489	0.006	0.003	0.001	1.500	2.195 × 10 ³		
4.00 GeV	4.104 × 10 ³	1.535	0.009	0.006	0.002	1.552	2.850 × 10 ³		
8.00 GeV	8.105 × 10 ³	1.639	0.022	0.020	0.003	1.685	5.313 × 10 ³		
10.0 GeV	1.011 × 10 ⁴	1.670	0.029	0.029	0.004	1.733	6.483 × 10 ³		
14.0 GeV	1.411 × 10 ⁴	1.715	0.045	0.047	0.005	1.813	8.738 × 10 ³		
20.0 GeV	2.011 × 10 ⁴	1.760	0.070	0.077	0.007	1.915	1.196 × 10 ⁴		
30.0 GeV	3.011 × 10 ⁴	1.808	0.114	0.135	0.011	2.069	1.698 × 10 ⁴		
40.0 GeV	4.011 × 10 ⁴	1.840	0.161	0.198	0.014	2.214	2.165 × 10 ⁴		
80.0 GeV	8.011 × 10 ⁴	1.909	0.365	0.477	0.028	2.780	3.773 × 10 ⁴		
100. GeV	1.001 × 10 ⁵	1.930	0.472	0.627	0.035	3.066	4.458 × 10 ⁴		
140. GeV	1.401 × 10 ⁵	1.961	0.693	0.936	0.049	3.640	5.654 × 10 ⁴		
161. GeV	1.611 × 10 ⁵	1.973	0.813	1.104	0.056	3.947	Muon critical energy		
200. GeV	2.001 × 10 ⁵	1.992	1.039	1.426	0.069	4.528			
300. GeV	3.001 × 10 ⁵	2.026	1.629	2.245	0.104	6.006	9.043 × 10 ⁴		
400. GeV	4.001 × 10 ⁵	2.050	2.239	3.092	0.139	7.522	1.053 × 10 ⁵		
800. GeV	8.001 × 10 ⁵	2.108	4.756	6.568	0.281	13.715	1.441 × 10 ⁵		
1.00 TeV	1.000 × 10 ⁶	2.127	6.048	8.346	0.353	16.876	1.572 × 10 ⁵		
1.40 TeV	1.400 × 10 ⁶	2.156	8.638	11.891	0.500	23.187	1.774 × 10 ⁵		
2.00 TeV	2.000 × 10 ⁶	2.187	12.597	17.301	0.723	32.810	1.990 × 10 ⁵		
3.00 TeV	3.000 × 10 ⁶	2.223	19.205	26.290	1.105	48.825	2.239 × 10 ⁵		
4.00 TeV	4.000 × 10 ⁶	2.249	25.900	35.373	1.493	65.016	2.416 × 10 ⁵		
8.00 TeV	8.000 × 10 ⁶	2.312	52.880	71.882	3.099	130.175	2.842 × 10 ⁵		
10.0 TeV	1.000 × 10 ⁷	2.333	66.472	90.232	3.924	162.963	2.979 × 10 ⁵		
14.0 TeV	1.400 × 10 ⁷	2.365	93.583	126.847	5.617	228.413	3.185 × 10 ⁵		
20.0 TeV	2.000 × 10 ⁷	2.399	134.480	182.002	8.210	327.093	3.404 × 10 ⁵		
30.0 TeV	3.000 × 10 ⁷	2.439	202.563	273.766	12.688	491.458	3.651 × 10 ⁵		
40.0 TeV	4.000 × 10 ⁷	2.467	270.881	365.744	17.270	656.365	3.827 × 10 ⁵		
80.0 TeV	8.000 × 10 ⁷	2.538	544.541	733.910	36.395	1317.385	4.248 × 10 ⁵		
100. TeV	1.000 × 10 ⁸	2.561	681.590	918.160	46.270	1648.583	4.384 × 10 ⁵		