## Table 088: Muons in Radium

| Z | $A$ [g/mol] | $\rho$ [g/cm$^3$] | $I$ [eV] | $a$ | $k = m_s$ | $x_0$ | $x_1$ | $\overline{C}$ | $\delta_0$ |
|---|---|---|---|---|---|---|---|---|---|
| 88 (Ra) | [226.02541 (2)] | 5.000 | 826.0 | 0.08804 | 3.2454 | 0.5991 | 3.9428 | 7.0452 | 0.14 |

| $T$ | $p$ [MeV/$c$] | Ionization | Brems | Pair prod | Photonucl | Total | CSDA range [g/cm$^2$] |
|---|---|---|---|---|---|---|---|
| | | [MeV cm$^2$/g] | | | | | |
| 10.0 MeV | $4.704 \times 10^1$ | 3.765 | | | | 3.765 | $1.546 \times 10^0$ |
| 14.0 MeV | $5.616 \times 10^1$ | 3.007 | | | | 3.007 | $2.745 \times 10^0$ |
| 20.0 MeV | $6.802 \times 10^1$ | 2.398 | | | | 2.398 | $5.002 \times 10^0$ |
| 30.0 MeV | $8.509 \times 10^1$ | 1.898 | | | | 1.898 | $9.749 \times 10^0$ |
| 40.0 MeV | $1.003 \times 10^2$ | 1.641 | | | | 1.641 | $1.545 \times 10^1$ |
| 80.0 MeV | $1.527 \times 10^2$ | 1.264 | | | | 1.264 | $4.404 \times 10^1$ |
| 100. MeV | $1.764 \times 10^2$ | 1.199 | | | | 1.199 | $6.032 \times 10^1$ |
| 140. MeV | $2.218 \times 10^2$ | 1.137 | | | | 1.138 | $9.472 \times 10^1$ |
| 200. MeV | $2.868 \times 10^2$ | 1.112 | | | | 1.112 | $1.482 \times 10^2$ |
| 222. MeV | $3.104 \times 10^2$ | 1.111 | 0.000 | | | 1.111 | *Minimum ionization* |
| 300. MeV | $3.917 \times 10^2$ | 1.120 | 0.000 | | 0.000 | 1.121 | $2.380 \times 10^2$ |
| 400. MeV | $4.945 \times 10^2$ | 1.144 | 0.000 | | 0.000 | 1.145 | $3.263 \times 10^2$ |
| 800. MeV | $8.995 \times 10^2$ | 1.236 | 0.001 | | 0.000 | 1.238 | $6.616 \times 10^2$ |
| 1.00 GeV | $1.101 \times 10^3$ | 1.271 | 0.002 | | 0.000 | 1.273 | $8.209 \times 10^2$ |
| 1.40 GeV | $1.502 \times 10^3$ | 1.326 | 0.003 | | 0.001 | 1.330 | $1.128 \times 10^3$ |
| 2.00 GeV | $2.103 \times 10^3$ | 1.385 | 0.004 | 0.001 | 0.001 | 1.391 | $1.569 \times 10^3$ |
| 3.00 GeV | $3.104 \times 10^3$ | 1.451 | 0.007 | 0.003 | 0.001 | 1.463 | $2.268 \times 10^3$ |
| 4.00 GeV | $4.104 \times 10^3$ | 1.497 | 0.011 | 0.006 | 0.002 | 1.516 | $2.939 \times 10^3$ |
| 8.00 GeV | $8.105 \times 10^3$ | 1.599 | 0.026 | 0.022 | 0.003 | 1.651 | $5.457 \times 10^3$ |
| 10.0 GeV | $1.011 \times 10^4$ | 1.629 | 0.035 | 0.032 | 0.004 | 1.700 | $6.651 \times 10^3$ |
| 14.0 GeV | $1.411 \times 10^4$ | 1.673 | 0.053 | 0.052 | 0.005 | 1.784 | $8.946 \times 10^3$ |
| 20.0 GeV | $2.011 \times 10^4$ | 1.716 | 0.083 | 0.086 | 0.007 | 1.893 | $1.221 \times 10^4$ |
| 30.0 GeV | $3.011 \times 10^4$ | 1.761 | 0.136 | 0.153 | 0.011 | 2.061 | $1.727 \times 10^4$ |
| 40.0 GeV | $4.011 \times 10^4$ | 1.792 | 0.192 | 0.225 | 0.014 | 2.224 | $2.193 \times 10^4$ |
| 80.0 GeV | $8.011 \times 10^4$ | 1.858 | 0.434 | 0.546 | 0.027 | 2.868 | $3.773 \times 10^4$ |
| 100. GeV | $1.001 \times 10^5$ | 1.878 | 0.562 | 0.720 | 0.034 | 3.196 | $4.434 \times 10^4$ |
| 137. GeV | $1.374 \times 10^5$ | 1.906 | 0.807 | 1.052 | 0.047 | 3.814 | *Muon critical energy* |
| 140. GeV | $1.401 \times 10^5$ | 1.908 | 0.825 | 1.077 | 0.048 | 3.859 | $5.572 \times 10^4$ |
| 200. GeV | $2.001 \times 10^5$ | 1.938 | 1.237 | 1.643 | 0.068 | 4.886 | $6.951 \times 10^4$ |
| 300. GeV | $3.001 \times 10^5$ | 1.971 | 1.938 | 2.587 | 0.101 | 6.599 | $8.707 \times 10^4$ |
| 400. GeV | $4.001 \times 10^5$ | 1.994 | 2.663 | 3.566 | 0.135 | 8.360 | $1.005 \times 10^5$ |
| 800. GeV | $8.001 \times 10^5$ | 2.050 | 5.653 | 7.579 | 0.274 | 15.557 | $1.351 \times 10^5$ |
| 1.00 TeV | $1.000 \times 10^6$ | 2.068 | 7.188 | 9.631 | 0.344 | 19.233 | $1.466 \times 10^5$ |
| 1.40 TeV | $1.400 \times 10^6$ | 2.096 | 10.262 | 13.723 | 0.487 | 26.570 | $1.642 \times 10^5$ |
| 2.00 TeV | $2.000 \times 10^6$ | 2.125 | 14.962 | 19.968 | 0.704 | 37.760 | $1.831 \times 10^5$ |
| 3.00 TeV | $3.000 \times 10^6$ | 2.159 | 22.802 | 30.342 | 1.076 | 56.381 | $2.046 \times 10^5$ |
| 4.00 TeV | $4.000 \times 10^6$ | 2.184 | 30.742 | 40.826 | 1.453 | 75.207 | $2.199 \times 10^5$ |
| 8.00 TeV | $8.000 \times 10^6$ | 2.244 | 62.734 | 82.963 | 3.016 | 150.959 | $2.567 \times 10^5$ |
| 10.0 TeV | $1.000 \times 10^7$ | 2.264 | 78.847 | 104.140 | 3.818 | 189.071 | $2.685 \times 10^5$ |
| 14.0 TeV | $1.400 \times 10^7$ | 2.294 | 110.985 | 146.397 | 5.463 | 265.143 | $2.863 \times 10^5$ |
| 20.0 TeV | $2.000 \times 10^7$ | 2.327 | 159.458 | 210.050 | 7.984 | 379.821 | $3.051 \times 10^5$ |
| 30.0 TeV | $3.000 \times 10^7$ | 2.365 | 240.152 | 315.949 | 12.336 | 570.803 | $3.265 \times 10^5$ |
| 40.0 TeV | $4.000 \times 10^7$ | 2.392 | 321.116 | 422.091 | 16.788 | 762.389 | $3.416 \times 10^5$ |
| 80.0 TeV | $8.000 \times 10^7$ | 2.459 | 645.395 | 846.939 | 35.363 | 1530.158 | $3.779 \times 10^5$ |
| 100. TeV | $1.000 \times 10^8$ | 2.481 | 807.780 | 1059.550 | 44.950 | 1914.763 | $3.895 \times 10^5$ |