## Table 280: Muons in Heavymet as in Rochester gamma stop

| $\langle Z/A \rangle$ | $\rho$ [g/cm$^3$] | $I$ [eV] | $a$ | $k = m_s$ | $x_0$ | $x_1$ | $\overline{C}$ | $\delta_0$ |
|---|---|---|---|---|---|---|---|---|
| 0.40915 | 19.300 | 727.0 | 0.15509 | 2.8447 | 0.2167 | 3.4960 | 5.4059 | 0.14 |

| $T$ | $p$ [MeV/$c$] | Ionization | Brems | Pair prod | Photonucl | Total | CSDA range [g/cm$^2$] |
|---|---|---|---|---|---|---|---|
| | | [MeV cm$^2$/g] | | | | | |
| 10.0 MeV | $4.704 \times 10^1$ | 4.142 | | | | 4.142 | $1.377 \times 10^0$ |
| 14.0 MeV | $5.616 \times 10^1$ | 3.280 | | | | 3.280 | $2.472 \times 10^0$ |
| 20.0 MeV | $6.802 \times 10^1$ | 2.598 | | | | 2.598 | $4.550 \times 10^0$ |
| 30.0 MeV | $8.509 \times 10^1$ | 2.044 | | | | 2.044 | $8.946 \times 10^0$ |
| 40.0 MeV | $1.003 \times 10^2$ | 1.761 | | | | 1.761 | $1.425 \times 10^1$ |
| 80.0 MeV | $1.527 \times 10^2$ | 1.347 | | | | 1.347 | $4.101 \times 10^1$ |
| 100. MeV | $1.764 \times 10^2$ | 1.273 | | | | 1.273 | $5.632 \times 10^1$ |
| 140. MeV | $2.218 \times 10^2$ | 1.202 | | | | 1.202 | $8.880 \times 10^1$ |
| 200. MeV | $2.868 \times 10^2$ | 1.168 | | | | 1.169 | $1.396 \times 10^2$ |
| 242. MeV | $3.316 \times 10^2$ | 1.164 | 0.000 | | | 1.164 | *Minimum ionization* |
| 300. MeV | $3.917 \times 10^2$ | 1.169 | 0.000 | | 0.000 | 1.169 | $2.254 \times 10^2$ |
| 400. MeV | $4.945 \times 10^2$ | 1.187 | 0.000 | | 0.000 | 1.188 | $3.103 \times 10^2$ |
| 800. MeV | $8.995 \times 10^2$ | 1.268 | 0.001 | | 0.000 | 1.269 | $6.356 \times 10^2$ |
| 1.00 GeV | $1.101 \times 10^3$ | 1.300 | 0.001 | | 0.000 | 1.302 | $7.912 \times 10^2$ |
| 1.40 GeV | $1.502 \times 10^3$ | 1.351 | 0.002 | | 0.001 | 1.354 | $1.092 \times 10^3$ |
| 2.00 GeV | $2.103 \times 10^3$ | 1.407 | 0.004 | 0.001 | 0.001 | 1.413 | $1.525 \times 10^3$ |
| 3.00 GeV | $3.104 \times 10^3$ | 1.470 | 0.006 | 0.003 | 0.001 | 1.481 | $2.216 \times 10^3$ |
| 4.00 GeV | $4.104 \times 10^3$ | 1.514 | 0.009 | 0.006 | 0.002 | 1.531 | $2.879 \times 10^3$ |
| 8.00 GeV | $8.105 \times 10^3$ | 1.613 | 0.022 | 0.020 | 0.003 | 1.658 | $5.380 \times 10^3$ |
| 10.0 GeV | $1.011 \times 10^4$ | 1.642 | 0.029 | 0.028 | 0.004 | 1.705 | $6.569 \times 10^3$ |
| 14.0 GeV | $1.411 \times 10^4$ | 1.685 | 0.045 | 0.046 | 0.005 | 1.782 | $8.862 \times 10^3$ |
| 20.0 GeV | $2.011 \times 10^4$ | 1.728 | 0.069 | 0.076 | 0.007 | 1.882 | $1.214 \times 10^4$ |
| 30.0 GeV | $3.011 \times 10^4$ | 1.773 | 0.114 | 0.133 | 0.011 | 2.032 | $1.725 \times 10^4$ |
| 40.0 GeV | $4.011 \times 10^4$ | 1.803 | 0.161 | 0.196 | 0.014 | 2.175 | $2.200 \times 10^4$ |
| 80.0 GeV | $8.011 \times 10^4$ | 1.870 | 0.363 | 0.472 | 0.028 | 2.735 | $3.836 \times 10^4$ |
| 100. GeV | $1.001 \times 10^5$ | 1.890 | 0.471 | 0.621 | 0.035 | 3.018 | $4.532 \times 10^4$ |
| 140. GeV | $1.401 \times 10^5$ | 1.920 | 0.691 | 0.928 | 0.049 | 3.589 | $5.746 \times 10^4$ |
| 159. GeV | $1.590 \times 10^5$ | 1.931 | 0.798 | 1.078 | 0.055 | 3.863 | *Muon critical energy* |
| 200. GeV | $2.001 \times 10^5$ | 1.951 | 1.036 | 1.414 | 0.070 | 4.470 | $7.242 \times 10^4$ |
| 300. GeV | $3.001 \times 10^5$ | 1.985 | 1.624 | 2.225 | 0.104 | 5.939 | $9.178 \times 10^4$ |
| 400. GeV | $4.001 \times 10^5$ | 2.009 | 2.231 | 3.066 | 0.139 | 7.447 | $1.068 \times 10^5$ |
| 800. GeV | $8.001 \times 10^5$ | 2.067 | 4.739 | 6.513 | 0.281 | 13.602 | $1.460 \times 10^5$ |
| 1.00 TeV | $1.000 \times 10^6$ | 2.086 | 6.027 | 8.276 | 0.354 | 16.745 | $1.592 \times 10^5$ |
| 1.40 TeV | $1.400 \times 10^6$ | 2.115 | 8.607 | 11.793 | 0.501 | 23.017 | $1.795 \times 10^5$ |
| 2.00 TeV | $2.000 \times 10^6$ | 2.146 | 12.552 | 17.159 | 0.724 | 32.583 | $2.013 \times 10^5$ |
| 3.00 TeV | $3.000 \times 10^6$ | 2.182 | 19.135 | 26.075 | 1.107 | 48.501 | $2.263 \times 10^5$ |
| 4.00 TeV | $4.000 \times 10^6$ | 2.208 | 25.805 | 35.085 | 1.496 | 64.595 | $2.441 \times 10^5$ |
| 8.00 TeV | $8.000 \times 10^6$ | 2.272 | 52.684 | 71.300 | 3.106 | 129.365 | $2.870 \times 10^5$ |
| 10.0 TeV | $1.000 \times 10^7$ | 2.292 | 66.226 | 89.503 | 3.933 | 161.956 | $3.008 \times 10^5$ |
| 14.0 TeV | $1.400 \times 10^7$ | 2.324 | 93.235 | 125.824 | 5.630 | 227.014 | $3.216 \times 10^5$ |
| 20.0 TeV | $2.000 \times 10^7$ | 2.359 | 133.978 | 180.536 | 8.229 | 325.102 | $3.435 \times 10^5$ |
| 30.0 TeV | $3.000 \times 10^7$ | 2.398 | 201.805 | 271.564 | 12.718 | 488.488 | $3.685 \times 10^5$ |
| 40.0 TeV | $4.000 \times 10^7$ | 2.427 | 269.867 | 362.805 | 17.312 | 652.413 | $3.861 \times 10^5$ |
| 80.0 TeV | $8.000 \times 10^7$ | 2.497 | 542.495 | 728.005 | 36.486 | 1309.486 | $4.285 \times 10^5$ |
| 100. TeV | $1.000 \times 10^8$ | 2.521 | 679.027 | 910.765 | 46.386 | 1638.700 | $4.422 \times 10^5$ |