## Table 155: Muons in Ethylene ($C_2H_4$)

| $\langle Z/A \rangle$ | $\rho$ [g/cm$^3$] | $I$ [eV] | $a$ | $k = m_s$ | $x_0$ | $x_1$ | $\overline{C}$ | $\delta_0$ |
|---|---|---|---|---|---|---|---|---|
| 0.57034 | $1.175 \times 10^{-3}$ | 50.7 | 0.10636 | 3.5387 | 1.5528 | 3.9327 | 9.4380 | 0.00 |

| $T$ | $p$ [MeV/$c$] | Ionization | Brems | Pair prod | Photonucl | Total | CSDA range [g/cm$^2$] |
|---|---|---|---|---|---|---|---|
| | | [MeV cm$^2$/g] | | | | | |
| 10.0 MeV | $4.704 \times 10^1$ | 8.598 | | | | 8.598 | $6.406 \times 10^{-1}$ |
| 14.0 MeV | $5.616 \times 10^1$ | 6.695 | | | | 6.695 | $1.173 \times 10^0$ |
| 20.0 MeV | $6.802 \times 10^1$ | 5.219 | | | | 5.220 | $2.200 \times 10^0$ |
| 30.0 MeV | $8.509 \times 10^1$ | 4.042 | | | | 4.042 | $4.408 \times 10^0$ |
| 40.0 MeV | $1.003 \times 10^2$ | 3.447 | | | | 3.447 | $7.105 \times 10^0$ |
| 80.0 MeV | $1.527 \times 10^2$ | 2.581 | | | | 2.581 | $2.095 \times 10^1$ |
| 100. MeV | $1.764 \times 10^2$ | 2.425 | | | | 2.425 | $2.896 \times 10^1$ |
| 140. MeV | $2.218 \times 10^2$ | 2.271 | | | | 2.272 | $4.608 \times 10^1$ |
| 200. MeV | $2.868 \times 10^2$ | 2.192 | | | | 2.192 | $7.307 \times 10^1$ |
| 266. MeV | $3.567 \times 10^2$ | 2.174 | | | 0.000 | 2.175 | *Minimum ionization* |
| 300. MeV | $3.917 \times 10^2$ | 2.177 | | | 0.000 | 2.177 | $1.190 \times 10^2$ |
| 400. MeV | $4.945 \times 10^2$ | 2.203 | | | 0.000 | 2.203 | $1.647 \times 10^2$ |
| 800. MeV | $8.995 \times 10^2$ | 2.341 | 0.000 | | 0.000 | 2.342 | $3.407 \times 10^2$ |
| 1.00 GeV | $1.101 \times 10^3$ | 2.401 | 0.000 | | 0.000 | 2.401 | $4.250 \times 10^2$ |
| 1.40 GeV | $1.502 \times 10^3$ | 2.498 | 0.000 | | 0.001 | 2.499 | $5.881 \times 10^2$ |
| 2.00 GeV | $2.103 \times 10^3$ | 2.607 | 0.000 | 0.000 | 0.001 | 2.609 | $8.228 \times 10^2$ |
| 3.00 GeV | $3.104 \times 10^3$ | 2.736 | 0.001 | 0.000 | 0.001 | 2.739 | $1.196 \times 10^3$ |
| 4.00 GeV | $4.104 \times 10^3$ | 2.825 | 0.001 | 0.001 | 0.002 | 2.829 | $1.555 \times 10^3$ |
| 8.00 GeV | $8.105 \times 10^3$ | 3.003 | 0.003 | 0.003 | 0.004 | 3.012 | $2.919 \times 10^3$ |
| 10.0 GeV | $1.011 \times 10^4$ | 3.054 | 0.004 | 0.004 | 0.005 | 3.066 | $3.577 \times 10^3$ |
| 14.0 GeV | $1.411 \times 10^4$ | 3.127 | 0.006 | 0.006 | 0.007 | 3.145 | $4.864 \times 10^3$ |
| 20.0 GeV | $2.011 \times 10^4$ | 3.197 | 0.009 | 0.010 | 0.009 | 3.225 | $6.746 \times 10^3$ |
| 30.0 GeV | $3.011 \times 10^4$ | 3.270 | 0.015 | 0.018 | 0.014 | 3.316 | $9.801 \times 10^3$ |
| 40.0 GeV | $4.011 \times 10^4$ | 3.317 | 0.021 | 0.026 | 0.018 | 3.382 | $1.279 \times 10^4$ |
| 80.0 GeV | $8.011 \times 10^4$ | 3.419 | 0.047 | 0.063 | 0.035 | 3.564 | $2.429 \times 10^4$ |
| 100. GeV | $1.001 \times 10^5$ | 3.449 | 0.061 | 0.084 | 0.043 | 3.637 | $2.984 \times 10^4$ |
| 140. GeV | $1.401 \times 10^5$ | 3.492 | 0.091 | 0.126 | 0.060 | 3.769 | $4.064 \times 10^4$ |
| 200. GeV | $2.001 \times 10^5$ | 3.537 | 0.137 | 0.193 | 0.085 | 3.951 | $5.618 \times 10^4$ |
| 300. GeV | $3.001 \times 10^5$ | 3.585 | 0.216 | 0.307 | 0.127 | 4.236 | $8.061 \times 10^4$ |
| 400. GeV | $4.001 \times 10^5$ | 3.619 | 0.299 | 0.427 | 0.170 | 4.515 | $1.035 \times 10^5$ |
| 800. GeV | $8.001 \times 10^5$ | 3.701 | 0.644 | 0.925 | 0.343 | 5.613 | $1.828 \times 10^5$ |
| 1.00 TeV | $1.000 \times 10^6$ | 3.728 | 0.822 | 1.183 | 0.430 | 6.164 | $2.168 \times 10^5$ |
| 1.40 TeV | $1.400 \times 10^6$ | 3.768 | 1.182 | 1.697 | 0.611 | 7.258 | $2.765 \times 10^5$ |
| 1.51 TeV | $1.508 \times 10^6$ | 3.777 | 1.281 | 1.837 | 0.659 | 7.554 | *Muon critical energy* |
| 2.00 TeV | $2.000 \times 10^6$ | 3.811 | 1.736 | 2.485 | 0.884 | 8.917 | $3.510 \times 10^5$ |
| 3.00 TeV | $3.000 \times 10^6$ | 3.861 | 2.665 | 3.799 | 1.355 | 11.681 | $4.487 \times 10^5$ |
| 4.00 TeV | $4.000 \times 10^6$ | 3.897 | 3.612 | 5.132 | 1.834 | 14.476 | $5.254 \times 10^5$ |
| 8.00 TeV | $8.000 \times 10^6$ | 3.986 | 7.450 | 10.502 | 3.831 | 25.770 | $7.298 \times 10^5$ |
| 10.0 TeV | $1.000 \times 10^7$ | 4.015 | 9.393 | 13.208 | 4.860 | 31.477 | $7.999 \times 10^5$ |
| 14.0 TeV | $1.400 \times 10^7$ | 4.059 | 13.272 | 18.599 | 6.982 | 42.912 | $9.083 \times 10^5$ |
| 20.0 TeV | $2.000 \times 10^7$ | 4.107 | 19.144 | 26.732 | 10.243 | 60.227 | $1.026 \times 10^6$ |
| 30.0 TeV | $3.000 \times 10^7$ | 4.163 | 28.924 | 40.262 | 15.907 | 89.256 | $1.161 \times 10^6$ |
| 40.0 TeV | $4.000 \times 10^7$ | 4.202 | 38.762 | 53.838 | 21.722 | 118.524 | $1.258 \times 10^6$ |
| 80.0 TeV | $8.000 \times 10^7$ | 4.301 | 78.203 | 108.188 | 46.153 | 236.845 | $1.493 \times 10^6$ |
| 100. TeV | $1.000 \times 10^8$ | 4.333 | 97.977 | 135.397 | 58.825 | 296.533 | $1.568 \times 10^6$ |