## Muons in ammonia ($NH_3$)

| $\langle Z/A \rangle$ | $\rho$ [g/cm$^3$] | $I$ [eV] | $a$ | $k = m_s$ | $x_0$ | $x_1$ | $\overline{C}$ | $\delta_0$ |
|---|---|---|---|---|---|---|---|---|
| 0.59719 | $8.260 \times 10^{-4}$ | 53.7 | 0.08315 | 3.6464 | 1.6822 | 4.1158 | 9.8763 | 0.00 |

| $T$ | $p$ [MeV/$c$] | Ionization | Brems | Pair prod | Photonucl | Total | CSDA range [g/cm$^2$] |
|---|---|---|---|---|---|---|---|
| | | [MeV cm$^2$/g] | | | | | |
| 10.0 MeV | $4.704 \times 10^1$ | 8.939 | | | | 8.939 | $6.164 \times 10^{-1}$ |
| 14.0 MeV | $5.616 \times 10^1$ | 6.962 | | | | 6.962 | $1.129 \times 10^0$ |
| 20.0 MeV | $6.802 \times 10^1$ | 5.429 | | | | 5.429 | $2.116 \times 10^0$ |
| 30.0 MeV | $8.509 \times 10^1$ | 4.205 | | | | 4.206 | $4.238 \times 10^0$ |
| 40.0 MeV | $1.003 \times 10^2$ | 3.587 | | | | 3.587 | $6.830 \times 10^0$ |
| 80.0 MeV | $1.527 \times 10^2$ | 2.687 | | | | 2.687 | $2.013 \times 10^1$ |
| 100. MeV | $1.764 \times 10^2$ | 2.525 | | | | 2.525 | $2.783 \times 10^1$ |
| 140. MeV | $2.218 \times 10^2$ | 2.365 | | | | 2.366 | $4.427 \times 10^1$ |
| 200. MeV | $2.868 \times 10^2$ | 2.283 | | | | 2.283 | $7.019 \times 10^1$ |
| 266. MeV | $3.567 \times 10^2$ | 2.265 | | | 0.000 | 2.266 | *Minimum ionization* |
| 300. MeV | $3.917 \times 10^2$ | 2.268 | | | 0.000 | 2.269 | $1.143 \times 10^2$ |
| 400. MeV | $4.945 \times 10^2$ | 2.295 | | | 0.000 | 2.296 | $1.581 \times 10^2$ |
| 800. MeV | $8.995 \times 10^2$ | 2.441 | 0.000 | | 0.000 | 2.441 | $3.270 \times 10^2$ |
| 1.00 GeV | $1.101 \times 10^3$ | 2.503 | 0.000 | | 0.000 | 2.504 | $4.078 \times 10^2$ |
| 1.40 GeV | $1.502 \times 10^3$ | 2.605 | 0.000 | | 0.001 | 2.606 | $5.643 \times 10^2$ |
| 2.00 GeV | $2.103 \times 10^3$ | 2.719 | 0.001 | 0.000 | 0.001 | 2.721 | $7.893 \times 10^2$ |
| 3.00 GeV | $3.104 \times 10^3$ | 2.855 | 0.001 | 0.001 | 0.001 | 2.858 | $1.147 \times 10^3$ |
| 4.00 GeV | $4.104 \times 10^3$ | 2.952 | 0.001 | 0.001 | 0.002 | 2.956 | $1.491 \times 10^3$ |
| 8.00 GeV | $8.105 \times 10^3$ | 3.155 | 0.003 | 0.003 | 0.004 | 3.165 | $2.791 \times 10^3$ |
| 10.0 GeV | $1.011 \times 10^4$ | 3.210 | 0.004 | 0.004 | 0.005 | 3.224 | $3.417 \times 10^3$ |
| 14.0 GeV | $1.411 \times 10^4$ | 3.289 | 0.006 | 0.007 | 0.007 | 3.309 | $4.641 \times 10^3$ |
| 20.0 GeV | $2.011 \times 10^4$ | 3.365 | 0.010 | 0.011 | 0.009 | 3.395 | $6.429 \times 10^3$ |
| 30.0 GeV | $3.011 \times 10^4$ | 3.443 | 0.016 | 0.020 | 0.014 | 3.493 | $9.330 \times 10^3$ |
| 40.0 GeV | $4.011 \times 10^4$ | 3.495 | 0.023 | 0.029 | 0.018 | 3.564 | $1.216 \times 10^4$ |
| 80.0 GeV | $8.011 \times 10^4$ | 3.605 | 0.052 | 0.070 | 0.035 | 3.762 | $2.306 \times 10^4$ |
| 100. GeV | $1.001 \times 10^5$ | 3.637 | 0.068 | 0.093 | 0.043 | 3.841 | $2.833 \times 10^4$ |
| 140. GeV | $1.401 \times 10^5$ | 3.684 | 0.100 | 0.139 | 0.060 | 3.983 | $3.855 \times 10^4$ |
| 200. GeV | $2.001 \times 10^5$ | 3.731 | 0.151 | 0.213 | 0.085 | 4.180 | $5.325 \times 10^4$ |
| 300. GeV | $3.001 \times 10^5$ | 3.783 | 0.239 | 0.340 | 0.127 | 4.488 | $7.632 \times 10^4$ |
| 400. GeV | $4.001 \times 10^5$ | 3.819 | 0.330 | 0.471 | 0.169 | 4.789 | $9.789 \times 10^4$ |
| 800. GeV | $8.001 \times 10^5$ | 3.905 | 0.710 | 1.020 | 0.342 | 5.977 | $1.725 \times 10^5$ |
| 1.00 TeV | $1.000 \times 10^6$ | 3.933 | 0.907 | 1.304 | 0.429 | 6.574 | $2.044 \times 10^5$ |
| 1.40 TeV | $1.400 \times 10^6$ | 3.975 | 1.303 | 1.870 | 0.609 | 7.757 | $2.603 \times 10^5$ |
| 1.47 TeV | $1.469 \times 10^6$ | 3.981 | 1.373 | 1.968 | 0.640 | 7.963 | *Muon critical energy* |
| 2.00 TeV | $2.000 \times 10^6$ | 4.021 | 1.913 | 2.737 | 0.882 | 9.553 | $3.299 \times 10^5$ |
| 3.00 TeV | $3.000 \times 10^6$ | 4.073 | 2.937 | 4.181 | 1.351 | 12.542 | $4.210 \times 10^5$ |
| 4.00 TeV | $4.000 \times 10^6$ | 4.111 | 3.979 | 5.647 | 1.828 | 15.564 | $4.925 \times 10^5$ |
| 8.00 TeV | $8.000 \times 10^6$ | 4.203 | 8.202 | 11.550 | 3.818 | 27.774 | $6.823 \times 10^5$ |
| 10.0 TeV | $1.000 \times 10^7$ | 4.234 | 10.340 | 14.524 | 4.843 | 33.941 | $7.473 \times 10^5$ |
| 14.0 TeV | $1.400 \times 10^7$ | 4.280 | 14.607 | 20.449 | 6.957 | 46.294 | $8.478 \times 10^5$ |
| 20.0 TeV | $2.000 \times 10^7$ | 4.330 | 21.067 | 29.387 | 10.205 | 64.990 | $9.567 \times 10^5$ |
| 30.0 TeV | $3.000 \times 10^7$ | 4.388 | 31.825 | 44.257 | 15.847 | 96.318 | $1.082 \times 10^6$ |
| 40.0 TeV | $4.000 \times 10^7$ | 4.430 | 42.647 | 59.175 | 21.640 | 127.892 | $1.172 \times 10^6$ |
| 80.0 TeV | $8.000 \times 10^7$ | 4.533 | 86.070 | 118.900 | 45.974 | 255.478 | $1.389 \times 10^6$ |
| 100. TeV | $1.000 \times 10^8$ | 4.567 | 107.853 | 148.799 | 58.595 | 319.815 | $1.459 \times 10^6$ |