## Muons in nitrous oxide ($N_2O$)

| $\langle Z/A \rangle$ | $\rho$ [g/cm$^3$] | $I$ [eV] | $a$ | $k = m_s$ | $x_0$ | $x_1$ | $\overline{C}$ | $\delta_0$ |
|---|---|---|---|---|---|---|---|---|
| 0.49985 | $1.831 \times 10^{-3}$ | 84.9 | 0.11992 | 3.3318 | 1.6477 | 4.1565 | 10.1575 | 0.00 |

| $T$ | $p$ [MeV/$c$] | Ionization | Brems | Pair prod | Photonucl | Total | CSDA range [g/cm$^2$] |
|---|---|---|---|---|---|---|---|
| | | [MeV cm$^2$/g] | | | | | |
| 10.0 MeV | $4.704 \times 10^1$ | 7.057 | | | | 7.057 | $7.841 \times 10^{-1}$ |
| 14.0 MeV | $5.616 \times 10^1$ | 5.508 | | | | 5.508 | $1.432 \times 10^0$ |
| 20.0 MeV | $6.802 \times 10^1$ | 4.304 | | | | 4.304 | $2.679 \times 10^0$ |
| 30.0 MeV | $8.509 \times 10^1$ | 3.341 | | | | 3.341 | $5.353 \times 10^0$ |
| 40.0 MeV | $1.003 \times 10^2$ | 2.854 | | | | 2.854 | $8.612 \times 10^0$ |
| 80.0 MeV | $1.527 \times 10^2$ | 2.145 | | | | 2.145 | $2.529 \times 10^1$ |
| 100. MeV | $1.764 \times 10^2$ | 2.018 | | | | 2.018 | $3.493 \times 10^1$ |
| 140. MeV | $2.218 \times 10^2$ | 1.894 | | | | 1.894 | $5.549 \times 10^1$ |
| 200. MeV | $2.868 \times 10^2$ | 1.831 | | | | 1.831 | $8.783 \times 10^1$ |
| 257. MeV | $3.471 \times 10^2$ | 1.819 | | | 0.000 | 1.820 | *Minimum ionization* |
| 300. MeV | $3.917 \times 10^2$ | 1.823 | | | 0.000 | 1.823 | $1.427 \times 10^2$ |
| 400. MeV | $4.945 \times 10^2$ | 1.848 | | | 0.000 | 1.848 | $1.972 \times 10^2$ |
| 800. MeV | $8.995 \times 10^2$ | 1.972 | 0.000 | | 0.000 | 1.972 | $4.066 \times 10^2$ |
| 1.00 GeV | $1.101 \times 10^3$ | 2.024 | 0.000 | | 0.000 | 2.025 | $5.066 \times 10^2$ |
| 1.40 GeV | $1.502 \times 10^3$ | 2.109 | 0.000 | | 0.001 | 2.111 | $6.999 \times 10^2$ |
| 2.00 GeV | $2.103 \times 10^3$ | 2.206 | 0.001 | 0.000 | 0.001 | 2.208 | $9.775 \times 10^2$ |
| 3.00 GeV | $3.104 \times 10^3$ | 2.319 | 0.001 | 0.001 | 0.001 | 2.322 | $1.418 \times 10^3$ |
| 4.00 GeV | $4.104 \times 10^3$ | 2.401 | 0.001 | 0.001 | 0.002 | 2.405 | $1.841 \times 10^3$ |
| 8.00 GeV | $8.105 \times 10^3$ | 2.569 | 0.004 | 0.003 | 0.004 | 2.580 | $3.438 \times 10^3$ |
| 10.0 GeV | $1.011 \times 10^4$ | 2.617 | 0.005 | 0.005 | 0.005 | 2.632 | $4.205 \times 10^3$ |
| 14.0 GeV | $1.411 \times 10^4$ | 2.685 | 0.007 | 0.008 | 0.007 | 2.707 | $5.703 \times 10^3$ |
| 20.0 GeV | $2.011 \times 10^4$ | 2.751 | 0.011 | 0.013 | 0.009 | 2.785 | $7.886 \times 10^3$ |
| 30.0 GeV | $3.011 \times 10^4$ | 2.820 | 0.019 | 0.023 | 0.013 | 2.875 | $1.142 \times 10^4$ |
| 40.0 GeV | $4.011 \times 10^4$ | 2.865 | 0.026 | 0.033 | 0.017 | 2.942 | $1.485 \times 10^4$ |
| 80.0 GeV | $8.011 \times 10^4$ | 2.961 | 0.060 | 0.081 | 0.034 | 3.136 | $2.799 \times 10^4$ |
| 100. GeV | $1.001 \times 10^5$ | 2.990 | 0.078 | 0.106 | 0.042 | 3.216 | $3.429 \times 10^4$ |
| 140. GeV | $1.401 \times 10^5$ | 3.030 | 0.115 | 0.160 | 0.058 | 3.363 | $4.645 \times 10^4$ |
| 200. GeV | $2.001 \times 10^5$ | 3.071 | 0.173 | 0.244 | 0.083 | 3.571 | $6.375 \times 10^4$ |
| 300. GeV | $3.001 \times 10^5$ | 3.116 | 0.272 | 0.388 | 0.124 | 3.900 | $9.053 \times 10^4$ |
| 400. GeV | $4.001 \times 10^5$ | 3.147 | 0.376 | 0.538 | 0.165 | 4.225 | $1.152 \times 10^5$ |
| 800. GeV | $8.001 \times 10^5$ | 3.220 | 0.805 | 1.160 | 0.334 | 5.520 | $1.977 \times 10^5$ |
| 1.00 TeV | $1.000 \times 10^6$ | 3.243 | 1.027 | 1.482 | 0.420 | 6.172 | $2.320 \times 10^5$ |
| 1.10 TeV | $1.104 \times 10^6$ | 3.253 | 1.142 | 1.646 | 0.465 | 6.507 | *Muon critical energy* |
| 1.40 TeV | $1.400 \times 10^6$ | 3.278 | 1.474 | 2.122 | 0.595 | 7.470 | $2.908 \times 10^5$ |
| 2.00 TeV | $2.000 \times 10^6$ | 3.316 | 2.160 | 3.102 | 0.862 | 9.441 | $3.621 \times 10^5$ |
| 3.00 TeV | $3.000 \times 10^6$ | 3.360 | 3.310 | 4.734 | 1.321 | 12.725 | $4.530 \times 10^5$ |
| 4.00 TeV | $4.000 \times 10^6$ | 3.392 | 4.479 | 6.388 | 1.787 | 16.046 | $5.229 \times 10^5$ |
| 8.00 TeV | $8.000 \times 10^6$ | 3.469 | 9.210 | 13.050 | 3.729 | 29.459 | $7.041 \times 10^5$ |
| 10.0 TeV | $1.000 \times 10^7$ | 3.495 | 11.601 | 16.406 | 4.730 | 36.232 | $7.652 \times 10^5$ |
| 14.0 TeV | $1.400 \times 10^7$ | 3.534 | 16.373 | 23.091 | 6.789 | 49.787 | $8.591 \times 10^5$ |
| 20.0 TeV | $2.000 \times 10^7$ | 3.576 | 23.588 | 33.174 | 9.953 | 70.291 | $9.600 \times 10^5$ |
| 30.0 TeV | $3.000 \times 10^7$ | 3.624 | 35.600 | 49.952 | 15.444 | 104.621 | $1.076 \times 10^6$ |
| 40.0 TeV | $4.000 \times 10^7$ | 3.659 | 47.674 | 66.783 | 21.078 | 139.195 | $1.158 \times 10^6$ |
| 80.0 TeV | $8.000 \times 10^7$ | 3.745 | 96.093 | 134.165 | 44.711 | 278.716 | $1.358 \times 10^6$ |
| 100. TeV | $1.000 \times 10^8$ | 3.774 | 120.368 | 167.896 | 56.957 | 348.996 | $1.422 \times 10^6$ |