## Muons in sodium nitrate ($NaNO_3$)

| $\langle Z/A \rangle$ | $\rho$ [g/cm$^3$] | $I$ [eV] | $a$ | $k = m_s$ | $x_0$ | $x_1$ | $\overline{C}$ | $\delta_0$ |
|---|---|---|---|---|---|---|---|---|
| 0.49415 | 2.261 | 114.6 | 0.09391 | 3.5097 | 0.1534 | 2.8221 | 3.6502 | 0.00 |

| $T$ | $p$ [MeV/$c$] | Ionization | Brems | Pair prod | Photonucl | Total | CSDA range [g/cm$^2$] |
|---|---|---|---|---|---|---|---|
| | | [MeV cm$^2$/g] | | | | | |
| 10.0 MeV | $4.704 \times 10^1$ | 6.702 | | | | 6.702 | $8.281 \times 10^{-1}$ |
| 14.0 MeV | $5.616 \times 10^1$ | 5.239 | | | | 5.239 | $1.510 \times 10^0$ |
| 20.0 MeV | $6.802 \times 10^1$ | 4.100 | | | | 4.100 | $2.820 \times 10^0$ |
| 30.0 MeV | $8.509 \times 10^1$ | 3.187 | | | | 3.187 | $5.624 \times 10^0$ |
| 40.0 MeV | $1.003 \times 10^2$ | 2.726 | | | | 2.726 | $9.039 \times 10^0$ |
| 80.0 MeV | $1.527 \times 10^2$ | 2.053 | | | | 2.053 | $2.648 \times 10^1$ |
| 100. MeV | $1.764 \times 10^2$ | 1.927 | | | | 1.927 | $3.656 \times 10^1$ |
| 140. MeV | $2.218 \times 10^2$ | 1.800 | | | | 1.800 | $5.814 \times 10^1$ |
| 200. MeV | $2.868 \times 10^2$ | 1.729 | | | | 1.729 | $9.228 \times 10^1$ |
| 298. MeV | $3.894 \times 10^2$ | 1.705 | | | 0.000 | 1.705 | *Minimum ionization* |
| 300. MeV | $3.917 \times 10^2$ | 1.705 | | | 0.000 | 1.705 | $1.507 \times 10^2$ |
| 400. MeV | $4.945 \times 10^2$ | 1.714 | | | 0.000 | 1.714 | $2.092 \times 10^2$ |
| 800. MeV | $8.995 \times 10^2$ | 1.787 | 0.000 | | 0.000 | 1.787 | $4.377 \times 10^2$ |
| 1.00 GeV | $1.101 \times 10^3$ | 1.819 | 0.000 | | 0.000 | 1.819 | $5.486 \times 10^2$ |
| 1.40 GeV | $1.502 \times 10^3$ | 1.870 | 0.000 | 0.000 | 0.001 | 1.871 | $7.653 \times 10^2$ |
| 2.00 GeV | $2.103 \times 10^3$ | 1.926 | 0.001 | 0.000 | 0.001 | 1.928 | $1.081 \times 10^3$ |
| 3.00 GeV | $3.104 \times 10^3$ | 1.990 | 0.001 | 0.001 | 0.001 | 1.993 | $1.590 \times 10^3$ |
| 4.00 GeV | $4.104 \times 10^3$ | 2.034 | 0.002 | 0.001 | 0.002 | 2.039 | $2.086 \times 10^3$ |
| 8.00 GeV | $8.105 \times 10^3$ | 2.135 | 0.004 | 0.004 | 0.004 | 2.147 | $3.992 \times 10^3$ |
| 10.0 GeV | $1.011 \times 10^4$ | 2.165 | 0.005 | 0.005 | 0.005 | 2.181 | $4.916 \times 10^3$ |
| 14.0 GeV | $1.411 \times 10^4$ | 2.209 | 0.008 | 0.009 | 0.006 | 2.233 | $6.727 \times 10^3$ |
| 20.0 GeV | $2.011 \times 10^4$ | 2.254 | 0.013 | 0.015 | 0.009 | 2.291 | $9.378 \times 10^3$ |
| 30.0 GeV | $3.011 \times 10^4$ | 2.302 | 0.021 | 0.026 | 0.013 | 2.362 | $1.367 \times 10^4$ |
| 40.0 GeV | $4.011 \times 10^4$ | 2.334 | 0.030 | 0.038 | 0.017 | 2.420 | $1.785 \times 10^4$ |
| 80.0 GeV | $8.011 \times 10^4$ | 2.409 | 0.068 | 0.091 | 0.034 | 2.602 | $3.377 \times 10^4$ |
| 100. GeV | $1.001 \times 10^5$ | 2.432 | 0.088 | 0.120 | 0.042 | 2.682 | $4.134 \times 10^4$ |
| 140. GeV | $1.401 \times 10^5$ | 2.467 | 0.130 | 0.181 | 0.058 | 2.835 | $5.584 \times 10^4$ |
| 200. GeV | $2.001 \times 10^5$ | 2.503 | 0.195 | 0.276 | 0.082 | 3.057 | $7.621 \times 10^4$ |
| 300. GeV | $3.001 \times 10^5$ | 2.544 | 0.307 | 0.438 | 0.123 | 3.413 | $1.072 \times 10^5$ |
| 400. GeV | $4.001 \times 10^5$ | 2.573 | 0.423 | 0.607 | 0.164 | 3.767 | $1.350 \times 10^5$ |
| 800. GeV | $8.001 \times 10^5$ | 2.644 | 0.907 | 1.307 | 0.331 | 5.190 | $2.251 \times 10^5$ |
| 830. GeV | $8.297 \times 10^5$ | 2.648 | 0.944 | 1.360 | 0.344 | 5.296 | *Muon critical energy* |
| 1.00 TeV | $1.000 \times 10^6$ | 2.667 | 1.156 | 1.669 | 0.416 | 5.909 | $2.612 \times 10^5$ |
| 1.40 TeV | $1.400 \times 10^6$ | 2.702 | 1.659 | 2.388 | 0.590 | 7.339 | $3.219 \times 10^5$ |
| 2.00 TeV | $2.000 \times 10^6$ | 2.739 | 2.429 | 3.489 | 0.854 | 9.512 | $3.935 \times 10^5$ |
| 3.00 TeV | $3.000 \times 10^6$ | 2.783 | 3.720 | 5.322 | 1.309 | 13.133 | $4.826 \times 10^5$ |
| 4.00 TeV | $4.000 \times 10^6$ | 2.814 | 5.032 | 7.179 | 1.770 | 16.796 | $5.498 \times 10^5$ |
| 8.00 TeV | $8.000 \times 10^6$ | 2.891 | 10.340 | 14.655 | 3.693 | 31.580 | $7.207 \times 10^5$ |
| 10.0 TeV | $1.000 \times 10^7$ | 2.916 | 13.022 | 18.420 | 4.683 | 39.042 | $7.775 \times 10^5$ |
| 14.0 TeV | $1.400 \times 10^7$ | 2.954 | 18.375 | 25.922 | 6.722 | 53.974 | $8.643 \times 10^5$ |
| 20.0 TeV | $2.000 \times 10^7$ | 2.996 | 26.468 | 37.235 | 9.852 | 76.551 | $9.572 \times 10^5$ |
| 30.0 TeV | $3.000 \times 10^7$ | 3.044 | 39.936 | 56.061 | 15.282 | 114.324 | $1.063 \times 10^6$ |
| 40.0 TeV | $4.000 \times 10^7$ | 3.078 | 53.470 | 74.946 | 20.853 | 152.348 | $1.139 \times 10^6$ |
| 80.0 TeV | $8.000 \times 10^7$ | 3.163 | 107.742 | 150.547 | 44.210 | 305.663 | $1.321 \times 10^6$ |
| 100. TeV | $1.000 \times 10^8$ | 3.191 | 134.950 | 188.391 | 56.310 | 382.842 | $1.379 \times 10^6$ |