

Table 277: Muons in Water (vapor) (H₂O)

| $\langle Z/A \rangle$ | ρ [g/cm ³] | I [eV] | a | $k = m_s$ | x_0 | x_1 | \bar{C} | δ_0 |
|-----------------------|-----------------------------|------------|---------|---------------------------------------|-----------|---------|------------------------------------|------------|
| 0.55509 | 7.562×10^{-4} | 71.6 | 0.08101 | 3.5901 | 1.7952 | 4.3437 | 10.5962 | 0.00 |
| T | p [MeV/c] | Ionization | Brems | Pair prod [MeV cm ² /g] | Photonucl | Total | CSDA range [g/cm ²] | |
| 10.0 MeV | 4.704×10^1 | 8.013 | | | | 8.013 | 6.895×10^{-1} | |
| 14.0 MeV | 5.616×10^1 | 6.249 | | | | 6.249 | 1.261×10^0 | |
| 20.0 MeV | 6.802×10^1 | 4.879 | | | | 4.879 | 2.360×10^0 | |
| 30.0 MeV | 8.509×10^1 | 3.784 | | | | 3.784 | 4.720×10^0 | |
| 40.0 MeV | 1.003×10^2 | 3.231 | | | | 3.231 | 7.598×10^0 | |
| 80.0 MeV | 1.527×10^2 | 2.425 | | | | 2.425 | 2.234×10^1 | |
| 100. MeV | 1.764×10^2 | 2.281 | | | | 2.281 | 3.087×10^1 | |
| 140. MeV | 2.218×10^2 | 2.139 | | | | 2.139 | 4.907×10^1 | |
| 200. MeV | 2.868×10^2 | 2.066 | | | | 2.066 | 7.772×10^1 | |
| 260. MeV | 3.496×10^2 | 2.052 | | | 0.000 | 2.052 | <i>Minimum ionization</i> | |
| 300. MeV | 3.917×10^2 | 2.056 | | | 0.000 | 2.056 | 1.264×10^2 | |
| 400. MeV | 4.945×10^2 | 2.082 | | | 0.000 | 2.083 | 1.747×10^2 | |
| 800. MeV | 8.995×10^2 | 2.219 | 0.000 | | 0.000 | 2.220 | 3.606×10^2 | |
| 1.00 GeV | 1.101×10^3 | 2.277 | 0.000 | | 0.000 | 2.278 | 4.496×10^2 | |
| 1.40 GeV | 1.502×10^3 | 2.372 | 0.000 | | 0.001 | 2.373 | 6.214×10^2 | |
| 2.00 GeV | 2.103×10^3 | 2.479 | 0.001 | 0.000 | 0.001 | 2.480 | 8.684×10^2 | |
| 3.00 GeV | 3.104×10^3 | 2.604 | 0.001 | 0.001 | 0.001 | 2.608 | 1.261×10^3 | |
| 4.00 GeV | 4.104×10^3 | 2.695 | 0.001 | 0.001 | 0.002 | 2.700 | 1.638×10^3 | |
| 8.00 GeV | 8.105×10^3 | 2.902 | 0.004 | 0.003 | 0.004 | 2.913 | 3.055×10^3 | |
| 10.0 GeV | 1.011×10^4 | 2.958 | 0.005 | 0.005 | 0.005 | 2.972 | 3.735×10^3 | |
| 14.0 GeV | 1.411×10^4 | 3.036 | 0.007 | 0.008 | 0.007 | 3.058 | 5.060×10^3 | |
| 20.0 GeV | 2.011×10^4 | 3.112 | 0.011 | 0.013 | 0.009 | 3.146 | 6.993×10^3 | |
| 30.0 GeV | 3.011×10^4 | 3.190 | 0.019 | 0.023 | 0.013 | 3.246 | 1.012×10^4 | |
| 40.0 GeV | 4.011×10^4 | 3.241 | 0.027 | 0.034 | 0.018 | 3.319 | 1.316×10^4 | |
| 80.0 GeV | 8.011×10^4 | 3.351 | 0.060 | 0.081 | 0.034 | 3.527 | 2.483×10^4 | |
| 100. GeV | 1.001×10^5 | 3.383 | 0.078 | 0.107 | 0.042 | 3.611 | 3.043×10^4 | |
| 140. GeV | 1.401×10^5 | 3.429 | 0.116 | 0.161 | 0.059 | 3.765 | 4.128×10^4 | |
| 200. GeV | 2.001×10^5 | 3.475 | 0.174 | 0.246 | 0.084 | 3.979 | 5.677×10^4 | |
| 300. GeV | 3.001×10^5 | 3.525 | 0.275 | 0.391 | 0.125 | 4.317 | 8.089×10^4 | |
| 400. GeV | 4.001×10^5 | 3.560 | 0.379 | 0.542 | 0.167 | 4.648 | 1.032×10^5 | |
| 800. GeV | 8.001×10^5 | 3.642 | 0.814 | 1.171 | 0.337 | 5.963 | 1.790×10^5 | |
| 1.00 TeV | 1.000×10^6 | 3.668 | 1.038 | 1.496 | 0.423 | 6.626 | 2.108×10^5 | |
| 1.23 TeV | 1.231×10^6 | 3.692 | 1.299 | 1.868 | 0.526 | 7.385 | <i>Muon critical energy</i> | |
| 1.40 TeV | 1.400×10^6 | 3.707 | 1.491 | 2.142 | 0.601 | 7.941 | 2.659×10^5 | |
| 2.00 TeV | 2.000×10^6 | 3.749 | 2.186 | 3.132 | 0.870 | 9.937 | 3.333×10^5 | |
| 3.00 TeV | 3.000×10^6 | 3.798 | 3.352 | 4.781 | 1.332 | 13.263 | 4.201×10^5 | |
| 4.00 TeV | 4.000×10^6 | 3.833 | 4.537 | 6.452 | 1.803 | 16.626 | 4.873×10^5 | |
| 8.00 TeV | 8.000×10^6 | 3.919 | 9.338 | 13.185 | 3.763 | 30.206 | 6.633×10^5 | |
| 10.0 TeV | 1.000×10^7 | 3.948 | 11.766 | 16.575 | 4.773 | 37.063 | 7.229×10^5 | |
| 14.0 TeV | 1.400×10^7 | 3.991 | 16.613 | 23.331 | 6.854 | 50.789 | 8.148×10^5 | |
| 20.0 TeV | 2.000×10^7 | 4.037 | 23.944 | 33.521 | 10.051 | 71.553 | 9.138×10^5 | |
| 30.0 TeV | 3.000×10^7 | 4.091 | 36.151 | 50.475 | 15.600 | 106.318 | 1.028×10^6 | |
| 40.0 TeV | 4.000×10^7 | 4.130 | 48.424 | 67.484 | 21.296 | 141.334 | 1.109×10^6 | |
| 80.0 TeV | 8.000×10^7 | 4.226 | 97.657 | 135.575 | 45.199 | 282.658 | 1.305×10^6 | |
| 100. TeV | 1.000×10^8 | 4.257 | 122.347 | 169.661 | 57.590 | 353.855 | 1.369×10^6 | |