

Table 144: Muons in Shielding concrete

| | $\langle Z/A \rangle$ | ρ [g/cm ³] | I [eV] | a | $k = m_s$ | x_0 | x_1 | \bar{C} | δ_0 |
|----------|-----------------------|-----------------------------|----------|---------------------------------------|-----------|---------|------------------------------------|-----------|------------|
| | 0.50274 | 2.300 | 135.2 | 0.07515 | 3.5467 | 0.1301 | 3.0466 | 3.9464 | 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 | 6.664 | | | | 6.664 | 8.343×10^{-1} | | |
| 14.0 MeV | 5.616×10^1 | 5.214 | | | | 5.214 | 1.520×10^0 | | |
| 20.0 MeV | 6.802×10^1 | 4.084 | | | | 4.084 | 2.835×10^0 | | |
| 30.0 MeV | 8.509×10^1 | 3.178 | | | | 3.178 | 5.649×10^0 | | |
| 40.0 MeV | 1.003×10^2 | 2.719 | | | | 2.719 | 9.073×10^0 | | |
| 80.0 MeV | 1.527×10^2 | 2.049 | | | | 2.049 | 2.655×10^1 | | |
| 100. MeV | 1.764×10^2 | 1.925 | | | | 1.925 | 3.664×10^1 | | |
| 140. MeV | 2.218×10^2 | 1.801 | | | | 1.801 | 5.822×10^1 | | |
| 200. MeV | 2.868×10^2 | 1.732 | | | | 1.732 | 9.232×10^1 | | |
| 293. MeV | 3.844×10^2 | 1.711 | | | 0.000 | 1.711 | <i>Minimum ionization</i> | | |
| 300. MeV | 3.917×10^2 | 1.711 | | | 0.000 | 1.711 | 1.506×10^2 | | |
| 400. MeV | 4.945×10^2 | 1.722 | | | 0.000 | 1.722 | 2.089×10^2 | | |
| 800. MeV | 8.995×10^2 | 1.800 | 0.000 | | 0.000 | 1.801 | 4.360×10^2 | | |
| 1.00 GeV | 1.101×10^3 | 1.834 | 0.000 | | 0.000 | 1.834 | 5.460×10^2 | | |
| 1.40 GeV | 1.502×10^3 | 1.888 | 0.001 | 0.000 | 0.001 | 1.889 | 7.607×10^2 | | |
| 2.00 GeV | 2.103×10^3 | 1.947 | 0.001 | 0.000 | 0.001 | 1.949 | 1.073×10^3 | | |
| 3.00 GeV | 3.104×10^3 | 2.014 | 0.001 | 0.001 | 0.001 | 2.018 | 1.577×10^3 | | |
| 4.00 GeV | 4.104×10^3 | 2.060 | 0.002 | 0.002 | 0.002 | 2.066 | 2.066×10^3 | | |
| 8.00 GeV | 8.105×10^3 | 2.165 | 0.005 | 0.005 | 0.004 | 2.179 | 3.945×10^3 | | |
| 10.0 GeV | 1.011×10^4 | 2.197 | 0.007 | 0.007 | 0.005 | 2.216 | 4.855×10^3 | | |
| 14.0 GeV | 1.411×10^4 | 2.243 | 0.010 | 0.011 | 0.006 | 2.271 | 6.637×10^3 | | |
| 20.0 GeV | 2.011×10^4 | 2.289 | 0.016 | 0.019 | 0.009 | 2.333 | 9.242×10^3 | | |
| 30.0 GeV | 3.011×10^4 | 2.338 | 0.027 | 0.033 | 0.013 | 2.411 | 1.346×10^4 | | |
| 40.0 GeV | 4.011×10^4 | 2.372 | 0.038 | 0.048 | 0.017 | 2.474 | 1.755×10^4 | | |
| 80.0 GeV | 8.011×10^4 | 2.448 | 0.085 | 0.115 | 0.033 | 2.682 | 3.305×10^4 | | |
| 100. GeV | 1.001×10^5 | 2.472 | 0.110 | 0.151 | 0.041 | 2.775 | 4.038×10^4 | | |
| 140. GeV | 1.401×10^5 | 2.507 | 0.162 | 0.226 | 0.057 | 2.953 | 5.435×10^4 | | |
| 200. GeV | 2.001×10^5 | 2.544 | 0.244 | 0.346 | 0.081 | 3.215 | 7.382×10^4 | | |
| 300. GeV | 3.001×10^5 | 2.586 | 0.384 | 0.548 | 0.122 | 3.639 | 1.030×10^5 | | |
| 400. GeV | 4.001×10^5 | 2.615 | 0.529 | 0.759 | 0.162 | 4.065 | 1.290×10^5 | | |
| 700. GeV | 7.005×10^5 | 2.673 | 0.978 | 1.409 | 0.286 | 5.347 | <i>Muon critical energy</i> | | |
| 800. GeV | 8.001×10^5 | 2.687 | 1.130 | 1.629 | 0.328 | 5.774 | 2.112×10^5 | | |
| 1.00 TeV | 1.000×10^6 | 2.711 | 1.441 | 2.077 | 0.412 | 6.640 | 2.434×10^5 | | |
| 1.40 TeV | 1.400×10^6 | 2.746 | 2.065 | 2.969 | 0.583 | 8.364 | 2.970×10^5 | | |
| 2.00 TeV | 2.000×10^6 | 2.784 | 3.022 | 4.335 | 0.845 | 10.987 | 3.594×10^5 | | |
| 3.00 TeV | 3.000×10^6 | 2.828 | 4.624 | 6.607 | 1.294 | 15.354 | 4.361×10^5 | | |
| 4.00 TeV | 4.000×10^6 | 2.860 | 6.252 | 8.908 | 1.750 | 19.770 | 4.934×10^5 | | |
| 8.00 TeV | 8.000×10^6 | 2.938 | 12.832 | 18.169 | 3.650 | 37.589 | 6.376×10^5 | | |
| 10.0 TeV | 1.000×10^7 | 2.964 | 16.155 | 22.831 | 4.627 | 46.577 | 6.854×10^5 | | |
| 14.0 TeV | 1.400×10^7 | 3.003 | 22.789 | 32.122 | 6.640 | 64.554 | 7.580×10^5 | | |
| 20.0 TeV | 2.000×10^7 | 3.045 | 32.815 | 46.131 | 9.730 | 91.721 | 8.356×10^5 | | |
| 30.0 TeV | 3.000×10^7 | 3.094 | 49.496 | 69.444 | 15.087 | 137.121 | 9.242×10^5 | | |
| 40.0 TeV | 4.000×10^7 | 3.129 | 66.253 | 92.826 | 20.582 | 182.791 | 9.871×10^5 | | |
| 80.0 TeV | 8.000×10^7 | 3.216 | 133.445 | 186.432 | 43.612 | 366.705 | 1.139×10^6 | | |
| 100. TeV | 1.000×10^8 | 3.244 | 167.127 | 233.286 | 55.538 | 459.196 | 1.187×10^6 | | |