

Table 014: Muons in Silicon

| Z | A [g/mol] | ρ [g/cm ³] | I [eV] | a | $k = m_s$ | x_0 | x_1 | \bar{C} | δ_0 |
|----------|---------------------|-----------------------------|---------|---------------------------------------|-----------|---------|------------------------------------|-----------|------------|
| 14 (Si) | 28.0855 (3) | 2.329 | 173.0 | 0.14921 | 3.2546 | 0.2015 | 2.8716 | 4.4355 | 0.14 |
| 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 | 6.363 | | | | 6.363 | 8.779×10^{-1} | | |
| 14.0 MeV | 5.616×10^1 | 4.987 | | | | 4.987 | 1.595×10^0 | | |
| 20.0 MeV | 6.802×10^1 | 3.912 | | | | 3.912 | 2.969×10^0 | | |
| 30.0 MeV | 8.509×10^1 | 3.047 | | | | 3.047 | 5.905×10^0 | | |
| 40.0 MeV | 1.003×10^2 | 2.608 | | | | 2.608 | 9.476×10^0 | | |
| 80.0 MeV | 1.527×10^2 | 1.965 | | | | 1.965 | 2.770×10^1 | | |
| 100. MeV | 1.764×10^2 | 1.849 | | | | 1.849 | 3.822×10^1 | | |
| 140. MeV | 2.218×10^2 | 1.737 | | | | 1.737 | 6.064×10^1 | | |
| 200. MeV | 2.868×10^2 | 1.678 | | | | 1.678 | 9.590×10^1 | | |
| 273. MeV | 3.633×10^2 | 1.664 | | | 0.000 | 1.664 | <i>Minimum ionization</i> | | |
| 300. MeV | 3.917×10^2 | 1.665 | | | 0.000 | 1.666 | 1.559×10^2 | | |
| 400. MeV | 4.945×10^2 | 1.681 | | | 0.000 | 1.681 | 2.157×10^2 | | |
| 800. MeV | 8.995×10^2 | 1.767 | 0.000 | | 0.000 | 1.768 | 4.475×10^2 | | |
| 1.00 GeV | 1.101×10^3 | 1.803 | 0.000 | | 0.000 | 1.804 | 5.595×10^2 | | |
| 1.40 GeV | 1.502×10^3 | 1.860 | 0.001 | 0.000 | 0.001 | 1.862 | 7.776×10^2 | | |
| 2.00 GeV | 2.103×10^3 | 1.922 | 0.001 | 0.001 | 0.001 | 1.924 | 1.094×10^3 | | |
| 3.00 GeV | 3.104×10^3 | 1.991 | 0.002 | 0.001 | 0.001 | 1.995 | 1.604×10^3 | | |
| 4.00 GeV | 4.104×10^3 | 2.038 | 0.003 | 0.002 | 0.002 | 2.045 | 2.099×10^3 | | |
| 8.00 GeV | 8.105×10^3 | 2.145 | 0.006 | 0.006 | 0.004 | 2.162 | 3.994×10^3 | | |
| 10.0 GeV | 1.011×10^4 | 2.177 | 0.009 | 0.009 | 0.005 | 2.199 | 4.911×10^3 | | |
| 14.0 GeV | 1.411×10^4 | 2.224 | 0.013 | 0.014 | 0.006 | 2.257 | 6.705×10^3 | | |
| 20.0 GeV | 2.011×10^4 | 2.270 | 0.020 | 0.023 | 0.009 | 2.322 | 9.325×10^3 | | |
| 30.0 GeV | 3.011×10^4 | 2.319 | 0.033 | 0.040 | 0.013 | 2.405 | 1.355×10^4 | | |
| 40.0 GeV | 4.011×10^4 | 2.352 | 0.046 | 0.059 | 0.017 | 2.474 | 1.765×10^4 | | |
| 80.0 GeV | 8.011×10^4 | 2.427 | 0.105 | 0.142 | 0.033 | 2.707 | 3.308×10^4 | | |
| 100. GeV | 1.001×10^5 | 2.451 | 0.136 | 0.187 | 0.040 | 2.814 | 4.033×10^4 | | |
| 140. GeV | 1.401×10^5 | 2.485 | 0.200 | 0.279 | 0.056 | 3.021 | 5.404×10^4 | | |
| 200. GeV | 2.001×10^5 | 2.522 | 0.300 | 0.425 | 0.080 | 3.328 | 7.295×10^4 | | |
| 300. GeV | 3.001×10^5 | 2.563 | 0.472 | 0.675 | 0.119 | 3.831 | 1.009×10^5 | | |
| 400. GeV | 4.001×10^5 | 2.593 | 0.651 | 0.935 | 0.159 | 4.338 | 1.255×10^5 | | |
| 582. GeV | 5.816×10^5 | 2.631 | 0.982 | 1.417 | 0.232 | 5.263 | <i>Muon critical energy</i> | | |
| 800. GeV | 8.001×10^5 | 2.664 | 1.389 | 2.003 | 0.322 | 6.379 | 2.010×10^5 | | |
| 1.00 TeV | 1.000×10^6 | 2.687 | 1.770 | 2.551 | 0.404 | 7.413 | 2.301×10^5 | | |
| 1.40 TeV | 1.400×10^6 | 2.723 | 2.535 | 3.645 | 0.573 | 9.476 | 2.777×10^5 | | |
| 2.00 TeV | 2.000×10^6 | 2.760 | 3.708 | 5.319 | 0.830 | 12.617 | 3.324×10^5 | | |
| 3.00 TeV | 3.000×10^6 | 2.804 | 5.670 | 8.101 | 1.270 | 17.846 | 3.988×10^5 | | |
| 4.00 TeV | 4.000×10^6 | 2.836 | 7.662 | 10.917 | 1.718 | 23.134 | 4.478×10^5 | | |
| 8.00 TeV | 8.000×10^6 | 2.913 | 15.713 | 22.251 | 3.581 | 44.458 | 5.704×10^5 | | |
| 10.0 TeV | 1.000×10^7 | 2.938 | 19.777 | 27.954 | 4.539 | 55.209 | 6.107×10^5 | | |
| 14.0 TeV | 1.400×10^7 | 2.977 | 27.892 | 39.323 | 6.510 | 76.704 | 6.719×10^5 | | |
| 20.0 TeV | 2.000×10^7 | 3.019 | 40.156 | 56.460 | 9.536 | 109.172 | 7.372×10^5 | | |
| 30.0 TeV | 3.000×10^7 | 3.067 | 60.546 | 84.985 | 14.778 | 163.377 | 8.116×10^5 | | |
| 40.0 TeV | 4.000×10^7 | 3.102 | 81.023 | 113.592 | 20.152 | 217.870 | 8.644×10^5 | | |
| 80.0 TeV | 8.000×10^7 | 3.188 | 163.133 | 228.110 | 42.660 | 437.091 | 9.915×10^5 | | |
| 100. TeV | 1.000×10^8 | 3.216 | 204.290 | 285.430 | 54.310 | 547.247 | 1.032×10^6 | | |