

**Table 296: Muons in Silica aerogel for  $\rho = 0.2$  (0.03 H<sub>2</sub>O, 0.97 SiO<sub>2</sub>)**

| $\langle Z/A \rangle$ | $\rho$ [g/cm <sup>3</sup> ] | $I$ [eV]   | $a$     | $k = m_s$                             | $x_0$     | $x_1$   | $\bar{C}$                          | $\delta_0$ |
|-----------------------|-----------------------------|------------|---------|---------------------------------------|-----------|---------|------------------------------------|------------|
| 0.50093               | 0.200                       | 139.2      | 0.26675 | 3.0000                                | 0.6029    | 3.0000  | 6.4507                             | 0.00       |
| $T$                   | $p$<br>[MeV/c]              | Ionization | Brems   | Pair prod<br>[MeV cm <sup>2</sup> /g] | Photonucl | Total   | CSDA range<br>[g/cm <sup>2</sup> ] |            |
| 10.0 MeV              | $4.704 \times 10^1$         | 6.613      |         |                                       |           | 6.613   | $8.411 \times 10^{-1}$             |            |
| 14.0 MeV              | $5.616 \times 10^1$         | 5.175      |         |                                       |           | 5.175   | $1.532 \times 10^0$                |            |
| 20.0 MeV              | $6.802 \times 10^1$         | 4.054      |         |                                       |           | 4.054   | $2.857 \times 10^0$                |            |
| 30.0 MeV              | $8.509 \times 10^1$         | 3.155      |         |                                       |           | 3.155   | $5.691 \times 10^0$                |            |
| 40.0 MeV              | $1.003 \times 10^2$         | 2.700      |         |                                       |           | 2.700   | $9.140 \times 10^0$                |            |
| 80.0 MeV              | $1.527 \times 10^2$         | 2.037      |         |                                       |           | 2.037   | $2.673 \times 10^1$                |            |
| 100. MeV              | $1.764 \times 10^2$         | 1.919      |         |                                       |           | 1.919   | $3.687 \times 10^1$                |            |
| 140. MeV              | $2.218 \times 10^2$         | 1.804      |         |                                       |           | 1.805   | $5.847 \times 10^1$                |            |
| 200. MeV              | $2.868 \times 10^2$         | 1.748      |         |                                       |           | 1.749   | $9.237 \times 10^1$                |            |
| 247. MeV              | $3.366 \times 10^2$         | 1.740      |         |                                       | 0.000     | 1.740   | <i>Minimum ionization</i>          |            |
| 300. MeV              | $3.917 \times 10^2$         | 1.745      |         |                                       | 0.000     | 1.746   | $1.498 \times 10^2$                |            |
| 400. MeV              | $4.945 \times 10^2$         | 1.771      |         |                                       | 0.000     | 1.772   | $2.066 \times 10^2$                |            |
| 800. MeV              | $8.995 \times 10^2$         | 1.883      | 0.000   |                                       | 0.000     | 1.884   | $4.253 \times 10^2$                |            |
| 1.00 GeV              | $1.101 \times 10^3$         | 1.927      | 0.000   |                                       | 0.000     | 1.928   | $5.302 \times 10^2$                |            |
| 1.40 GeV              | $1.502 \times 10^3$         | 1.996      | 0.001   | 0.000                                 | 0.001     | 1.997   | $7.338 \times 10^2$                |            |
| 2.00 GeV              | $2.103 \times 10^3$         | 2.069      | 0.001   | 0.000                                 | 0.001     | 2.071   | $1.028 \times 10^3$                |            |
| 3.00 GeV              | $3.104 \times 10^3$         | 2.150      | 0.001   | 0.001                                 | 0.001     | 2.154   | $1.501 \times 10^3$                |            |
| 4.00 GeV              | $4.104 \times 10^3$         | 2.205      | 0.002   | 0.002                                 | 0.002     | 2.211   | $1.959 \times 10^3$                |            |
| 8.00 GeV              | $8.105 \times 10^3$         | 2.327      | 0.005   | 0.005                                 | 0.004     | 2.341   | $3.711 \times 10^3$                |            |
| 10.0 GeV              | $1.011 \times 10^4$         | 2.363      | 0.007   | 0.007                                 | 0.005     | 2.381   | $4.558 \times 10^3$                |            |
| 14.0 GeV              | $1.411 \times 10^4$         | 2.414      | 0.010   | 0.011                                 | 0.006     | 2.441   | $6.216 \times 10^3$                |            |
| 20.0 GeV              | $2.011 \times 10^4$         | 2.463      | 0.016   | 0.018                                 | 0.009     | 2.507   | $8.639 \times 10^3$                |            |
| 30.0 GeV              | $3.011 \times 10^4$         | 2.516      | 0.026   | 0.032                                 | 0.013     | 2.586   | $1.256 \times 10^4$                |            |
| 40.0 GeV              | $4.011 \times 10^4$         | 2.550      | 0.036   | 0.046                                 | 0.017     | 2.651   | $1.638 \times 10^4$                |            |
| 80.0 GeV              | $8.011 \times 10^4$         | 2.627      | 0.083   | 0.112                                 | 0.033     | 2.855   | $3.090 \times 10^4$                |            |
| 100. GeV              | $1.001 \times 10^5$         | 2.651      | 0.107   | 0.147                                 | 0.041     | 2.947   | $3.779 \times 10^4$                |            |
| 140. GeV              | $1.401 \times 10^5$         | 2.686      | 0.158   | 0.220                                 | 0.057     | 3.122   | $5.098 \times 10^4$                |            |
| 200. GeV              | $2.001 \times 10^5$         | 2.723      | 0.237   | 0.336                                 | 0.081     | 3.377   | $6.945 \times 10^4$                |            |
| 300. GeV              | $3.001 \times 10^5$         | 2.764      | 0.373   | 0.533                                 | 0.122     | 3.793   | $9.737 \times 10^4$                |            |
| 400. GeV              | $4.001 \times 10^5$         | 2.794      | 0.514   | 0.738                                 | 0.162     | 4.209   | $1.224 \times 10^5$                |            |
| 762. GeV              | $7.625 \times 10^5$         | 2.861      | 1.044   | 1.505                                 | 0.312     | 5.722   | <i>Muon critical energy</i>        |            |
| 800. GeV              | $8.001 \times 10^5$         | 2.866      | 1.100   | 1.586                                 | 0.328     | 5.880   | $2.024 \times 10^5$                |            |
| 1.00 TeV              | $1.000 \times 10^6$         | 2.889      | 1.402   | 2.022                                 | 0.412     | 6.725   | $2.342 \times 10^5$                |            |
| 1.40 TeV              | $1.400 \times 10^6$         | 2.924      | 2.010   | 2.891                                 | 0.584     | 8.410   | $2.873 \times 10^5$                |            |
| 2.00 TeV              | $2.000 \times 10^6$         | 2.962      | 2.942   | 4.222                                 | 0.846     | 10.972  | $3.496 \times 10^5$                |            |
| 3.00 TeV              | $3.000 \times 10^6$         | 3.006      | 4.502   | 6.434                                 | 1.295     | 15.238  | $4.266 \times 10^5$                |            |
| 4.00 TeV              | $4.000 \times 10^6$         | 3.038      | 6.087   | 8.676                                 | 1.752     | 19.553  | $4.844 \times 10^5$                |            |
| 8.00 TeV              | $8.000 \times 10^6$         | 3.116      | 12.495  | 17.697                                | 3.653     | 36.963  | $6.308 \times 10^5$                |            |
| 10.0 TeV              | $1.000 \times 10^7$         | 3.141      | 15.732  | 22.238                                | 4.632     | 45.745  | $6.793 \times 10^5$                |            |
| 14.0 TeV              | $1.400 \times 10^7$         | 3.180      | 22.193  | 31.290                                | 6.647     | 63.311  | $7.533 \times 10^5$                |            |
| 20.0 TeV              | $2.000 \times 10^7$         | 3.222      | 31.960  | 44.936                                | 9.741     | 89.858  | $8.325 \times 10^5$                |            |
| 30.0 TeV              | $3.000 \times 10^7$         | 3.271      | 48.207  | 67.647                                | 15.104    | 134.229 | $9.230 \times 10^5$                |            |
| 40.0 TeV              | $4.000 \times 10^7$         | 3.306      | 64.528  | 90.427                                | 20.605    | 178.867 | $9.873 \times 10^5$                |            |
| 80.0 TeV              | $8.000 \times 10^7$         | 3.392      | 129.977 | 181.618                               | 43.661    | 358.650 | $1.142 \times 10^6$                |            |
| 100. TeV              | $1.000 \times 10^8$         | 3.421      | 162.786 | 227.265                               | 55.602    | 449.073 | $1.192 \times 10^6$                |            |