

## Muons in polytetrafluoroethylene (Teflon, $[(CF_2CF_2)_n]$ )

| $\langle Z/A \rangle$ | $\rho$ [g/cm <sup>3</sup> ] | $I$ [eV]   | $a$     | $k = m_s$                             | $x_0$     | $x_1$   | $\bar{C}$                          | $\delta_0$ |
|-----------------------|-----------------------------|------------|---------|---------------------------------------|-----------|---------|------------------------------------|------------|
| 0.47992               | 2.200                       | 99.1       | 0.10606 | 3.4046                                | 0.1648    | 2.7404  | 3.4161                             | 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              | $4.704 \times 10^1$         | 6.638      |         |                                       |           | 6.638   | $8.348 \times 10^{-1}$             |            |
| 14.0 MeV              | $5.616 \times 10^1$         | 5.185      |         |                                       |           | 5.185   | $1.524 \times 10^0$                |            |
| 20.0 MeV              | $6.802 \times 10^1$         | 4.055      |         |                                       |           | 4.055   | $2.847 \times 10^0$                |            |
| 30.0 MeV              | $8.509 \times 10^1$         | 3.150      |         |                                       |           | 3.150   | $5.684 \times 10^0$                |            |
| 40.0 MeV              | $1.003 \times 10^2$         | 2.692      |         |                                       |           | 2.692   | $9.140 \times 10^0$                |            |
| 80.0 MeV              | $1.527 \times 10^2$         | 2.026      |         |                                       |           | 2.026   | $2.681 \times 10^1$                |            |
| 100. MeV              | $1.764 \times 10^2$         | 1.900      |         |                                       |           | 1.900   | $3.703 \times 10^1$                |            |
| 140. MeV              | $2.218 \times 10^2$         | 1.771      |         |                                       |           | 1.771   | $5.894 \times 10^1$                |            |
| 200. MeV              | $2.868 \times 10^2$         | 1.698      |         |                                       |           | 1.698   | $9.367 \times 10^1$                |            |
| 300. MeV              | $3.917 \times 10^2$         | 1.671      |         |                                       | 0.000     | 1.672   | $1.532 \times 10^2$                |            |
| 308. MeV              | $4.000 \times 10^2$         | 1.671      |         |                                       | 0.000     | 1.672   | <i>Minimum ionization</i>          |            |
| 400. MeV              | $4.945 \times 10^2$         | 1.678      |         |                                       | 0.000     | 1.679   | $2.129 \times 10^2$                |            |
| 800. MeV              | $8.995 \times 10^2$         | 1.745      | 0.000   |                                       | 0.000     | 1.746   | $4.466 \times 10^2$                |            |
| 1.00 GeV              | $1.101 \times 10^3$         | 1.776      | 0.000   |                                       | 0.000     | 1.776   | $5.602 \times 10^2$                |            |
| 1.40 GeV              | $1.502 \times 10^3$         | 1.824      | 0.000   | 0.000                                 | 0.001     | 1.826   | $7.822 \times 10^2$                |            |
| 2.00 GeV              | $2.103 \times 10^3$         | 1.878      | 0.001   | 0.000                                 | 0.001     | 1.880   | $1.106 \times 10^3$                |            |
| 3.00 GeV              | $3.104 \times 10^3$         | 1.939      | 0.001   | 0.001                                 | 0.001     | 1.942   | $1.628 \times 10^3$                |            |
| 4.00 GeV              | $4.104 \times 10^3$         | 1.982      | 0.002   | 0.001                                 | 0.002     | 1.986   | $2.137 \times 10^3$                |            |
| 8.00 GeV              | $8.105 \times 10^3$         | 2.078      | 0.004   | 0.004                                 | 0.004     | 2.090   | $4.094 \times 10^3$                |            |
| 10.0 GeV              | $1.011 \times 10^4$         | 2.108      | 0.005   | 0.005                                 | 0.005     | 2.123   | $5.044 \times 10^3$                |            |
| 14.0 GeV              | $1.411 \times 10^4$         | 2.150      | 0.008   | 0.008                                 | 0.006     | 2.173   | $6.905 \times 10^3$                |            |
| 20.0 GeV              | $2.011 \times 10^4$         | 2.193      | 0.012   | 0.014                                 | 0.009     | 2.228   | $9.629 \times 10^3$                |            |
| 30.0 GeV              | $3.011 \times 10^4$         | 2.240      | 0.020   | 0.024                                 | 0.013     | 2.297   | $1.405 \times 10^4$                |            |
| 40.0 GeV              | $4.011 \times 10^4$         | 2.271      | 0.028   | 0.035                                 | 0.017     | 2.352   | $1.835 \times 10^4$                |            |
| 80.0 GeV              | $8.011 \times 10^4$         | 2.344      | 0.063   | 0.085                                 | 0.034     | 2.526   | $3.473 \times 10^4$                |            |
| 100. GeV              | $1.001 \times 10^5$         | 2.366      | 0.082   | 0.113                                 | 0.042     | 2.603   | $4.253 \times 10^4$                |            |
| 140. GeV              | $1.401 \times 10^5$         | 2.400      | 0.121   | 0.169                                 | 0.058     | 2.748   | $5.748 \times 10^4$                |            |
| 200. GeV              | $2.001 \times 10^5$         | 2.435      | 0.182   | 0.258                                 | 0.082     | 2.958   | $7.851 \times 10^4$                |            |
| 300. GeV              | $3.001 \times 10^5$         | 2.475      | 0.287   | 0.410                                 | 0.123     | 3.295   | $1.105 \times 10^5$                |            |
| 400. GeV              | $4.001 \times 10^5$         | 2.503      | 0.396   | 0.568                                 | 0.164     | 3.631   | $1.394 \times 10^5$                |            |
| 800. GeV              | $8.001 \times 10^5$         | 2.572      | 0.848   | 1.224                                 | 0.331     | 4.976   | $2.331 \times 10^5$                |            |
| 854. GeV              | $8.536 \times 10^5$         | 2.578      | 0.910   | 1.314                                 | 0.354     | 5.157   | <i>Muon critical energy</i>        |            |
| 1.00 TeV              | $1.000 \times 10^6$         | 2.594      | 1.082   | 1.563                                 | 0.416     | 5.656   | $2.708 \times 10^5$                |            |
| 1.40 TeV              | $1.400 \times 10^6$         | 2.628      | 1.552   | 2.237                                 | 0.590     | 7.007   | $3.343 \times 10^5$                |            |
| 2.00 TeV              | $2.000 \times 10^6$         | 2.665      | 2.273   | 3.268                                 | 0.855     | 9.061   | $4.094 \times 10^5$                |            |
| 3.00 TeV              | $3.000 \times 10^6$         | 2.707      | 3.482   | 4.985                                 | 1.310     | 12.484  | $5.030 \times 10^5$                |            |
| 4.00 TeV              | $4.000 \times 10^6$         | 2.737      | 4.710   | 6.726                                 | 1.772     | 15.945  | $5.738 \times 10^5$                |            |
| 8.00 TeV              | $8.000 \times 10^6$         | 2.812      | 9.681   | 13.733                                | 3.696     | 29.922  | $7.540 \times 10^5$                |            |
| 10.0 TeV              | $1.000 \times 10^7$         | 2.836      | 12.193  | 17.262                                | 4.687     | 36.978  | $8.140 \times 10^5$                |            |
| 14.0 TeV              | $1.400 \times 10^7$         | 2.873      | 17.204  | 24.293                                | 6.727     | 51.098  | $9.056 \times 10^5$                |            |
| 20.0 TeV              | $2.000 \times 10^7$         | 2.914      | 24.781  | 34.897                                | 9.860     | 72.452  | $1.004 \times 10^6$                |            |
| 30.0 TeV              | $3.000 \times 10^7$         | 2.960      | 37.396  | 52.542                                | 15.296    | 108.195 | $1.116 \times 10^6$                |            |
| 40.0 TeV              | $4.000 \times 10^7$         | 2.994      | 50.074  | 70.243                                | 20.873    | 144.183 | $1.196 \times 10^6$                |            |
| 80.0 TeV              | $8.000 \times 10^7$         | 3.076      | 100.900 | 141.106                               | 44.257    | 289.339 | $1.388 \times 10^6$                |            |
| 100. TeV              | $1.000 \times 10^8$         | 3.104      | 126.375 | 176.579                               | 56.372    | 362.430 | $1.449 \times 10^6$                |            |