

## Muons in seaborgium (Sg)

| Z        | A [g/mol]           | $\rho$ [g/cm <sup>3</sup> ] | I [eV]  | $a$                                   | $k = m_s$ | $x_0$    | $x_1$                              | $\bar{C}$ | $\delta_0$ |
|----------|---------------------|-----------------------------|---------|---------------------------------------|-----------|----------|------------------------------------|-----------|------------|
| 106 (Sg) | [271.133 (5)]       | ??                          | 1074.0  | 0.27308                               | 3.0000    | 0.6309   | 3.0000                             | 6.5365    | 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 | $4.704 \times 10^1$ | 3.525                       |         |                                       |           | 3.525    | $1.683 \times 10^0$                |           |            |
| 14.0 MeV | $5.616 \times 10^1$ | 2.840                       |         |                                       |           | 2.840    | $2.958 \times 10^0$                |           |            |
| 20.0 MeV | $6.802 \times 10^1$ | 2.281                       |         |                                       |           | 2.281    | $5.338 \times 10^0$                |           |            |
| 30.0 MeV | $8.509 \times 10^1$ | 1.817                       |         |                                       |           | 1.817    | $1.031 \times 10^1$                |           |            |
| 40.0 MeV | $1.003 \times 10^2$ | 1.576                       |         |                                       |           | 1.576    | $1.625 \times 10^1$                |           |            |
| 80.0 MeV | $1.527 \times 10^2$ | 1.223                       |         |                                       |           | 1.223    | $4.590 \times 10^1$                |           |            |
| 100. MeV | $1.764 \times 10^2$ | 1.162                       |         |                                       |           | 1.162    | $6.272 \times 10^1$                |           |            |
| 140. MeV | $2.218 \times 10^2$ | 1.106                       |         |                                       |           | 1.106    | $9.816 \times 10^1$                |           |            |
| 200. MeV | $2.868 \times 10^2$ | 1.085                       |         |                                       |           | 1.085    | $1.531 \times 10^2$                |           |            |
| 210. MeV | $2.974 \times 10^2$ | 1.085                       | 0.000   |                                       |           | 1.085    | <i>Minimum ionization</i>          |           |            |
| 300. MeV | $3.917 \times 10^2$ | 1.099                       | 0.000   |                                       | 0.000     | 1.099    | $2.449 \times 10^2$                |           |            |
| 400. MeV | $4.945 \times 10^2$ | 1.126                       | 0.000   |                                       | 0.000     | 1.127    | $3.347 \times 10^2$                |           |            |
| 800. MeV | $8.995 \times 10^2$ | 1.223                       | 0.001   |                                       | 0.000     | 1.225    | $6.742 \times 10^2$                |           |            |
| 1.00 GeV | $1.101 \times 10^3$ | 1.259                       | 0.002   |                                       | 0.000     | 1.261    | $8.351 \times 10^2$                |           |            |
| 1.40 GeV | $1.502 \times 10^3$ | 1.314                       | 0.003   |                                       | 0.000     | 1.318    | $1.145 \times 10^3$                |           |            |
| 2.00 GeV | $2.103 \times 10^3$ | 1.372                       | 0.005   | 0.000                                 | 0.001     | 1.379    | $1.590 \times 10^3$                |           |            |
| 3.00 GeV | $3.104 \times 10^3$ | 1.436                       | 0.009   | 0.003                                 | 0.001     | 1.450    | $2.296 \times 10^3$                |           |            |
| 4.00 GeV | $4.104 \times 10^3$ | 1.480                       | 0.013   | 0.007                                 | 0.001     | 1.501    | $2.973 \times 10^3$                |           |            |
| 8.00 GeV | $8.105 \times 10^3$ | 1.575                       | 0.032   | 0.025                                 | 0.003     | 1.636    | $5.515 \times 10^3$                |           |            |
| 10.0 GeV | $1.011 \times 10^4$ | 1.603                       | 0.043   | 0.036                                 | 0.004     | 1.687    | $6.718 \times 10^3$                |           |            |
| 14.0 GeV | $1.411 \times 10^4$ | 1.643                       | 0.065   | 0.060                                 | 0.005     | 1.775    | $9.029 \times 10^3$                |           |            |
| 20.0 GeV | $2.011 \times 10^4$ | 1.682                       | 0.102   | 0.099                                 | 0.007     | 1.892    | $1.230 \times 10^4$                |           |            |
| 30.0 GeV | $3.011 \times 10^4$ | 1.723                       | 0.167   | 0.177                                 | 0.011     | 2.079    | $1.734 \times 10^4$                |           |            |
| 40.0 GeV | $4.011 \times 10^4$ | 1.750                       | 0.236   | 0.263                                 | 0.014     | 2.265    | $2.195 \times 10^4$                |           |            |
| 80.0 GeV | $8.011 \times 10^4$ | 1.810                       | 0.534   | 0.644                                 | 0.027     | 3.017    | $3.721 \times 10^4$                |           |            |
| 100. GeV | $1.001 \times 10^5$ | 1.829                       | 0.692   | 0.850                                 | 0.034     | 3.406    | $4.344 \times 10^4$                |           |            |
| 114. GeV | $1.143 \times 10^5$ | 1.840                       | 0.805   | 0.997                                 | 0.038     | 3.681    | <i>Muon critical energy</i>        |           |            |
| 140. GeV | $1.401 \times 10^5$ | 1.856                       | 1.015   | 1.273                                 | 0.047     | 4.194    | $5.402 \times 10^4$                |           |            |
| 200. GeV | $2.001 \times 10^5$ | 1.885                       | 1.521   | 1.946                                 | 0.067     | 5.421    | $6.658 \times 10^4$                |           |            |
| 300. GeV | $3.001 \times 10^5$ | 1.917                       | 2.384   | 3.068                                 | 0.100     | 7.471    | $8.224 \times 10^4$                |           |            |
| 400. GeV | $4.001 \times 10^5$ | 1.940                       | 3.275   | 4.231                                 | 0.133     | 9.582    | $9.403 \times 10^4$                |           |            |
| 800. GeV | $8.001 \times 10^5$ | 1.996                       | 6.948   | 9.001                                 | 0.270     | 18.217   | $1.238 \times 10^5$                |           |            |
| 1.00 TeV | $1.000 \times 10^6$ | 2.015                       | 8.833   | 11.441                                | 0.339     | 22.630   | $1.337 \times 10^5$                |           |            |
| 1.40 TeV | $1.400 \times 10^6$ | 2.042                       | 12.606  | 16.306                                | 0.480     | 31.437   | $1.486 \times 10^5$                |           |            |
| 2.00 TeV | $2.000 \times 10^6$ | 2.072                       | 18.373  | 23.730                                | 0.694     | 44.871   | $1.645 \times 10^5$                |           |            |
| 3.00 TeV | $3.000 \times 10^6$ | 2.106                       | 27.992  | 36.064                                | 1.060     | 67.225   | $1.826 \times 10^5$                |           |            |
| 4.00 TeV | $4.000 \times 10^6$ | 2.131                       | 37.732  | 48.529                                | 1.432     | 89.826   | $1.954 \times 10^5$                |           |            |
| 8.00 TeV | $8.000 \times 10^6$ | 2.192                       | 76.965  | 98.626                                | 2.973     | 180.757  | $2.262 \times 10^5$                |           |            |
| 10.0 TeV | $1.000 \times 10^7$ | 2.211                       | 96.721  | 123.804                               | 3.763     | 226.502  | $2.360 \times 10^5$                |           |            |
| 14.0 TeV | $1.400 \times 10^7$ | 2.242                       | 136.124 | 174.045                               | 5.384     | 317.798  | $2.509 \times 10^5$                |           |            |
| 20.0 TeV | $2.000 \times 10^7$ | 2.275                       | 195.546 | 249.726                               | 7.866     | 455.415  | $2.666 \times 10^5$                |           |            |
| 30.0 TeV | $3.000 \times 10^7$ | 2.313                       | 294.566 | 375.625                               | 12.152    | 684.657  | $2.844 \times 10^5$                |           |            |
| 40.0 TeV | $4.000 \times 10^7$ | 2.340                       | 393.933 | 501.812                               | 16.537    | 914.625  | $2.969 \times 10^5$                |           |            |
| 80.0 TeV | $8.000 \times 10^7$ | 2.407                       | 791.367 | 1006.902                              | 34.829    | 1835.507 | $3.272 \times 10^5$                |           |            |
| 100. TeV | $1.000 \times 10^8$ | 2.429                       | 990.200 | 1259.670                              | 44.270    | 2296.572 | $3.369 \times 10^5$                |           |            |