

## **<sup>223</sup>Pa**

In the 1970 article “Production and decay properties of protactinium isotopes of mass 222 to 225 formed in heavy-ion reactions,” Borggreen et al. identified <sup>223</sup>Pa ([1970Bo13](#)). The Berkeley heavy-ion linear accelerator (HILAC) was used to bombard <sup>209</sup>Bi, <sup>208</sup>Pb and <sup>205</sup>Tl targets with <sup>16</sup>O, <sup>19</sup>F and <sup>22</sup>Ne beams forming <sup>223</sup>Pa in (xn) fusion-evaporation reactions. Recoil products were deposited by a helium gas stream on a metal surface located in front of a gold surface-barrier detector which recorded the subsequent  $\alpha$  decay. “From the combined results a value of  $6.5\pm 1.0$  msec was determined for the <sup>223</sup>Pa half-life.”

Adapted from reference ([2013Fr03](#))

[1970Bo13](#) J. Borggreen, K. Valli, and E. K. Hyde, Phys. Rev. C **2**, 1841 (1970).

[2013Fr03](#) C. Fry and M. Thoennessen, At. Data Nucl. Data Tables **99**, 345 (2013).

Please cite this abstract as: “FRIB Nuclear Data Group, *Discovery of Nuclides Project*, Isotope Database, doi:[10.11578/frib/2279152](https://doi.org/10.11578/frib/2279152)”