ABSTRACT OF THE DISCLOSURE

Disclosed herein are a particle production method whereby spherical fine particles of a crystalline calcium phosphate-based compound can be efficiently produced at low cost, fine particles (especially, spherical particles) with good flowability produced by the particle production method, and a high-quality sintered body obtained by sintering a molded body of the particles. The particle production method comprises a first step of mixing a first substance containing phosphorus and a second substance containing calcium so that the phosphorus and the calcium are present in a predetermined mole ratio and feeding, into a heated atmosphere, droplets of a slurry containing an amorphous reaction product, obtained by the reaction between the first substance and the second substance, to bring the reaction product into a gaseous state; and a second step of crystallizing the reaction product in the gaseous state to obtain particles mainly composed of a calcium phosphate-based compound containing phosphorus and calcium in the predetermined mole ratio. The heated atmosphere preferably contains plasma produced by ionization of an ambient gas.