ABSTRACT

Disclosed are a silicon powder composition, method, reactor and device for producing hydrogen. Said silicon powder composition comprises a silicon powder, a precipitation agent and an alkaline substance; wherein the alkaline substance is a weak acid salt of alkali metal; the mass ratio of the alkaline substance to the silicon powder is greater than or equal to 0.06:1 and less than or equal to 4:1; the silicon powder is a silicon powder with an average particle diameter of less than or equal to 1 mm; the molar stoichiometric ratio of the precipitation agent to the silicon in the silicon powder is greater than or equal to 0.12:1 and less than or equal to 4:1. Also disclosed are a method and reactor for producing hydrogen, and a reaction device for producing hydrogen. The silicon powder composition of the present invention is an optimized formulation which needs no pre-treatment, contains no highly corrosive alkalis, and does not easily burn or explode even when contacting water due to inappropriate storage. The reactor structure and the device of the present invention also have relatively high practicability.