

ABSTRACT

Disclosed is a method for the preparation of hydrogen suitable for civil applications, in which metal aluminum is mainly used for producing hydrogen. Water is added into a collection of reactants formed by placing an alkaline substance and metal aluminum together. The portion of said alkaline substance or its reaction product with water, wherein participates in the mass-transferring contact with said metal aluminum, has an effective molar ratio of less than 0.8 with respect to said metal aluminum. The water is added slowly into the collection of reactants; during the reaction, residual reactive but as yet unreacted water has a molar ratio of less than 1 but greater than 0 with respect to the metal aluminum added initially. Also disclosed is a device for the preparation of hydrogen, and a composition. The present invention has positive improvements in overcoming the problems of high costs or toxicity in existing hydrogen production technology of high energy density, and thus is suitable for civil applications.