

Material Technology



Catalyst Composition, Catalyst And Method For Manufacturing The Same And Method For Hydrogen Production

Abstract

This technology is a catalyst composition, which uses cement-clay as a supporter for catalysts in methanol steam reforming (MSR) to help reduce the number of metal catalysts needed in the hydrogen-producing process. The catalyst composition includes a carrier component and an active component, and the carrier component includes cement and clay. Wherein the catalyzer has the advantage of low cost, and has excellent long-term performance and its performance can be comparable with commercially available catalyzer

Benefits

The catalyst for thermochemically generating hydrogen includes a carrier and an active component with catalytic ability, wherein the main component of the carrier is usually alumina and/ or zirconia. When preparing these catalysts, alumina and/ or zirconia are subjected to a high-temperature treatment before the active ingredients are attached to them, followed by another high-temperature treatment. In other words, when preparing these catalysts, a second high-temperature treatment step is required, which consumes more energy. In addition, the cost of alumina and zirconia is relatively high, resulting in the high cost of these catalysts. The cost of producing hydrogen remains high.

The catalyst composition of this technology uses cement and clay as carrier components, which can reduce the cost of raw materials and stabilize the active component, which is beneficial to long-lasting catalytic activity. This preparation method of the catalyst wherein cement, and clay form the prepared carrier precursor does not need to be subjected to high-temperature treatment before carrying the active ingredient step, compared with the catalyst with alumina and/ or zirconia as the main component of the carrier, the preparation method of the catalyst of this invention can reduce one high-temperature treatment step, which is beneficial to reduce energy costs.

Industry Categories

Blast furnace steelworks, petrochemical plants, incineration plants, etc.

Keywords

Hydrogen production; methanol steam reforming (MSR); nickel- copper catalyst; cement; clay

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