

## Abstract

The present invention discloses an alumina support having multiple pore structure, wherein the alumina support has a specific surface area of from 40 to 160 m<sup>2</sup>/g and a total pore volume of from 0.3 to 1.2 cm<sup>3</sup>/g; a pore volume of pores having a pore diameter of less than 30nm comprises 5 to 60 % of the total pore volume; a pore volume of pores having a pore diameter of from 30 to 60 nm comprises 20 to 75 % of the total pore volume; and a pore volume of pores having a pore diameter of larger than 60nm comprises 20 to 60 % of the total pore volume. The present invention further discloses a catalyst used for selective hydrogenation of a pyrolysis gasoline, comprising: (a) the alumina support according to the invention; and (b) 0.01 to 1.2 wt.% of metal palladium or palladium oxides, based on the weight of the alumina support.