

**Abstract****POLYSTYRENE SULFONIC ACID RESIN CATALYST,  
PREPARATION METHOD THEREFOR AND USE THEREOF**

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A polystyrene sulfonic acid resin catalyst and a preparation method therefor. The catalyst is separately used for performing dehydration of tertiary butyl alcohol (TBA) and isobutylene oligomerization to cogenerate isobutylene and diisobutylene (DIB). The catalyst comprises a polystyrene sulfonic acid resin, a metal, and a metal sulfate. The metal contains two parts: metal  
10 coated with the polystyrene sulfonic acid resin, and metal not coated with the polystyrene sulfonic acid resin. The metal sulfate is formed by converting the exposed surface of the metal not coated with the polystyrene sulfonic acid resin in the catalyst. When the catalyst is separately used in the dehydration of TBA and the isobutylene oligomerization, due to the high thermal conductivity of the catalyst, the two reactions are coupled, thus supplementing energy required by  
15 the dehydration of TBA and greatly reducing the hot-spot temperature of the bed layer of the isobutylene oligomerization. In the reaction, the conversion rate per pass of the dehydration of TBA may be 40% or more, and the selectivity of isobutylene is 99% or more. Moreover, there is no need to add inhibitor when the isobutylene oligomerization is catalyzed, because even if isobutylene with a concentration greater than 80 wt% is used as a raw material, the selectivity of  
20 DIB is still 80% or more, and the conversion rate per pass is 90% or more.