CLAIMS

1. An adsorbent composition for removing polar compounds from C_2-C_4 olefins, characterized in that the adsorbent composition comprises molecular sieves, hydrated alumina and alumina,

wherein the adsorbent composition comprises, by weight: a) 10-50 parts, preferably 20-40 parts of the molecular sieves; b) 20-55 parts, preferably 30-45 parts of the hydrated alumina, calculated as alumina; c) 5-35 parts, preferably 8-30 parts of the alumina, and

wherein the adsorbent composition has a total amount of strong acids of less than 0.05mmol/g, preferably 0.01-0.04mmol/g; wherein acidity of the adsorbent composition refers to the amount of active sites in the adsorbent composition used to adsorb alkaline polar compounds, wherein the active sites correspond to NH_3 desorption peaks in the NH_3-TPD curve thereof, and wherein the active sites corresponding to a temperature of less than 300 ℃ in the NH_3-TPD curve are regarded as weak acids, and the active sites corresponding to a temperature of greater than 300 ℃ are regarded as strong acids; wherein acidity of the adsorbent composition is measured via the NH_3-TPD curve thereof by: obtaining the area of desorption peak of the corresponding strong acids or weak acids by fitting the desorption curve in the obtained NH_3-TPD profile, calculating the ratio of weak acid or strong acid to total acids, obtaining the total amount of acids by weighting via a microbalance, and calculating the total amount of strong acids or weak acids based on the total amount of acids and the above ratios.

2. The adsorbent composition of claim 1, characterized in that the XRD pattern of the adsorbent composition involves diffraction peaks at 2θ of 6.03°, 13.47°, 15.32°, 28.01°, 37.96° and 49.28°, preferably involves diffraction peaks at 2θ of 6.03°, 13.47°, 15.32°, 28.01°, 23.16°, 37.96°, 46.34°, 49.28° and 66.8°, more preferably involves diffraction peaks at 2θ as outlined in the following table:

2θ
6.03
9.87
11.6
13.47
15.32
19.9
23.16
26.5
28.01
30.8
31.8
33.4
37.96
46.34
49.28
64.7
66.8

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3. The adsorbent composition of claim 1, characterized in that the hydrated alumina comprises one or more of pseudo-boehmite, boehmite, gibbsite and bayerite, preferably is pseudo-boehmite, or

the hydrated alumina has a specific surface area of 300-400m^2/g, and a pore volume of 0.3-0.4 cm^3/g.

4. The adsorbent composition of claim 1, characterized in that the alumina has a specific surface area of 200-300m^2/g, and a pore volume of 0.5-0.8cm^3/g.

5. The adsorbent composition of claim 1, characterized in that the molecule sieves are one or two selected from the group consisting of

X-type molecular sieves and Y-type molecular sieves, preferably one or two selected from the group consisting of 13X and NaY.

6. A method for preparing the adsorbent composition of any one of claims 1-5, characterized in that the method comprises the steps of:

subjecting molecular sieves, hydrated alumina and alumina to mixing, shaping, drying and calcining to obtain the adsorbent composition, wherein the calcining is operated at a temperature of lower than 400 ℃.

7. The method of claim 6, characterized in that the hydrated alumina is pseudo-boehmite, preferably, the pseudo-boehmite prepared by coprecipitation reaction of an aqueous solution of water-soluble metaaluminates and a nitric acid solution, wherein the water-soluble metaaluminates are one or two of sodium metaaluminate and potassium metaaluminate, and the reaction is operated at pH=6-8.

8. The method of claim 6, characterized in that the calcining is operated at a temperature of 200-400 ℃, preferably 250-350 ℃ for 2-10 hours, preferably 3-8 hours.

9. A use of the adsorbent composition of any one of claims 1-5 or the adsorbent composition prepared by the method of any one of claims 6-8 in removing polar compounds from C_2-C_4 olefins.