Summary

[0025a] In one aspect of the present disclosure, there is provided a zeolitic adsorbent, in the form of an agglomerate, comprising at least one FAU zeolite and comprising barium and/or potassium, characterized in that the external surface area of said zeolitic adsorbent, measured by nitrogen adsorption, is greater than 20 $m^2.g^{-1}$.

[0025b] In another aspect of the present disclosure, there is provided a process for preparing an adsorbent as described herein, comprising at least the steps of:

a) agglomeration of crystalline elements of at least one FAU type zeolite, having an external surface area greater than 40 $m^2.g^{-1}$, with number-average diameter between 0.1 µm and 20 µm inclusive, with a binder comprising at least 80% of clay or of a mixture of clays, optionally zeolitizable, and with up to 5% of additives as well as with the amount of water that allows forming of the agglomerated material; drying of the agglomerates at a temperature between 50°C and 150°C; calcination of the dried agglomerates while flushing with oxidizing and/or inert gas, at a temperature above 150°C, for some hours;

b) optionally zeolitization of some or all of the binder by bringing the agglomerates obtained in step a) into contact with an alkaline basic solution;

c) cationic exchange(s) of the agglomerates from step a) and/or from step b) by bringing into contact with a solution of barium ions and/or of potassium ions;

d) additional optional cationic exchange of the agglomerates from step c) by bringing into contact with a solution of potassium ions;

e) washing and drying the agglomerates obtained in steps c) or d), at a temperature between 50°C and 150°C; and

f) obtaining the zeolitic adsorbent according to the invention by activation of the agglomerates obtained in step e) while flushing with oxidizing and/or inert gas, at a temperature between 100°C and 400°C, for a time determined as a function of the desired water content and loss on ignition.

CLAIMS

1. Zeolitic adsorbent, in the form of an agglomerate, comprising at least one FAU zeolite and comprising barium and/or potassium, characterized in that the external surface area of said zeolitic adsorbent, measured by nitrogen adsorption, is greater than 20 $m^2.g^{-1}$.

2. Zeolitic adsorbent according to Claim 1, wherein the content of barium oxide (BaO) is above 10% by weight relative to the total weight of the adsorbent.

3. Zeolitic adsorbent according to Claim 1 or Claim 2, wherein the content of potassium oxide K_2O is below 25% by weight relative to the total weight of the adsorbent.

4. Adsorbent according to any one of Claims 1 to 3, wherein said FAU zeolite has an Si/Al atomic ratio between 1.00 and 1.50 inclusive.

5. Adsorbent according to any one of the preceding claims, wherein no zeolitic structure other than the faujasite structure is detected by X-ray diffraction.

6. Adsorbent according to any one of the preceding claims, wherein the fraction by weight of FAU zeolite is greater than or equal to 80% relative to the total weight of adsorbent.

7. Adsorbent according to any one of the preceding claims, whose loss on ignition measured at 900°C according to standard NF EN 196-2 is less than or equal to 7.7%.