Description

The present invention relates to the preparation of a shapable dough comprising a silica source and a crystalline aluminosilicate source, to a process for preparing crystalline aluminosilicate extrudates, to extrudates containing crystalline aluminosilicates, to the preparation of calcined extrudates containing crystalline aluminosilicates and to the use of such extrudates as catalyst carriers or as catalysts.

It is well known in the art that aluminosilicate zeolites can be composited with a matrix or a binder material in order to impart strength thereto. Alumina is a well-known and cheap binder material and is often used in commercially developed zeolite systems. It appears, as acknowledged in EP-A-0167324, that it is much more difficult to use silica as binder for aluminosilicate zeolites if one is to take advantage of the inherent properties of silica as a catalyst (co)carrier beyond the techniques of filling or pelletising.

In said European patent specification it is described that both silica and mixtures of silica and aluminosilicate zeolites can be extruded when using an alkali metal compound such as sodium hydroxide or sodium carbonate in a total solids content of from 25% to 75% by weight, the alkali compound being added in an amount of from 0.25 to 10% by weight on a dry basis, based on total solids content of the mixture. The crush strength of materials thus extruded appears to have increased substantially.

The choice of an alkali compound as extrusion aid is rather specific in that it is stated emphatically in said European patent specification that ammonium hydroxide is not effective but that more basic quaternary ammonium hydroxides can be used although they are not preferred because of a tendency to produce thixotropic masses which are difficult to extrude as well as the fact that they are relatively expensive.

It appears, however, that the use of an alkali compound as extrusion aid for aluminosilicate zeolite containing systems has a severe drawback in that it substantially damages the crystallinity of crystalline aluminosilicate zeolites having a relatively high silica-alumina molar ratio. This holds both for crystalline aluminosilicate zeolites prepared as such or which have been subjected to one or more dealumination procedures known to those skilled in the art.

It has now surprisingly been found that a certain class of alkanolamines can be suitably applied to produce extrudates containing silica and dealuminated aluminosilicate zeolites wherein the aluminosilicate zeolites have retained no less than 90% of their initial crystallinity which renders such extrudates particularly attractive for the production of various types of, inter alia, hydroprocessing catalysts.

The present invention thus relates to a process for preparing a shapable dough which comprises mixing and kneading a silica source, a dealuminated aluminosilicate zeolite source, water and a trialkanolamine containing at least two carbon atoms per alkanolamine moiety.

The invention further relates to a process for the preparation of extrudates containing silica and a dealuminated aluminosilicate zeolite which comprises mixing and kneading a silica source, a dealuminated aluminosilicate zeolite source as defined hereinafter, water and a trialkanolamine containing at least two carbon atoms per alkanolamine moiety and extruding the mixture. The extrudates thus produced have retained at least 90% of their initial crystallinity and moreover, the extrusion process can be carried out very smoothly.

The invention further relates to a process for preparing calcined extrudates containing silica and a dealuminated aluminosilicate zeolite which comprises extruding a shapable dough into extrudates containing silica and a dealuminated aluminosilicate zeolite and calcining the extrudates obtained to a final temperature of between 300 °C and 1000 °C, and to calcined extrudates thus obtained.

The trialkanolamines to be used in the preparation of the shapable dough and the extrudates formed therefrom have at least two carbon atoms in the respective alkanolamine moieties. Preference is given to the use of trialkanolamines containing up to five carbon atoms in the respective alkanolamine moieties. It is advantageous to use trialkanolamines having the same number of carbon atoms in alkanolamine moiety; in particular the use of triethanolamine is preferred.

It has been found that the use of monoethanolamine, which is the preferred extrusion aid for the preparation of silica-alumina extrudates as described in EP-A-313163, is not suitable at all in the extrusion of shapable doughs comprising such compound together with silica and a dealuminated aluminosilicate zeolite since nearly half of the initial crystallinity of the dealuminated aluminosilicate zeolite is destroyed.

The trialkanolamines to be used in the process according to the present invention are suitably present in the shapable dough in an amount of from 0.5 to 40% by weight calculated on the total solids content of the mixture. Preferably, the trialkanolamines are present in amounts between 1 and 35% by weight, in particular between 1 and 10% by weight, calculated on the total solids content of the mixture. It should be noted that compounds capable of releasing a trialkanolamine (as defined hereinbefore) during the preparation of the dough and/or the subsequent extrusion are also contemplated within the scope of the present invention.

The total solids content of the mixture comprising a silica source, a dealuminated aluminosilicate zeolite, water and a trialkanolamine as defined hereinbefore is suitably between 25 and 75% by weight, preferably be-

tween 25 and 65% by weight, more preferably between 30 and 65% by weight, in order to obtain a smoothly extrudable mixture.

Dealuminated aluminosilicate zeolites which will be transferred into extrudates using the process according to the present invention are defined for the purpose of this invention as aluminosilicate zeolites having an average pore diameter of at least 0.7nm (7 Å) and a silica-alumina molar ratio of at least 18.5. Preferably, the dealuminated aluminosilicate zeolites have an average pore diameter of at least 0.8nm (8 Å) and a silica-alumina molar ratio of at least 20. Dealuminated forms of zeolite Y are of particular interest since they find application in many (hydro)conversion processes.

As already referred to hereinabove aluminosilicates which have been prepared with higher than normal silica-alumina ratios can also be suitably applied in the process according to the present invention. Examples of dealumination techniques comprise inter alia the use of acid extraction, the use of silicon halides or other suitable chemical treating agents, chelates as well as the use of chlorine or chlorine-containing gases at high temperatures. Good results have been obtained using materials which have been subjected to one or more acid-leaching procedures, but other techniques can be applied as well.

The source of silica to be used in the preparation of extrudates in accordance with the present invention is not critical and any suitable source of silica can be used. Examples of suitable, commercially available silicas comprise Ludox AS40 (Du Pont) and Hi-Sil 233 (PPG Industries).

To improve the flux properties in the extruder the mixture may also comprise a polyelectrolyte, such as Nalco 7879 (obtainable from Nalco). The mixture (with or without polyelectrolyte) can readily be extruded e.g. over the metal die-plate of a Bonnot-extruder. Cylindrical extrudates can suitably be prepared, but other shapes can be prepared as well, such as trilobes and quadrulobes. Reference is made in this respect to US patent specification 4,028,227.

It is possible to admix prior to extrusion small amounts of one or more inorganic oxides to the composition to be extruded. The incorporation of such inorganic oxides is particularly useful when such oxides impart (additional) catalytic activity to the system containing such oxides.

The extrudates according to the present invention can be suitably applied as catalyst carriers or as catalysts. When applied as catalysts the catalytic activity is primarily secured by the presence of one or more metals and/or metal compounds from Group VI and/or Group VIII of the Periodic Table of the Elements. The choice of the metal(s) and/or metal compounds depends primarily on the envisaged duty of the catalysts and are known to those skilled in the art.

Suitably, the extrudates according to the present invention can be used as catalysts or catalyst carriers in (hydro)conversion processes such as hydrogenation, dehydrogenation, hydrocracking, isomerisation, polymerisation, reforming and catalytic cracking, in particular in hydrogenation or hydrocracking processes.

When the extrudates according to the present invention are to be used in hydrogenation processes they suitably contain at least one metal or metal compound of Group VIII, suitably nickel, cobalt, ruthenium, rhodium, palladium, osmium, iridium and platinum. Particularly preferred are platinum and palladium, preferably when used together. The amount of Group VIII metal(s) or metal compounds suitably ranges between 0.05 and 10% by weight, calculated as metal on dealuminated aluminosilicate zeolite and silica. Preferred amounts are between 0.2 and 5 % by weight, calculated as metal on dealuminated aluminosilicate zeolite and silica. When two noble metals are applied, the amount of the two metals normally ranges between 0.5 and 3% by weight, calculated as metal on dealuminated aluminosilicate zeolite and silica. When platinum and palladium are used as the noble metals normally a platinum/palladium molar ratio of 0.25-0.75 is applied.

When the extrudates according to the present invention are to be used in hydrocracking duty they suitably contain at least one metal or metal compound from Group VI of the Periodic Table of the Elements and/or at least one metal or metal compound of Group VIII of the Periodic Table of the Elements. Preference is given to the use of molybdenum and tungsten as Group VI metals and of nickel and cobalt as Group VIII metals. Preferred metal combinations comprise nickel and molybdenum and/or tungsten as well as cobalt and molybdenum and/or tungsten. The amount of Group VI and/or Group VIII metal(s) suitably ranges between 1 and 25% by weight, calculated as metal on dealuminated aluminosilicate zeolite and silica. Preferred amounts are between 1 and 15% by weight for Group VI metals and between 5 and 25% by weight of Group VIII metals, calculated as metal on dealuminated aluminosilicate zeolite and silica.

The metal(s) (compound)(s)) to be present in the catalysts based on extrudates produced in accordance with the present invention can be suitably incorporated into the extrudates by methods known in the art such as impregnation or ion-exchange techniques. Both wet and dry impregnation techniques can be suitably applied. Normally, the loaded extrudates will be subjected to a drying treatment to remove solvent still present. Suitable drying temperatures range from ambient temperature to about 200 °C, preferably between 50 °C and 125 °C, for a period between 1 and 24 hours. If desired, the loaded extrudates may be subjected to a calcining treatment which is suitably carried out at a temperature range between 300 °C and 1000 °C, preferably between

400 °C and 850 °C.

The reaction conditions of the various (hydro)conversion processes are known to those skilled in the art. When the loaded extrudates are to be used in hydrogenation processes such processes are suitably carried out at a temperature between 150 °C and 450 °C, in particular between 250 °C and 400 °C, and preferably between 225 °C and 300 °C and at a pressure between 20 and 150 bar, in particular between 30 and 100 bar, preferably between 40 and 90 bar. Space velocities between 0.05 and 10 kg/l/h can be suitably applied, preference being given to space velocities between 0.1 and 5 kg/l/h. Hydrogen/feedstock ratios (Nl/kg) between 200 and 2000 can be suitably applied, preferably between 400 and 1500.

Normally, a hydrogenation process using a catalyst based on an extrudate according to the present invention will be carried out under conditions which allow substantial hydrogenation of the feedstock, say at least 70% of the total amount of components capable of being hydrogenated. It is preferred to carry out the hydrogenation process under conditions which allow at least 80% conversion by hydrogenation of the hydrogenatable components. By a proper choice of temperature and pressure more than 90% of the hydrogenatable components can be hydrogenated.

The extrudates according to the present invention can be suitably used to hydrogenate kerosene and/or cycle oils. Kerosenes which can be advantageously applied comprise straight run kerosenes having a boiling range between 130 °C and 275 °C as well as hydrotreated kerosenes. Also so-called cycle oils, normally obtained from catalytic cracking operations can be suitably applied as feedstocks. Light cycle oils, medium cycle oils as well as heavy cycle oils can be processed advantageously. It is also possible to hydrogenate process streams obtainable from hydrocracking operations. Both distillate fractions and bottom streams can be suitably hydrogenated.

Depending on the sulphur and nitrogen levels of the feedstock(s) and the (hydro)conversion process contemplated it may be advantageous to subject the feedstocks to one or more pre-treatments to reduce the levels of sulphur and nitrogen accordingly. In the case of hydrogenation being the process envisaged it has been found that feedstocks containing up to 1000 parts per million by weight of sulphur and up to 200 parts per million by weight of nitrogen can be processed adequately. The pre-treatment which can be applied is suitably a conventional hydrotreatment. Such treatments are normally carried out at a temperature between 200 °C and 375 °C and at a pressure between 40 and 100 bar using a catalyst containing Group VI and/or Group VIII metal compounds on an amorphous carrier such as alumina, silica or silica-alumina.

As hydrogen source use can be made of pure hydrogen or of hydrogen-containing mixtures, for instance the gases produced in catalytic reforming processes.

The invention will now be illustrated by means of the following Examples.

EXAMPLE I

A mixture was prepared having the following composition :

dealuminated zeolite Y (silica-alumina ratio 35.9)	75	g
Ludox AS40, comprising 39.4 %wt of solid silica	104.7	g
triethanolamine	10	g
liquid flocculating agent (ex Nalco)	2	g

The mixture was prepared by mixing the dealuminated zeolite Y with the mixture of Ludox and triethanolamine which had been kneaded for 40 minutes using a peristaltic pump. The flocculating agent was then added to the mixture which was then kneaded for another 15 minutes. The total kneaded mixture was extruded without any difficulty. The extrudates obtained (1.6 mm) were dried at 115 °C for a period of 3 hours and then calcined at 500 °C for a period of 2 hours.

It was found that mass loss did not occur and that the crystallinity of the dealuminated zeolite Y present in the extrudates amounted to 97% of the crystallinity of the dealuminated zeolite Y prior to extrusion according to the present invention.

COMPARATIVE EXAMPLE A

The process as described in Example I was repeated but using monoethanolamine as extrusion agent. Although again no mass loss was observed it appeared that the crystallinity of the dealuminated zeolite present in the extrudates amounted to only 57% of the crystallinity of the dealuminated zeolite Y prior to extrusion.

COMPARATIVE EXAMPLE B

The process as described in the previous Example was repeated but using tetrabutyl ammonium hydroxide as extrusion agent. A mass loss of no less than 50% by weight was observed and the crystallinity of the dealuminated zeolite present in the extrudates amounted to only 28% of the crystallinity of the dealuminated zeolite prior to extrusion.

EXAMPLE II

Extrudates containing 60% by weight of a dealuminated zeolite Y (silica-alumina ratio 35.9) and 40% by weight of silica were prepared by kneading the appropriate amounts of dealuminated zeolite Y, trialkanolamine and Ludox AS40 in the presence of Nalco 7879 (1% by weight) and extruding the resulting paste in a Hoake Rheocard extruder. The extrudates were dried at 115 °C for a period of 3 hours and subjected to calcination at 800 °C for 2 hours.

The extrudates thus obtained were impregnated with a solution of H_2PtCl_6 (to provide 0.3% by weight of Pt) and of H_2PdCl_4 (to provide 0.5% by weight of Pd) using the incipient wetness technique. The impregnated catalysts were calcined at a temperature of 300 °C for a period of 2 hours. The bulk crushing strength of the ready catalyst was 1.40 M Pa which is more than sufficient from a performance point of view.

The catalysts were tested in the hydrogenation of a hydrotreated cycle oil containing 273 mmoles monoaromatics/100 grammes feed and containing also 112 parts per million of sulphur and 76 parts per million of nitrogen. Prior to use the catalyst had been reduced at a temperature of 400 °C for a period of 16 hours.

The hydrogenation was carried out using full extrudates diluted with silicon carbide particles (1:4) at a hydrogen partial pressure of 48.9 bar and at a weighted hourly space velocity of 2 kg/l.cat/h. After 93 hours of operation at a temperature of 288 °C followed by 24 hours at 299 °C the monoaromatics level amounted to 31.7 mmoles monoaromatics/100 grammes feed which constitutes a reduction of 88.5%. The sulphur level had been reduced to 14 parts per million by weight.

Claims

1. Process for preparing a shapable dough which comprises mixing and kneading a silica source, a dealuminated aluminosilicate source, water and a trialkanolamine containing at least two carbon atoms per alkanolamine moiety.

2. Process according to claim 1 wherein a mixture is used having a total solids content of from 25 to 75% by weight, the trialkanolamine being present in an amount of from 0.5 to 40% by weight on the total solids content of the mixture.

3. Process according to claim 2 wherein the trialkanolamine is present in an amount between 1 and 35% by weight, preferably between 1 and 10% by weight on the total solids content of the mixture.

4. Process according to one or more of the preceding claims wherein use is made of a trialkanolamine having the same number of carbon atoms in each alkanolamine moiety, in particular of triethanolamine.

5. Process according to one or more of the preceding claims wherein use is made of a dealuminated aluminosilicate zeolite having an average pore diameter of at least 0.7nm (7 Å) and a silica-alumina molar ratio of at least 18.5.

6. A shapable dough whenever produced in accordance with one or more of the preceding claims.

7. Process for preparing crystalline aluminosilicate extrudates from a shapable dough which comprises mixing and kneading a silica source, a dealuminated aluminosilicate zeolite source, water and a trialkanolamine containing at least two carbon atoms per alkanolamine group to obtain a mixture having a total solids content of from 25 to 75% by weight, the trialkanolamine being present in an amount of from 0.5 to 40% by weight on the total solids content of the mixture and extruding the mixture.

8. Process according to claim 7 wherein a shapable dough is used containing of from 25 to 65% by weight of total solids, between 1 and 35% by weight on total solids content of the mixture of a trialkanolamine, preferably a trialkanolamine having the same number of carbon atoms in each trialkanolamine moiety.

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COMPARATIVE EXAMPLE B

The process as described in the previous Example was repeated but using tetrabutyl ammonium hydroxide as extrusion agent. A mass loss of no less than 50% by weight was observed and the crystallinity of the dealuminated zeolite present in the extrudates amounted to only 28% of the crystallinity of the dealuminated zeolite prior to extrusion.

EXAMPLE II

Extrudates containing 60% by weight of a dealuminated zeolite Y (silica-alumina ratio 35.9) and 40% by weight of silica were prepared by kneading the appropriate amounts of dealuminated zeolite Y, trialkanolamine and Ludox AS40 in the presence of Nalco 7879 (1% by weight) and extruding the resulting paste in a Hoake Rheocard extruder. The extrudates were dried at 115 °C for a period of 3 hours and subjected to calcination at 800 °C for 2 hours.

The extrudates thus obtained were impregnated with a solution of H_2PtCl_6 (to provide 0.3% by weight of Pt) and of H_2PdCl_4 (to provide 0.5% by weight of Pd) using the incipient wetness technique. The impregnated catalysts were calcined at a temperature of 300 °C for a period of 2 hours. The bulk crushing strength of the ready catalyst was 1.40 M Pa which is more than sufficient from a performance point of view.

The catalysts were tested in the hydrogenation of a hydrotreated cycle oil containing 273 mmoles monoaromatics/100 grammes feed and containing also 112 parts per million of sulphur and 76 parts per million of nitrogen. Prior to use the catalyst had been reduced at a temperature of 400 °C for a period of 16 hours.

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Claims

1. Process for preparing a shapable dough which comprises mixing and kneading a silica source, a dealuminated aluminosilicate source, water and a trialkanolamine containing at least two carbon atoms per alkanolamine moiety.

2. Process according to claim 1 wherein a mixture is used having a total solids content of from 25 to 75% by weight, the trialkanolamine being present in an amount of from 0.5 to 40% by weight on the total solids content of the mixture.

3. Process according to claim 2 wherein the trialkanolamine is present in an amount between 1 and 35% by weight, preferably between 1 and 10% by weight on the total solids content of the mixture.

4. Process according to one or more of the preceding claims wherein use is made of a trialkanolamine having the same number of carbon atoms in each alkanolamine moiety, in particular of triethanolamine.

5. Process according to one or more of the preceding claims wherein use is made of a dealuminated aluminosilicate zeolite having an average pore diameter of at least 0.7nm (7 Å) and a silica-alumina molar ratio of at least 18.5.

6. A shapable dough whenever produced in accordance with one or more of the preceding claims.

7. Process for preparing crystalline aluminosilicate extrudates from a shapable dough which comprises mixing and kneading a silica source, a dealuminated aluminosilicate zeolite source, water and a trialkanolamine containing at least two carbon atoms per alkanolamine group to obtain a mixture having a total solids content of from 25 to 75% by weight, the trialkanolamine being present in an amount of from 0.5 to 40% by weight on the total solids content of the mixture and extruding the mixture.

8. Process according to claim 7 wherein a shapable dough is used containing of from 25 to 65% by weight of total solids, between 1 and 35% by weight on total solids content of the mixture of a trialkanolamine, preferably a trialkanolamine having the same number of carbon atoms in each trialkanolamine moiety.

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9. Process according to claim 7 and/or 8 wherein the extrudates obtained are dried, preferably at a temperature in the range between 50 °C and 125 °C, for a period between 1 and 24 hours.

10. Extrudates whenever prepared according to a process as claimed in one or more of claims 7 - 9.

11. Use of extrudates according to claim 10, for the catalytic (hydro)conversion of hydrocarbonaceous feedstocks.

12. Process for the catalytic (hydro)conversion of hydrocarbonaceous feedstocks wherein hydrocarbonaceous feedstocks are contacted with hydrogen in the presence of a catalyst based on extrudates according to claim 10 comprising at least a metal of Group VIII, preferably platinum and/or palladium.

13. Process according to claim 12 wherein the hydrogenation is carried out at a temperature between 150 °C and 450 °C, preferably at a temperature between 250 °C and 400 °C and in particular at a temperature between 225 °C and 300 °C.

14. Process according to claim 12 and/or 13 wherein the hydrogenation is carried out using kerosene and/or a cycle oil as feedstock.

Patentansprüche

1. Verfahren zur Herstellung eines formbaren Teigs, umfassend das Vermischen und Durchkneten von einer Siliziumoxidquelle, von einer dealuminierten Aluminosilikatquelle, von Wasser und von einem Trialkanolamin, das mindestens zwei Kohlenstoffatome pro Alkanolaminmolekülteil enthält.

2. Verfahren gemäß Anspruch 1, in dem eine Mischung verwendet wird, die einen Gesamtfeststoffgehalt von 25 bis 75 Gew% aufweist, wobei das Trialkanolamin in einer Menge von 0,5 bis 40 Gew%, bezogen auf den Gesamtfeststoffgehalt des Gemischs, vorliegt.

3. Verfahren gemäß Anspruch 2, in dem das Trialkanolamin in einer Menge zwischen 1 und 35 Gew%, vorzugsweise zwischen 1 und 10 Gew%, bezogen auf den Gesamtfeststoffgehalt des Gemischs, vorliegt.

4. Verfahren gemäß einem oder mehreren der vorhergehenden Ansprüche, in dem ein Trialkanolamin, insbesondere ein Triethanolamin, verwendet wird, das in jedem Alkanolaminmolekülteil die gleiche Anzahl Kohlenstoffatome aufweist.

5. Verfahren gemäß einem oder mehreren der vorhergehenden Ansprüche, in dem ein dealuminierter Aluminosilikat-Zeolith verwendet wird, der einen durchschnittlichen Porendurchmesser von mindestens 0,7 nm (7 Å) und ein molares Siliziumoxid-Aluminiumoxid-Verhältnis von mindestens 18,5 aufweist.

6. Formbarer Teig, der nach einem oder mehreren der vorhergehenden Ansprüche hergestellt wurde.

7. Verfahren zur Herstellung von kristallinen Aluminosilikatextrudaten aus einem formbaren Teig, umfassend das Vermischen und Durchkneten von einer Siliziumoxidquelle, von einer dealuminierten Aluminosilikat-Zeolithquelle, von Wasser und von einem Trialkanolamin, das mindestens zwei Kohlenstoffatome pro Alkanolaminmolekülteil enthält, um ein Gemisch zu erhalten, das einen Gesamtfeststoffgehalt von 25 bis 75 Gew% aufweist, wobei das Trialkanolamin in einer Menge von 0,5 bis 40 Gew%, bezogen auf den Gesamtfeststoffgehalt des Gemischs, vorliegt, und das Extrudieren des Gemischs.

8. Verfahren gemäß Anspruch 7, in dem ein formbarer Teig verwendet wird, enthaltend 25 bis 65 Gew% an Gesamtfeststoffen und zwischen 1 und 35 Gew%, bezogen auf den Gesamtfeststoffgehalt des Gemischs, eines Trialkanolamins, vorzugsweise eines Trialkanolamins, das in jedem Trialkanolaminmolekülteil die gleiche Anzahl an Kohlenstoffatomen aufweist.

9. Verfahren gemäß Anspruch 7 und/oder 8, in dem die erhaltenen Extrudate getrocknet werden, vorzugsweise bei einer Temperatur im Bereich zwischen 50°C und 125°C, während eines Zeitraums zwischen 1 und 24 Stunden.

10. Extrudate, die nach einem Verfahren, wie in einem oder mehreren der Ansprüche 7-9 beansprucht, her-

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gestellt wurden.

11. Verwendung von Extrudaten nach Anspruch 10, zur katalytischen (Hydro)umwandlung von kohlenwasserstoffartigen Einsatzmaterialien.

12. Verfahren zur katalytischen (Hydro)umwandlung von kohlenwasserstoffartigen Einsatzmaterialien, in dem kohlenwasserstoffartige Einsatzmaterialien mit Wasserstoff in Gegenwart eines auf Extrudaten gemäß Anspruch 10 basierenden Katalysators in Berührung gebracht werden, welcher mindestens ein Metall der Gruppe VIII, vorzugsweise Platin und/oder Palladium, umfaßt.

13. Verfahren gemäß Anspruch 12, in dem die Hydrierung bei einer Temperatur zwischen 150°C und 450°C, vorzugsweise bei einer Temperatur zwischen 250°C und 400°C, insbesondere bei einer Temperatur zwischen 225°C und 300°C durchgeführt wird.

14. Verfahren gemäß Anspruch 12 und/oder 13, in dem die Hydrierung unter Verwendung von Kerosin und/oder einem Kreislauföl als Einsatzmaterial durchgeführt wird.

Revendications

1. Procédé pour préparer une pâte susceptible d'être formée, qui consiste à mélanger et à malaxer une source de silice, une source d'aluminosilicate désaluminée, de l'eau et une trialcanolamine renfermant au moins deux atomes de carbone par portion alcanolamine.

2. Procédé selon la revendication 1, dans lequel on utilise un mélange ayant une teneur totale en solides de 25 à 75 % en poids, la trialcanolamine étant présente en une quantité de 0,5 à 40 % en poids en se basant sur la teneur totale en solides du mélange.

3. Procédé selon la revendication 2, dans lequel la trialcanolamine est présente en une quantité entre 1 et 35 % en poids, de préférence entre 1 et 10 % en poids de la teneur totale en solides du mélange.

4. Procédé selon l'une ou plus d'une des revendications précédentes, dans lequel on utilise une trialcanolamine ayant le même nombre d'atomes de carbone dans chaque partie alcanolamine, en particulier la triéthanolamine.

5. Procédé selon l'une ou plus d'une des revendications précédentes, dans lequel on utilise une zéolithe en aluminosilicate désaluminée ayant un diamètre moyen des pores d'au moins 0,7 nm (7 Å) et un rapport molaire silice-alumine d'au moins 18,5.

6. Une pâte susceptible d'être formée, préparée selon une ou plus d'une des revendications précédentes.

7. Procédé pour préparer des extrudats à base d'aluminosilicate cristallin à partir d'une pâte susceptible d'être formée, procédé dans lequel on mélange et on malaxe une source de silice, une source de zéolithe en aluminosilicate désaluminée, de l'eau et une trialcanolamine renfermant au moins deux atomes de carbone par groupe alcanolamine afin d'obtenir un mélange ayant une teneur totale en solides de 25 à 75 % en poids, la trialcanolamine étant présente en une quantité de 0,5 à 40 % en poids de la teneur totale en solides du mélange, après quoi on extrude le mélange.

8. Procédé selon la revendication 7, dans lequel on utilise une pâte susceptible d'être formée renfermant de 25 à 65 % en poids de solides au total, entre 1 et 35 % en poids de la teneur totale en solides du mélange d'une trialcanolamine, de préférence une trialcanolamine ayant le même nombre d'atomes de carbone dans chaque portion trialcanolamine.

9. Procédé selon la revendication 7 et/ou la revendication 8, dans lequel les extrudats obtenus sont séchés, de préférence à une température dans la gamme de 50°C à 125°C, pendant une période entre 1 et 24 heures.

10. Extrudats lorsqu'ils sont préparés à chaque fois selon un procédé tel que revendiqué dans une ou plus d'une des revendications 7 à 9.

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11. Utilisation d'extrudats selon la revendication 10 pour la (hydro)conversion catalytique de charges hydrocarbonées.

12. Procédé pour la (hydro)conversion catalytique de charges hydrocarbonées, dans lequel les charges hydrocarbonées sont mises en contact avec de l'hydrogène en présence d'un catalyseur à base d'extrudats selon la revendication 10, comportant au moins un métal du groupe VIII, de préférence du platine et/ou du palladium.

13. Procédé selon la revendication 12, dans lequel l'hydrogénation est mise en oeuvre à une température entre 150°C et 450°C, de préférence à une température entre 250°C et 400°C et en particulier à une température entre 225°C et 300°C.

14. Procédé selon la revendication 12 et/ou la revendication 13, dans lequel l'hydrogénation est mise en oeuvre en utilisant du kérosène et/ou une coupe pétrolière recyclée en tant que charge.