bly of from 0.005 to 0.1 mol/l, more preferably of from 0.01 to 0.08 mol/l, more preferably of from 0.015 to 0.05 mol/l, more preferably of from 0.02 to 0.04 mol/l, and more preferably of from 0.025 to 0.035 mol/l.

It is preferred that the ratio S2 : S3 of the total volume of the solution S2 to the total volume of the solution S3 which are respectively fed into the solution S1 is comprised in the range of from 0.05 : 1 to 1 : 0.05, more preferably of from 0.1 : 1 to 1 : 0.1, more preferably of from 0.3 : 1 to 1 : 0.3, more preferably of from 0.5 : 1 to 1 : 0.5, more preferably of from 0.7 : 1 to 1 : 0.7, more preferably of from 0.8 : 1 to 1 : 0.8, and more preferably of from 0.9 : 1 to 1 : 0.9.

It is preferred that the ratio S2 : S3 : S4 of the total volume of the solution S2 to the total volume of the solution S3 to the total volume of the optional solution S4 which are respectively fed into the solution S1 is comprised in the range of from (0.05 to 20) : (0.05 to 20) : (0.0005 to 2), more preferably of from (0.1 to 10) : (0.1 to 10) : (0.001 to 1), more preferably of from (0.3 to 3) : (0.3 to 3) : (0.005 to 0.07), more preferably of from (0.5 to 2) : (0.5 to 2) : (0.01 to 0.05), more preferably of from (0.7 to 1.5) : (0.7 to 1.5) : (0.015 to 0.045), more preferably of from (0.8 to 1.3) : (0.8 to 1.3) : (0.02 to 0.04), and more preferably of from (0.9 to 1.1) : (0.9 to 1.1) : (0.025 to 0.035).

It is preferred that the ratio S2 : S1 of the total volume of the solution S2 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.01 to 5, more preferably of from 0.05 to 2, more preferably of from 0.1 to 1, more preferably of from 0.3 to 0.7, more preferably of from 0.4 to 0.55, and more preferably of from 0.45 to 0.5.

It is preferred that the ratio S3 : S1 of the total volume of the solution S3 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.01 to 5, more preferably of from 0.05 to 2, more preferably of from 0.1 to 1, more preferably of from 0.3 to 0.7, more preferably of from 0.4 to 0.55, and more preferably of from 0.45 to 0.5.

It is preferred that the ratio S4 : S1 of the total volume of the optional solution S4 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.0001 to 1, more preferably of from 0.0005 to 0.5, more preferably of from 0.001 to 0.1, more preferably of from 0.003 to 0.05, more preferably of from 0.005 to 0.03, more preferably of from 0.008 to 0.025, more preferably of from 0.01 to 0.02, and more preferably of from 0.013 to 0.017.

It is preferred that, independently of each other, the feeding of the solutions of S2, S3, and of the optional solution S4 in (5) is conducted for a duration comprised in the range of from 1 min to 24 h, more preferably of from 0.05 to 12 h, more preferably of from 0.1 to 6 h, more preferably of from 0.25 to 3 h, more preferably of from 0.5 to 1.5 h, and more preferably of from 0.75 to 1.25 h.

It is preferred that the feeding of solutions S2 and S3 and of optional solution S4 into solution S1 in (4) is conducted subsequently or simultaneously, more preferably simultaneously.

24. The process of any one of embodiments 7 to 23, wherein the ratio S2 : S3 of the total volume of the solution S2 to the total volume of the solution S3 which are respectively fed into the solution S1 is comprised in the range of from 0.05 : 1 to 1 : 0.05, preferably of from 0.1 : 1 to 1 : 0.1, more preferably of from 0.3 : 1 to 1 : 0.3, more preferably of from 0.5 : 1 to 1 : 0.5, more preferably of from 0.7 : 1 to 1 : 0.7, more preferably of from 0.8 : 1 to 1 : 0.8, and more preferably of from 0.9 : 1 to 1 : 0.9.

25. The process of any one of embodiments 7 to 24, wherein the ratio S2 : S3 : S4 of the total volume of the solution S2 to the total volume of the solution S3 to the total volume of the optional solution S4 which are respectively fed into the solution S1 is comprised in the range of from (0.05 to 20) : (0.05 to 20) : (0.0005 to 2), preferably of from (0.1 to 10) : (0.1 to 10) : (0.001 to 1), more preferably of from (0.3 to 3) : (0.3 to 3) : (0.005 to 0.07), more preferably of from (0.5 to 2) : (0.5 to 2) : (0.01 to 0.05), more preferably of from (0.7 to 1.5) : (0.7 to 1.5) : (0.015 to 0.045), more preferably of from (0.8 to 1.3) : (0.8 to 1.3) : (0.02 to 0.04), and more preferably of from (0.9 to 1.1) : (0.9 to 1.1) : (0.025 to 0.035).

26. The process of any one of embodiments 7 to 25, wherein the ratio S2 : S1 of the total volume of the solution S2 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.01 to 5, preferably of from 0.05 to 2, more preferably of from 0.1 to 1, more preferably of from 0.3 to 0.7, more preferably of from 0.4 to 0.55, and more preferably of from 0.45 to 0.5.

27. The process of any one of embodiments 7 to 26, wherein the ratio S3 : S1 of the total volume of the solution S3 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.01 to 5, preferably of from 0.05 to 2, more preferably of from 0.1 to 1, more preferably of from 0.3 to 0.7, more preferably of from 0.4 to 0.55, and more preferably of from 0.45 to 0.5.

28. The process of any one of embodiments 7 to 27, wherein the ratio S4 : S1 of the total volume of the optional solution S4 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.0001 to 1, preferably of from 0.0005 to 0.5, more preferably of from 0.001 to 0.1, more preferably of from 0.003 to 0.05, more preferably of from 0.005 to 0.03, more preferably of from 0.008 to 0.025, more preferably of from 0.01 to 0.02, and more preferably of from 0.013 to 0.017.

29. The process of any one of embodiments 7 to 28, wherein, independently of each other, the feeding of the solutions of S2, S3, and of the optional solution S4 in (5) is conducted for a duration comprised in the range of from 1 min to 24 h, preferably of from 0.05 to 12 h, more preferably of from 0.1 to 6 h, more preferably of from 0.25 to 3 h, more preferably of from 0.5 to 1.5 h, and more preferably of from 0.75 to 1.25 h.

Claims

1. A supported nickel catalyst precursor comprising Ni, Si, Al, O wherein the catalyst precursor displays a total intrusion volume in the range of from 2.5 to 6.5 cm^3/g (ml/g), wherein the total intrusion volume is determined via intrusion mercury porosimetry according to standard ASTM D 4284-12.

2. The catalyst precursor of claim 1, wherein the catalyst precursor displays a total pore volume in the range of from 0.5 to 2 cm^3/g, wherein the total pore volume is determined by nitrogen adsorption from the BJH method.

3. The catalyst precursor of claim 1 or 2, wherein the cumulative pore volume of the catalyst precursor for pore diameters of from 20 to 80 nm is in the range of from 0.15 to 0.7 cm^3/g, wherein the cumulative pore volume is determined by nitrogen adsorption from the BJH method.

4. The catalyst precursor of any one of claims 1 to 3, wherein the BJH method is performed according to standard DIN 66134 or ASTM D4641-12.

5. The catalyst precursor of any one of claims 1 to 4, wherein the BET surface area of the catalyst precursor is in the range of from 200 to 350 m^2/g, wherein the BET surface area is determined according to ISO 9277:2010.

6. A process for the preparation of the supported nickel catalyst precursor according to any one of claims 1 to 5, the process comprising

(1) preparing a first aqueous solution (S1) comprising one or more bases;

(2) preparing a second aqueous solution (S2) comprising one or more nickel containing compounds and one or more aluminum containing compounds;

(3) preparing a third aqueous solution (S3) comprising one or more silicon containing compounds;

(4) optionally preparing a fourth aqueous solution (S4) comprising one or more aluminum containing compounds;

(5) feeding solutions S2 and S3 and optional solution S4 are simultaneously fed into solution S1 for precipitating the supported nickel catalyst precursor, wherein the resulting mixture has a pH in the range of from 6.5 to 8.5;

(6) isolating the supported nickel catalyst precursor from the mixture obtained in (5).

7. The process of claim 6, wherein the ratio S2 : S3 of the total volume of the solution S2 to the total volume of the solution S3 which are respectively fed into the solution S1 is comprised in the range of from 0.05 : 1 to 1 : 0.05.

8. The process of claim 6 or 7, wherein the ratio S2 : S1 of the total volume of the solution S2 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.01 to 5.

9. The process of any one of claims 6 to 8, wherein the ratio S3 : S1 of the total volume of the solution S3 to the total volume of the solution S1 into which it is fed is comprised in the range of from 0.01 to 5.

10. The process of any one of claims 6 to 9, wherein the process further comprises
(7) washing the supported nickel catalyst precursor obtained in (6);
and/or, preferably and
(8) drying the supported nickel catalyst precursor obtained in (6) or (7).

11. The process of any one of claims 6 to 10, wherein the process further comprises
(9) calcining the supported nickel catalyst precursor obtained in (6), (7), or (8), for obtaining a supported nickel catalyst precursor comprising a mixed oxide of NiO, SiO_2, and Al_2O_3.

12. A supported nickel catalyst precursor obtainable and/or obtained according to the process of any one of claims 6 to 10.

13. The catalyst precursor of any one of claims 1 to 5 comprising a mixed oxide of NiO, SiO_2, and Al_2O_3.

14. A process for the preparation of a supported nickel catalyst comprising
(i) providing a supported nickel catalyst precursor according to claim 12 or 13;
(ii) reducing the supported nickel catalyst precursor provided in (i) in a hydrogen atmosphere for obtaining a supported nickel catalyst.

15. A supported nickel catalyst obtainable and/or obtained according to the process of claim 14.

16. A process for the hydrogenation of aromatic compounds comprising
(A) preparing a mixture of one or more aromatic compounds and a supported nickel catalyst precursor according to any one of claims 1 to 5 and 12 to 13, or a supported nickel catalyst

according to claim 15; and

(B) contacting the mixture obtained in (A) with hydrogen at a temperature comprised in the range of from 100 to 400°C.

17. Use of a supported nickel catalyst precursor according to any one of claims 1 to 5 and 12 to 13, or of a supported nickel catalyst according to claim 15, in the hydrogenation of aromatic compounds.

18. A process for the preparation of a supported nickel catalyst precursor, the process comprising

(1) preparing a first aqueous solution (S1) comprising one or more bases;

(2) preparing a second aqueous solution (S2) comprising one or more nickel containing compounds and one or more aluminum containing compounds;

(3) preparing a third aqueous solution (S3) comprising one or more silicon containing compounds;

(4) optionally preparing a fourth aqueous solution (S4) comprising one or more aluminum containing compounds;

(5) feeding solutions S2 and S3 and optional solution S4 are simultaneously fed into solution S1 for precipitating the supported nickel catalyst precursor, wherein the resulting mixture has a pH in the range of from 6.5 to 8.5;

(6) isolating the supported nickel catalyst precursor from the mixture obtained in (5).