

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 cm³/g (ml/g), wherein
5 the total intrusion volume is determined according to Reference Example 1.
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 cm³/g, wherein the total pore volume is determined according to Reference Example 2.
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 cm³/g,
10 wherein the cumulative pore volume is determined according to Reference Example 2.
4. The catalyst precursor of any one of claims 1 to 3, wherein the BET surface area of the catalyst precursor is in the range of from 200 to 350 m²/g, wherein the BET surface area is determined according to ISO 9277:2010.
5. A process for the preparation of the supported nickel catalyst precursor according to any one of claims 1 to 4, the process comprising
15 (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;
20 (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 into solution S1 for precipitating the supported nickel catalyst precursor, wherein the resulting mixture has a pH in the
25 range of from 6.5 to 8.5;
(6) isolating the supported nickel catalyst precursor from the mixture obtained in (5).
6. The process of claim 5, 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.
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7. The process of claim 5 or 6, 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.

8. The process of any one of claims 5 to 7, wherein the ratio S3 : 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 5 to 8, 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).
10. The process of any one of claims 5 to 9, 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, SiO₂, and Al₂O₃.
11. A supported nickel catalyst precursor obtainable and/or obtained according to the process of any one of claims 5 to 9.
12. A supported nickel catalyst precursor comprising a mixed oxide of NiO, SiO₂, and Al₂O₃, obtainable and/or obtained according to the process of claim 10.
13. A process for the preparation of a supported nickel catalyst comprising
 - (i) providing a supported nickel catalyst precursor according to claim 11 or 12;
 - (ii) reducing the supported nickel catalyst precursor provided in (i) in a hydrogen atmosphere for obtaining a supported nickel catalyst.
14. A supported nickel catalyst obtainable and/or obtained according to the process of claim 13.
15. 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 4 and 11 to 12, or a supported nickel catalyst according to claim 14; and
 - (B) contacting the mixture obtained in (A) with hydrogen at a temperature comprised in the range of from 100 to 400°C.
16. Use of a supported nickel catalyst precursor according to any one of claims 1 to 4 and 11 to 12, or of a supported nickel catalyst according to claim 13, in the hydrogenation of aromatic compounds.