(a) carrying out a thermal treatment of a metal carbonate mixture by heating to a temperature in the range from 200°C to 300°C for a time of from 1 hour to 6 hours to give a thermally treated metal carbonate mixture having a carbonate content in the range from 2.7 to 14.0% by weight, preferably in the range from 3.0 to 12.5% by weight, particularly preferably in the range from 3.2 to 12.0% by weight, more preferably in the range from 5.0 to 8.0% by weight, and

(b) tableting the thermally treated metal carbonate mixture obtained in step (a),

wherein:

- the metal carbonate mixture is obtainable by

(i) combining a solution A and a solution B to form a precipitate 1 at a pH value in the range from 6.0 to 7.5, separating off the precipitate and drying the isolated precipitate by heating to a temperature in the range from 75°C to 130°C; or

(ii) mixing a precipitate 2, a precipitate 3 and optionally one or more precipitates 4, with the precipitates being dried by heating to a temperature in the range from 75°C to 130°C before mixing and/or after mixing, and:

- precipitate 2 is a copper carbonate-containing precipitate obtainable by combining a solution C with a solution D at a pH value in the range from 6.0 to 7.5,

- precipitate 3 is a zinc carbonate-containing precipitate obtainable by combining a solution E with a solution F at a pH value in the range from 6.0 to 7.5,

- precipitate 4 is a precipitate which contains at least one metal carbonate different from copper carbonate and zinc carbonate and is obtainable by

combining at least one solution G with at least one solution H at a pH value in the range from 6.0 to 7.5;

and

- solution A is obtainable by dissolving a copper compound, a zinc compound and optionally one or more further metal compounds in a solvent, in particular water, optionally with the aid of an acid or base,

- solutions B, D, F and H are identical or different and are obtainable by dissolving a carbonate compound in a solvent, in particular water,

- solution C is obtainable by dissolving a copper compound in a solvent, in particular water, optionally with the aid of an acid or base,

- solution E is obtainable by dissolving a zinc compound in a solvent, in particular water, optionally with the aid of an acid or base, and

- solution G is obtainable by dissolving a metal compound which is not a copper or zinc compound in a solvent, in particular water, optionally with the aid of an acid or base.

The carbonate content, in particular of the metal carbonate mixture, is preferably determined in accordance with DIN ISO 10693.

Furthermore, the disclosure provides Cu-Zn catalysts which can be produced by the processes as defined herein.

In addition, the disclosure provides for the use of Cu-Zn catalysts as defined herein for the

CLAIMS

1. A process for producing a shaped tableted catalyst body, which comprises the following steps:

(a) carrying out a thermal treatment of a metal carbonate mixture by heating to a temperature in the range from 200°C to 300°C for a time of from 1 hour to 6 hours to give a thermally treated metal carbonate mixture having a carbonate content in the range from 2.7 to 14.0% by weight, preferably in the range from 3.0 to 12.5% by weight, particularly preferably in the range from 3.2 to 12.0% by weight, more preferably in the range from 5.0 to 8.0% by weight, and

(b) tableting the thermally treated metal carbonate mixture obtained in step (a),

wherein:

- the metal carbonate mixture is obtainable by

(i) combining a solution A and a solution B to form a precipitate 1 at a pH value in the range from 6.0 to 7.5, separating off the precipitate and drying the isolated precipitate by heating to a temperature in the range from 75°C to 130°C, or

(ii) mixing a precipitate 2, a precipitate 3 and optionally one or more precipitates 4, with the precipitates being dried by heating to a temperature in the range from 75°C to 130°C before mixing and/or after mixing;

and:

- precipitate 2 is a copper carbonate-containing precipitate obtainable by combining a solution C with a solution D at a pH value in the range from 6.0 to 7.5,

- precipitate 3 is a zinc carbonate-containing precipitate obtainable by combining a solution E with a solution F at a pH value in the range from 6.0 to 7.5,

- precipitate 4 is a precipitate which contains at least one metal carbonate different from copper carbonate and zinc carbonate and is obtainable by combining at least one solution G with at least one solution H at a pH value in the range from 6.0 to 7.5;

and

- solution A is obtainable by dissolving a copper compound, a zinc compound and optionally one or more further metal compounds in a solvent, in particular water, optionally with the aid of an acid or base,

- solutions B, D, F and H are identical or different and are obtainable by dissolving a carbonate compound in a solvent, in particular water,

- solution C is obtainable by dissolving a copper compound in a solvent, in particular water, optionally with the aid of an acid or base,

- solution E is obtainable by dissolving a zinc compound in a solvent, in particular water, optionally with the aid of an acid or base, and

- solution G is obtainable by dissolving a metal compound which is not a copper or zinc compound in a solvent, in particular water, optionally with the aid of an acid or base.

2. The process as claimed in claim 1, wherein the thermal treatment in step (a) is effected by heating to a temperature

in the range from 270°C to 290°C, for a time of from 1 hour to 6 hours, particularly preferably from 1.5 hours to 5 hours.

3. The process as claimed in claim 2, wherein the thermal treatment is carried out at a temperature in the range from 270°C to 290°C for a time of from 1.5 to 5 hours.

4. The process as claimed in any of claims 1 to 3, wherein the copper compound is selected from the group consisting of copper, copper oxide (Cu_2O and/or CuO), copper nitrate, copper sulfate, copper carbonate, copper hydroxide carbonate, copper acetate, copper halides such as copper chloride, copper bromide or copper iodide, Cu-ammine complexes such as copper tetrammine complex ($[Cu(NH_3)_4]^{2+}$) or copper hexammine complex ($[Cu(NH_3)_6]^{2+}$), and mixtures thereof and preferably selected from the group consisting of copper oxide, copper nitrate, copper chloride, copper carbonate, copper hydroxide carbonate, copper acetate, copper sulfate and mixtures thereof.

5. The process as claimed in any of claims 1 to 4, wherein the zinc compound is selected from the group consisting of zinc nitrate, zinc sulfate, zinc chloride, zinc carbonate, zinc hydroxide, zinc sulfite, zinc acetate, zinc phosphate, zinc metal and ZnO and mixtures thereof.

6. The process as claimed in any of claims 1 to 5, wherein the metal compound which is not a copper compound or zinc compound is selected from among compounds of Al, Ti, Mn, Ni, Cr, Fe, Co, Mo, Ce and Zr and mixtures thereof, preferably from among compounds of Mn, Ce, Zr and mixtures thereof and in particular from among compounds of Zr.

18. The shaped catalyst body as claimed in claim 17 which has a carbonate content in the range from 3.0 to 12.5% by weight, preferably in the range from 3.2 to 12.0% by weight, more preferably in the range from 5.0 to 8.0% by weight.

19. A reduced shaped catalyst body obtained by a process as claimed in any of claims 12 to 16, wherein the shaped tableted catalyst body obtained from step (b) has, before reduction, a carbonate content in the range from 2.7 to 14.0% by weight, preferably in the range from 3.0 to 12.5% by weight, particularly preferably in the range from 3.2 to 12.0% by weight, more preferably in the range from 5.0 to 8.0% by weight.

20. The reduced shaped catalyst body as claimed in claim 19 whose Cu metal surface area is 19 m^2/g or more, preferably 21 m^2/g or more, based on the total mass of the catalyst.

21. The shaped catalyst body as claimed in claim 19 or 20 which contains Cu(0) in a proportion in the range from 5 to 70% by weight, preferably in the range from 10 to 70% by weight, particularly preferably in the range from 20 to 50% by weight, based on the shaped catalyst body.

22. The use of the shaped catalyst body as claimed in any of claims 17 to 21 for hydrogenating organic compounds or in reactions selected from among synthesis gas reactions, methanol syntheses, Fischer-Tropsch syntheses, pyridine syntheses, ester hydrogenolyses, amination reactions, N-alkylations, hydrogenations of nitriles, in particular hydrogenation of nitriles to amines, hydrogenation of esters, in particular esters of fatty acids, hydrogenation of diesters to diols,