Claims

1. Process for producing chromium nitride-containing sintered spraying powder, which comprises the following steps:

   a) production of a powder mixture (A) comprising

      i) a powder (B) comprising one or more constituents selected from the group consisting of Cr, CrN and Cr_2N, and

      ii) a powder (C) comprising one or more constituents selected from the group consisting of nickel, cobalt, nickel alloys, cobalt alloys and iron alloys,

   b) sintering of the powder mixture (A) at a nitrogen partial pressure of greater than 1 bar, with maintenance of or an increase in the chemically bound nitrogen compared to the powder mixture (A).

2. Process according to claim 1, characterized in that the powder mixture (A) comprises CrN and/or Cr_2N.

3. Process according to claim 1 or 2, characterized in that the powder mixture (A) contains a nickel powder and/or NiCr alloy powder, preferably a cobalt base alloy or nickel base alloy or iron base alloy, with the alloy optionally containing one or more constituents selected from the group consisting of Cr, Si, Mo, Ti, Ta, B, Y, W and Mn.

4. Process according to one or more of claims 1 to 3, characterized in that the production of the powder mixture (A) is effected by dispersing the powder (B) together with the powder (C) in a liquid, with the liquid being removed after mixing is complete.

5. Process according to claim 4, characterized in that the liquid is selected from the group consisting of water, aliphatic alcohols, ketones and any mixtures thereof, preferably selected from among water, methanol, ethanol and propanol and mixtures thereof.

6. Process according to claim 4 or 5, characterized in that the removal of the liquid is carried out by spray drying.

7. Process according to one or more of claims 1 to 6, characterized in that the powder (B) has a particle size D90 below 20 µm, preferably below 15 µm.

8. Process according to one or more of claims 1 to 7, characterized in that the solid-state sintering is carried out in a gas atmosphere comprising at least 90% by volume, preferably at least 95% by volume, more preferably at least 98% by volume and in particular at least 99.5% by volume, of nitrogen, in each case based on the total volume of the atmosphere.

9. Process according to one or more of claims 1 to 8, characterized in that sintering is carried out at a nitrogen partial pressure above 6 bar, preferably in the range from 7 to 100 bar, more preferably from 8 to 50 bar and in particular from 9 to 20 bar.

10. Process according to one or more of claims 1 to 9, characterized in that sintering, in particular solid-state sintering, is carried out at a temperature above 1000°C, preferably in the range from 1050°C to 1500°C, more preferably from 1100°C to 1350°C and in particular from 1100°C to 1250°C.

11. Process according to one or more of claims 1 to 10, characterized in that sintering, in particular solid-state sintering, is carried out for a period of at least 1 hour, preferably at least 2 hours, more preferably at least 2.5 hours and in particular in the range from 3 to 48 hours.

12. Process according to one or more of claims 1 to 11, characterized in that the powder mixture (A) is essentially free of chromium carbides.

13. Process according to one or more of claims 1 to 12, characterized in that the powder mixture (A) contains the powder (B) in an amount of from 50 to 90% by weight, preferably from 60 to 80% by weight, in each case based on the total weight of the powder mixture (A).

14. Process according to one or more of claims 1 to 13, characterized in that the powder mixture (A) contains the powder (C) in an amount of from 10 to 50% by weight, preferably from 15 to 45% by weight and in particular

from 20 to 40% by weight, in each case based on the total weight of the powder mixture (A).

15. Process according to one or more of claims 1 to 14, characterized in that the sintered spraying powder comprises chromium nitrides, with the amount of CrN being at least 50% by weight, preferably at least 75% by weight, more preferably at least 78% by weight and in particular at least 80% by weight, in each case based on the total weight of chromium nitride in the sintered spraying powder.

16. Chromium nitride-containing sintered spray powder, obtainable by a process according to one or more of claims 1 to 15.

17. Process for producing a surface coated component by coating a component by means of thermal spraying of a spraying powder according to claim 16.

18. Use of the spraying powder according to claim 16 for the surface coating of components.

19. Coated component obtainable by the process according to claim 17.

Claims

1. Process for producing chromium nitride-containing sintered spraying powder, which comprises the following steps:

   a) production of a powder mixture (A) comprising

      i) a powder (B) comprising one or more constituents selected from the group consisting of Cr, CrN and Cr_2N, and

      ii) a powder (C) comprising one or more constituents selected from the group consisting of nickel, cobalt, nickel alloys, cobalt alloys and iron alloys,

   b) sintering of the powder mixture (A) at a nitrogen partial pressure of greater than 1 bar, with maintenance of or an increase in the chemically bound nitrogen compared to the powder mixture (A).

2. Process according to claim 1, characterized in that the powder mixture (A) comprises CrN and/or Cr_2N.

3. Process according to claim 1 or 2, characterized in that the powder mixture (A) contains a nickel powder and/or NiCr alloy powder, preferably a cobalt base alloy or nickel base alloy or iron base alloy, with the alloy optionally containing one or more constituents selected from the group consisting of Cr, Si, Mo, Ti, Ta, B, Y, W and Mn.

4. Process according to one or more of claims 1 to 3, characterized in that the production of the powder mixture (A) is effected by dispersing the powder (B) together with the powder (C) in a liquid, with the liquid being removed after mixing is complete.

5. Process according to claim 4, characterized in that the liquid is selected from the group consisting of water, aliphatic alcohols, ketones and any mixtures thereof, preferably selected from among water, methanol, ethanol and propanol and mixtures thereof.

6. Process according to claim 4 or 5, characterized in that the removal of the liquid is carried out by spray drying.

7. Process according to one or more of claims 1 to 6, characterized in that the powder (B) has a particle size D90 below 20 µm, preferably below 15 µm.

8. Process according to one or more of claims 1 to 7, characterized in that the solid-state sintering is carried out in a gas atmosphere comprising at least 90 % by volume, preferably at least 95 % by volume, more preferably at least 98 % by volume and in particular at least 99.5 % by volume, of nitrogen, in each case based on the total volume of the atmosphere.

9. Process according to one or more of claims 1 to 8, characterized in that sintering is carried out at a nitrogen partial pressure above 6 bar, preferably in the range from 7 to 100 bar, more preferably from 8 to 50 bar and in particular from 9 to 20 bar.

10. Process according to one or more of claims 1 to 9, characterized in that sintering, in particular solid-state sintering, is carried out at a temperature above 1000 °C, preferably in the range from 1050 °C to 1500 °C, more preferably from 1100 °C to 1350 °C and in particular from 1100 °C to 1250 °C.

11. Process according to one or more of claims 1 to 10, characterized in that sintering, in particular solid-state sintering, is carried out for a period of at least 1 hour, preferably at least 2 hours, more preferably at least 2.5 hours and in particular in the range from 3 to 48 hours.

12. Process according to one or more of claims 1 to 11, characterized in that the powder mixture (A) is essentially free of chromium carbides.

13. Process according to one or more of claims 1 to 12, characterized in that the powder mixture (A) contains the powder (B) in an amount of from 50 to 90 % by weight, preferably from 60 to 80 % by weight, in each case based on the total weight of the powder mixture (A).

14. Process according to one or more of claims 1 to 13, characterized in that the powder mixture (A) contains the powder (C) in an amount of from 10 to 50 % by weight, preferably from 15 to 45 % by weight and in particular

from 20 to 40 % by weight, in each case based on the total weight of the powder mixture (A).

15. Process according to one or more of claims 1 to 14, characterized in that the sintered spraying powder comprises chromium nitrides, with the amount of CrN being at least 50 % by weight, preferably at least 75 % by weight, more preferably at least 78 % by weight and in particular at least 80 % by weight, in each case based on the total weight of chromium nitride in the sintered spraying powder.

16. Chromium nitride-containing sintered spray powder, obtained a process according to one or more of claims 1 to 15.

17. Process for producing a surface coated component by coating a component by means of thermal spraying of a spraying powder according to claim 16.

18. Use of the spraying powder according to claim 16 for the surface coating of components.

19. Coated component obtained by the process according to claim 17.