Claims

1. A method for the powder-metallurgical production of a component from titanium or a titanium alloy, wherein first, using metal powder from titanium or the titanium alloy, a green part is formed and this is densified and compacted in a subsequent sintering step, characterized in that for producing the green part, metal powder from titanium or titanium alloy with a mean grain size of <25 μm, measured using laser diffraction according to ASTM B822-10 is used and that the sintering step is performed at a sintering temperature up to a maximum of 1100°C, at a sintering duration of ≤ 5 h in an atmosphere under a reduced pressure in comparison with normal pressure.
2. The method according to claim 1, characterized in that the maximum grain size of the metal powder from titanium or the titanium alloy is <30 μm.
3. The method according to one of the preceding claims, characterized in that the sintering step is performed under a vacuum with a pressure of ≤ 10^{-3} mbar, especially at a pressure of ≤ 10^{-5} mbar.
4. The method according to either of claims 1 or 2, characterized in that the sintering step is performed in an inert gas atmosphere, especially an argon atmosphere, at a pressure of ≤ 300 mbar.
5. The method according to any one of the preceding claims, characterized in that for producing the green part, metal powder from titanium or the titanium alloy with a mean grain size of <20 μm, in particular of <10 μm, preferably of <5 μm, is used.
6. The method according to any one of the preceding claims, characterized in that the sintering duration is ≤ 3.5 h, in particular of ≤ 3 h, preferably of ≤ 2.5 h.
7. The method according to any one of the preceding claims, characterized in that the sintering duration is at least 1 h, preferably at least ≤ 2 h.
8. The method according to any one of the preceding claims, characterized in that the sintering temperature is up to a maximum of 1050°C, preferably up to a maximum of temperature up to a maximum of 1000°C, especially up to a maximum of 950°C.
9. The method according to any one of the preceding claims, characterized in that the sintering temperature amounts to at least 860°C.
10. The method according to any one of the preceding claims, characterized in that in the sintering step, the sintering temperature is adjusted in the range below a β-transition temperature of the titanium or titanium alloy material.

11. The method according to any one of the preceding claims, characterized in that the component after the sintering step has a material density of >97%, in particular >98%, preferably ≥ 99%.

12. The method according to any of claims 1 to 11, characterized in that in the sintering step a sintering temperature of below 950°C is selected and that to achieve a material density in the component of >97%, after the sintering step this is exposed to an additional step with pressure and optionally a temperature, e.g., a step of cold isostatic pressing (CIP) and/or hot isostatic pressing (HIP).

13. The method according to any of the preceding claims, characterized in that the component, following the sintering step, is subjected to a thermal aftertreatment.

14. The method according to claim 13, characterized in that the thermal aftertreatment is conducted in the form of one or more of the following treatment procedures: hot isostatic pressing (HIP), quench, uniform rapid quench (URQ).