

Abstract

Bonding agent for the bonding of components, method for the bonding of components made of material with high silicic acid content, and component assembly obtained according to said method

In a known method for bonding components made of material with a high silicic acid content by means of a substance-to-substance bonding, a SiO₂-containing bonding mass is formed between the connecting surfaces of the components that has a chemical composition that is generic with regard to the material with a high silicic acid content. In order to facilitate cost-efficient manufacture of a thermally stabile assembly based on this, the invention proposes that the formation of the SiO₂-containing bonding mass comprises the following procedural steps:

- (a) provision of an aqueous slurry containing amorphous SiO₂ particles;
- (b) formation of a slurry mass between the connecting surfaces which are fixed in position with regard to each other;
- (c) drying of the slurry mass; and
- (d) solidification of the slurry mass by heating with formation of the SiO₂-containing bonding mass.

A component assembly manufactured according to the method of the invention shows high temperature stability and temperature fatigue resistance and can also be used for contamination-sensitive applications. This assembly is characterized in that a SiO₂-containing bonding mass is provided that is manufactured from amorphous, sintered or vitrified SiO₂ particles with particle sizes in the range of up to 500 µm, whereby amorphous SiO₂ particles with particle sizes in the range between 1 µm and 50 µm account for the largest volume fraction.