

Title (en)

PROCESS FOR PRODUCING SINTERED SILICIUM NITRIDE

Title (de)

VERFAHREN ZUR HERSTELLUNG VON GESINTERTEM SILICIUMNITRID

Title (fr)

PROCEDE POUR PRODUIRE DU NITRURE DE SILICIUM FRITTE

Publication

**EP 0866781 A1 19980930 (DE)**

Application

**EP 96943937 A 19961212**

Priority

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- EP 9605571 W 19961212

Abstract (en)

[origin: DE19546238A1] By providing a new production process for sintered silicium nitride, the present invention takes into account that parts made of Si<sub>3</sub>N<sub>4</sub> material are often used in temperature ranges below 1200 DEG C, and sometimes even below 500 DEG C, and therefore need not be designed for temperatures above 1200 DEG C. A thus adapted material is obtained by sintering a silicium nitride powder of less than 2 µm with 5 to 20 % by weight of one or several glass components having particles of the same size at temperatures below 1400 DEG C. It is essential that the glass components used, preferably alkali borate glasses, with a heat expansion coefficient alpha that matches the Si<sub>3</sub>N<sub>4</sub>, have a transformation point T<sub>g</sub> below 750 DEG C, and that the individual glass elements have a free enthalpy DELTA G equal to at least 60 % of the free enthalpy of SiO<sub>2</sub>. Such economically produced Si<sub>3</sub>N<sub>4</sub> parts most satisfactorily meet material quality requirements for low temperature uses, such as density, solidity and beta -phase proportion.

IPC 1-7

**C04B 35/587**; **C03C 14/00**

IPC 8 full level

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