

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

- DE 19546238 A 19951212
- 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 Si₃N₄ 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 Si₃N₄, have a transformation point T_g 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 SiO₂. Such economically produced Si₃N₄ 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

C03C 10/02 (2006.01); **C03C 14/00** (2006.01); **C04B 35/584** (2006.01)

CPC (source: EP US)

C03C 14/004 (2013.01 - EP US); **C04B 35/584** (2013.01 - EP US)

Citation (search report)

See references of WO 9721644A1

Designated contracting state (EPC)

DE FR GB IT

DOCDB simple family (publication)

DE 19546238 A1 19970619; EP 0866781 A1 19980930; US 5998319 A 19991207; WO 9721644 A1 19970619

DOCDB simple family (application)

DE 19546238 A 19951212; EP 9605571 W 19961212; EP 96943937 A 19961212; US 7773898 A 19980610