



# GNP Graystar

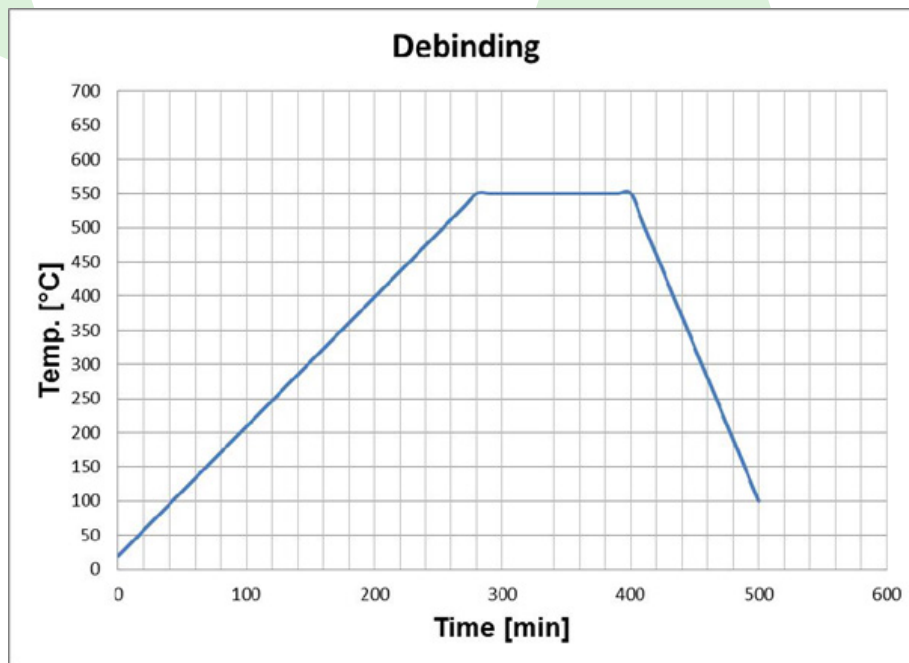
Specialty Materials

AN ISO 9001 CERTIFIED COMPANY

## TECHNICAL DATA SHEET

### Ready-to-Press (RTP) Silicon Nitride Powder / $\alpha$ -Si<sub>3</sub>N<sub>4</sub> Processing Manual

<b>Powder Density:</b>	0.9-1.0	g/cm <sup>3</sup>
<b>Molding:</b>		
Uniaxial-Pressing:	200	bar
Cold Isostatic Pressing (CIP):	1700-200	bar
*Recommendation: first step uniaxial pressing second step CIPing		
<b>Green Density:</b>	~ 1.92	g/cm <sup>3</sup>
<b>Debinding:</b>	~ 550	°C
*air atmosphere, 2h		



# TECHNICAL DATA SHEET

## Ready-to-Press (RTP) Silicon Nitride Powder / $\alpha$ -Si<sub>3</sub>N<sub>4</sub> Processing Manual

### Sintering:

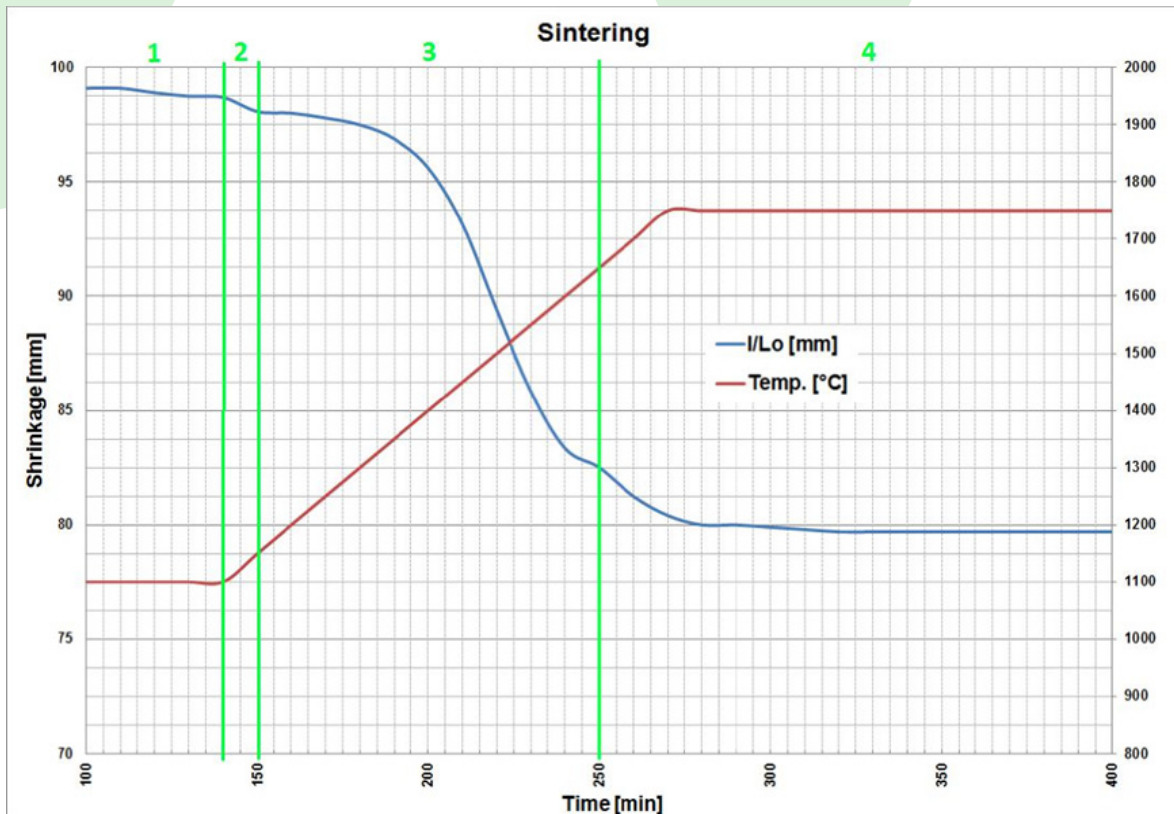
Area 1: Standard Atmosphere or Nitrogen Atmosphere

Area 2: Short Time Vacuum 0.4 mbar, followed by Nitrogen Atmosphere 1-2 bar, heating start

Area 3: Heating Rate ~5 K/min until the theoretical density of > 93 % is reached; usually between 1550 - 1650°C

Area 4: Increase the Nitrogen Pressure to 10-50 bar until the maximal temperature (1700 - 1850°C) is reach; followed by holding time of 2-3 h

Density: ~ 3.23 g/cm<sup>3</sup>



\* Sintering conditions can differ to the above mentioned depending on the size of the structures and the type of the sintering furnace. In addition, the sintering conditions can be adjusted to the tangled material properties.