TN

Through Nitriding Bonded Silicon Carbide

(Typically called nitride bonded silicon carbide;
Typical Abbreviations: SNBSC, NBSC, NBSIC)

SCProbond™ TN is a recent and exciting advancement at SCP developed to address the issue of unscheduled emergency downtime. In the world of nitride bonded silicon carbide, thick cross-sectional areas (greater than ¾") can show variation in strength and stability. This material is characterized by excellent wear properties in severe industrial environments, specifically in components with thick cross-sectional areas. SCProbond™ TN is a nitride bonded silicon carbide material, set apart by the advantage of its "Through Nitriding" properties which equalize the wear rate across thicker cross sections and increase lifetime predictability. Traditional nitride bonded silicon carbide material will exhibit a significant increase in wear rate as the distance to the center of a thick cross section decreases. The wear rate of our new SCProbond™ TN material will remain constant throughout the entirety of the cross section. "Through Nitriding" has seen success at cross-sections 4" and beyond. This gives our customers extended product lifetimes and the ability to better **predict** and **schedule** maintenance and replacement. Even in demanding abrasive applications, SCProbond™ TN offers excellent high impact resistance, corrosion resistance, temperature resistance up to 1525°C, and increases in strength with thermal cycling. This material is recommended for use in areas where sustained predictable wear is desired, such as power plants, mining for bulk material handling, and protective wear linings.

Physical Properties:

Include link to Mark's Article
Include link to TN vs. N wear-rate graph

Property	**Value**
Density	2.60-2.72 g/cc (162-169 *lb/*)
Apparent porosity	13-16 %
Abrasion loss (volumetric) C704 ASTM	2.50 cc (0.15)
C1421 Fracture Toughness	4.12
Modulus of rupture – 3 Point Loading	67 MPa (9700 psi)
C1171 Thermal Cycling (psi gain after T.C.)	10%
Thermal Conductivity	18 W/m·K
Coefficient of Thermal Expansion (at 1200ºC)	*4.9 x10−6/*°C *(2.7 x10−6/*°F*)*
Maximum safe operating temperature (Dependent upon atmosphere)	1525°C (2777°F)

Typical Applications:

- Cross sections ¾" and greater
- Ash Handling Sweeps
- Centrifuge Components
- Chutes
- Coal Handling Components
- Coal Preparation Applications
- Molten Metal Pump Protective Sleeves
- Frac Sand Sweeps, Elbows, Valve Body Liners
- Liners
- Cyclones
- Pump Components
- Spray Nozzles
- Transitions
- Wear Blocks
- Impellers
- Micronizers