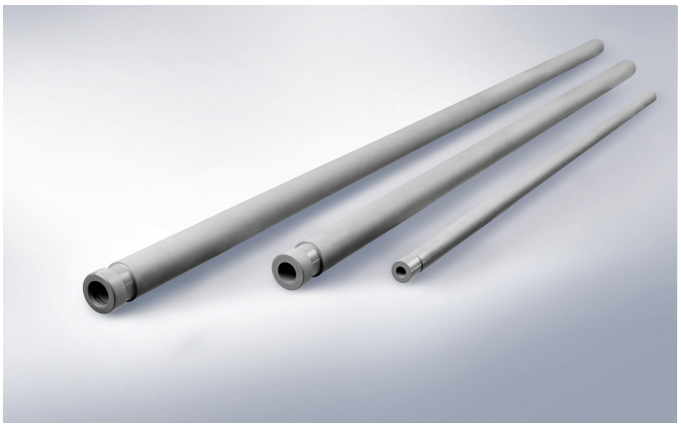
HIGH-PERFORMANCE CERAMICS

THERMOCOUPLE PROTECTION TUBES MADE OF STARCERAM® N

Application:
Foundry technology

Material:
Silicon nitride



In foundry technology, thermocouple protection tubes are are exposed to extreme conditions: High temperatures, aggressive molten metals and strong temperature fluctuations require robust and durable materials.

Protective tubes made of silicon nitride from Kyocera fulfil these requirements thanks to their excellent thermal shock resistance, high mechanical strength and exceptional corrosion and wear resistance. Their very low wettability with non-ferrous metal melts minimises deposits and enables precise temperature measurements.

Thanks to their long service life and simple installation with special metal connections, they contribute to process reliability and efficiency in foundry applications.

Material properties

StarCeram® N 7000	
Density [g/cm³]	3.22
Flexural strength $\sigma_{b4,m}$ RT [MPa][1]	800
Weibull modulus RT [-]	> 15
Fracture toughness [MPa√m]	6.7
Hardness (DPH) [GPa]	15
Young's modulus (RT) [GPa]	290
Thermal conductivity (RT) [W/mK]	20
Thermal expansion coefficient (RT-1000 °C) [x10^{-6}K^{-1}]	3.4
Thermal shock coefficient R1 [K]	620
Max. working temperature [°C]	1,000

[1] 4-point-bending 40/20 mm

The values in this publiation are typical values and do not constitute a specification.

Available in the following standard sizes*

Type	Diameter	Max. length
HC TSR 16	16/8 mm	800 mm
HC TSR 22	22/12 mm	1,000 mm
HC TSR 28	28/16 mm	1,200 mm
HC TSR 32	32/20 mm	1,500 mm

* Please request for other sizes and suitable metal connections

- **Excellent thermal shock behavior**
- **Extraordinary high mechanical strength**
- **High corrosion and wear resistance**
- **Extremely low wettability with non-ferrous metal melts**
- **High lifetime**
- **Quick and easy installation with special metal connections**

KYOCERA Fineceramics Europe GmbH
E-Mail: info@kyocera-fineceramics.de · www.kyocera-fineceramics.de