



Technology Metals | Advanced Ceramics

# ***Ceramic Injection Molding***

# Ceramic Injection Molding - Available in all Process Steps

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**H.C. Starck Ceramics is a leading company in the flexible production of engineering components made of high resistance ceramics. We develop innovative solutions in close cooperation with our clients and implement them quickly. We are equipped to carry out virtually all steps of the process of the net product in our own facilities.**

H.C. Starck Ceramics has been working in the field of ceramic injection molding (CIM) for more than 10 years now. In the nineties, the first silicon nitride feedstock was developed at CFI (Cremer Forschungsinstitut). At the beginning of the year 2000, this feedstock was successfully used to produce valve plates for the common rail diesel technology. After the merger of CFI with TeCe in Selb to form H.C. Ceramics in 2001, this CIM technology was continued and expanded.

All processing steps, feedstock, injection, sintering and hard machining, are available at H.C. Starck Ceramics.





The preferred material is silicon nitride. However, recently newer developments include feedstock based on zirconia and silicon carbide. These materials are also available on request.

CIM parts are used for engineering, in medical applications and for design components.

Materials Table	ZrO <sub>2</sub> white	ND-SSN N7000
	Density [g/cm <sup>3</sup> ]	> 6.0
Average fracture strength RT [MPa]	800	800
Weibull module RT [-]	> 10	> 15
Fracture toughness [MPa√m]	5.3	6.7
Hardness (HV 10) [GPa]	12	15
E-module (RT) [GPa]	210	290
Heat conduction (RT) [W/mK]	2	25
Coefficient of thermal expansion (RT-1000 °C) [x10 <sup>-6</sup> K <sup>-1</sup> ]	11.0	3.4
Resistivity RT [Ωm]	10 <sup>8</sup> – 10 <sup>13</sup>	10 <sup>11</sup> – 10 <sup>12</sup>
Thermal shock coefficient R1 [K]	280	592
Maximum use temperature [°C]	800	1000



## Materials:

> **Silicon nitride**  
Drawing dies  
Medical engineering  
Engineering

> **Zirconia black**  
Design components

> **Zirconia**  
Medical engineering  
Textile engineering  
Engineering

> **Feedstock**  
Silicon nitride  
(others on request)



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