Silicon nitride $\text{Si}_3\text{N}_4-\text{Y}_2\text{O}_3$

**CHEMICAL COMPOSITION**

<table>
<thead>
<tr>
<th>Component</th>
<th>wt%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{Si}_3\text{N}_4$</td>
<td>90%</td>
</tr>
<tr>
<td>$\text{Y}_2\text{O}_3$</td>
<td>5%</td>
</tr>
<tr>
<td>$\text{Al}_2\text{O}_3$</td>
<td>5%</td>
</tr>
<tr>
<td>Fe</td>
<td>0.05</td>
</tr>
<tr>
<td>* by difference</td>
<td></td>
</tr>
</tbody>
</table>

**PHYSICAL PROPERTIES**

- Mean grain size: -
- Sintered density: 3.21 g/cm$^3$
- Bending strength at 20$^\circ$C: 850 MPa
- Hardness $H_{1.5}$: 1600 Hv

**THERMAL PROPERTIES**

- Thermal conductivity at 20$^\circ$C: 20 W.m$^{-1}$.K$^{-1}$

**ELECTRICAL PROPERTIES**

- Dielectric constant at 25$^\circ$C-1MHz: 8 (1MHz)
- $\tan \delta$: -
- DC Volume resistivity at 25$^\circ$C: $1.10^{14}$ Ω.cm
- Dielectric strength at 3mm: 19 kV/mm$^{-1}$

**MICROSTRUCTURE**

**KEY FEATURES**

Light weight, good wear resistance, high mechanical strength

**TYPICAL APPLICATIONS**

Thermal Insulators, nozzles, sliding parts, watch movement components, bearing balls and rollers, cutting tools, valves, turbocharger rotors for engines, turbine blades, welding jigs and fixtures, severe duty valves and pumps, weld rolls for Steel & Aluminum tube production, food processing, scientific Instrumentation, materials handling.