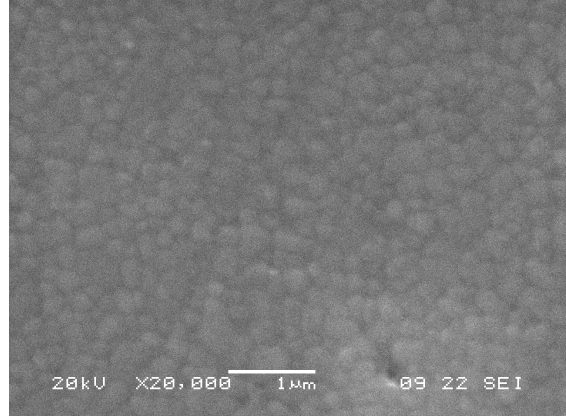


## MATERIAL DATA SHEET PHARMAZIRC®

Pharmazirc® is a Yttria partially-stabilized zirconia ceramic specially designed for our products.

Its carefully controlled chemistry and microstructure imparts **excellent resistance to corrosion** by both acid and alkali cleaning solutions and to the hydro-thermal destabilization that happens with other zirconia ceramics during steam sterilization.

This material is also **non-cytotoxic** and **does not release particles**. It is easy to clean due to the low porosity. It has **high wear resistance**, a **low friction coefficient** and accepts highly smooth surface finishing as a result of its



Pharmazirc® Microstructure

very fine grain size and low porosity.

### Chemical composition:

Component	ZrO <sub>2</sub>	Y <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O	CaO	HfO <sub>2</sub>
% weight	91,4	6,3	< 0.50	< 0.02	< 0.01	< 0.02	<0,02	<1,75

### Mechanical, physical and electrical properties:

Values at 20°C

Properties	Unit	Pharmazirc®
Color	-	White
Density	10 <sup>3</sup> kg/m <sup>3</sup>	>5.8
Porosity	% volume	0
Thermal expansion coefficient (20 – 1000°C)	10 <sup>-6</sup> /°C	10
Thermal conductivity	W/m.°C	2.93
Vickers hardness	GPa	13
Bend strength	MPa	800-900
Young's Modulus	GPa	200 – 205
Fracture toughness (K <sub>1c</sub> factor)	MPa.m <sup>1/2</sup>	7 – 8
Electrical resistivity	Ω.cm	> 10 <sup>10</sup>

*The properties quoted above are typical and should be used for guidance only. They vary somewhat with method of manufacture, size and shape and advice should be sought for critical applications.*

### Food and pharmaceutical products contact:

Pharmazirc® complies with: - directive 80/500/EEC amended  
- FDA regulation.