

# Zirconia prosthesis

Raw material is zirconium silicate ( zircon ) . This zircon sand is the raw material to obtain zirconium (Zr), a metal.

Van Arkel process used to obtain the metal Zirconium rod. This is used mainly in nuclear reactors as containers for the nuclear fuel. This metal is highly resistant to corrosion

Zirconium undergoes a reductive chlorination process, known as the Kroll process.  
This process produces zirconium oxide powder- zirconia  
Zirconia is a ceramic and no longer a metal

Zirconia is:

- White colour
- Strong covalent bonds
- Hard
- Fragile
- Wear resistant
- Thermic insulator
- Electric insulator
- Oxidation resistant
- No chemical corrosion
- Used in technical ceramics and as jewellery

At room temperature presents a monoclinic phase - very fragile

To stabilize the compound, other elements can be added: yttrium oxide , alumina

Y-TZP Yttrium stabilized tetragonal zirconia polycrystal

ATZ Alumina Toughened Zirconia

Tetragonal zirconia is a ceramic. Chemical name is Yttrium Tetragonal Zirconia. Used in dentistry, orthopaedics and Aerospace.

Cubic zirconia is also a ceramic. Zirconium oxide, which is used in jewelry.