Ultimate Strength of all-ceramic crowns

30 degree force

axial loading

MPa

Jacket Crown	Dicor	IPS Empress

Jacket Crown	Dicor	IPS Empress
Fracture Strength of Cemented Crowns

Mean Fracture Strength of Cemented Crowns (kg)

- IPS Empress
- Procera
- In-Ceram
Flexure Strength of Ceramic Materials

MPa

- Air
- Water
- 3 Months Air
- 3 Months Water

Materials:
- Finesse
- Finess Press
- IPS Empress
- OPC (light)
- OPC (dark)
- Lithium Disilicate
Fracture Toughness of Ceramic Materials

MPa/m^{0.5}

Air | Water | 3 Months Air | 3 Months Water
---|---|---|---

Finese | Finess Press | IPS Empress | OPC (light) | OPC (dark) | Lithium Disilicate
Biaxial Strength of Ceramic Materials

MPa

IPS Eris | Dry | 5 Days
---|---|---
DuCeram LFC
Vita Alpha
Finesse
Wear of Enamel Opposing Ceramics

microns

Cycles

Finesse  Softspar  IPS Empress  Ceramco II
Wear of Opposing Enamel

microns

- Fluorapatite
- Glass Ceramic
- IPS d.SIGN E
- IPS d.SIGN D
- VMK95
- Duceram
- Vita Omega
Wear of Enamel Opposing Ceramics

mean depth of loss (microns)

Specimen Wear  Enamel Wear  Cumulative Wear

IPS Empress  Duceragold

microns
IPSEmpress®
Leucite Reinforced Glass Ceramic

Crystal Structure & Dispersion Comparisons

Leucite in Glass Matrix

Feldspathic Ceramic
IPSEmpress® Physical Properties

- **Mechanical**
  - *Flexural Strength*: ≥ 120-220 MPa
  - *Fracture Toughness*: ≥ 1.3 MPa m^{1/2}

- **Chemical**
  - *Solubility*: < 100mg/cm²

- **Thermal**
  - *CTE*: 15.0 x 10^{-6} °K^{-1} m/m (Similar to Dentin)

- **Crystalline Content**
  - *By Volume*: 30-40%

- **Optical**
  - *Light Dispersion*: Similar to Natural Dentition
  - *Translucency*: Similar to Natural Dentition