The “Perfect” Zirconia

**Indications**

**BioZ X2 – Full Strength Zirconia**
Ideal when maximum strength and maximum masking of undesirable color is desired
- Conventional and Implant Retained Single Unit Restorations in All Tooth Positions and Long Span Bridgework Up to 14 Units
- Monolithic and Layered

**cubeONE – Translucent High Strength Zirconia**
Ideal when maximum strength is required with added translucency, masking capability and added translucency not as ideal as BioZ X2.
- Conventional and Implant Retained Single Unit Restorations in All Tooth Positions and Long Span Bridgework Up to 14 Units (maximum of two teeth per pontic span)
- Monolithic and Layered

**cubeX2 – Ultra Translucent Zirconia**
Ideal for maximum translucency and minimal masking capability
- Conventional and Implant Retained Single Unit Restorations in the Esthetic Zone (Bicuspid Forward) and 3 Unit Bridges
- Monolithic and Layered

**Preparation Requirements**

cubeONE requires less tooth preparation than is required for lithium disilicate. Ideally, a .8 mm chamfer or rounded shoulder prep is preferred, however a feather-edge margin is acceptable with 1.0 - 1.5 mm occlusal reduction.

**Cementation**

Researchers have shown that saliva contamination can hinder the bonding of zirconia-based products. When a zirconia crown or bridge is tried in the patient’s mouth and comes in contact with saliva, the phosphate groups in the saliva bind to the zirconia oxide and cannot be rinsed out with water. Attempting to use phosphoric acid (which is full of phosphate groups) to ‘clean out’ the saliva only makes the problem worse.

To successfully remove saliva, it is now suggested that after try-in and before priming, the crown should be cleaned with Dalcem, a zirconia oxide solution from Ivoclar Vivadent. This zirconia oxide solution is placed inside the restoration for 20 seconds and then rinsed out. Due to the large concentration of free zirconia oxide in the Ivoclean, it acts as a sponge and binds to the phosphate groups that were previously bonded to the restoration.

**Suggested Cementation Protocol:**

1. Try-in zirconia-based restoration
2. Rinse saliva out of restoration with water
3. Place Ivoclean in restoration for 20 seconds, rinse and dry
4. Apply primer and then cement with product of your choice

**Cementation Recommendations:**

- Ceramir® Crown & Bridge (Doxa Dental) or a resin-reinforced glass ionomer cement such as RelyX® Luting Cement (3M ESPE) or GC Fuji Plus® (GC America)
- For short or over-tapered preparations, use a resin cement such as LuteX, Unicorn (3M ESPE) or Panavia® F2.0 (Kuraray)

**Finishing and Polishing**

DAL recommends the Brasseler USA® Dialite® ZR Kit for finishing and polishing cubeONE zirconia. This two-step system allows you to quickly achieve maximum surface smoothness, enhancing your restoration’s longevity and minimizing wear to opposing dentition.

**Adjustment of occlusion using football-shaped red-band Dialite® finishing diamond (8369DF)**
Recommended speed: 100K rpm

**Dialite® ZR green medium polishing cup (W17MZR) for pre-polishing**
Recommended speed: 5K-7K rpm

**Dialite® ZR orange fine polishing cup (W17FZR) for high shine**
Recommended speed: 5K rpm

**Ivoclean cleaning paste from Ivoclar Vivadent**

**Important:** Be sure to use adequate water when adjusting.
Dental Arts Laboratories, Inc. is excited to announce the arrival of the next generation of zirconia...cubeONE. The new cubeONE material combines the maximum strength of full strength BioZX² zirconia with the translucency of the ultra-translucent cubeX² zirconia, making it the ideal choice for all tooth positions and bridgework up to 14 units.*

The "Perfect" Zirconia
The "Perfect" Blend of High Translucency and High Strength for All Indications!

THE EVOLUTION OF TODAY'S ZIRCONIA

- Generation 1...BioZX²
  The traditional full strength zirconia options which were initially established in the dental field, like BioZX², can be grouped together as 3Y TZP ceramics. These materials feature a 3% yttria oxide formulation, providing maximum strength (>1,250 MPa's of flexural strength/8.3 K1C fracture toughness) with approximately 40% translucency.

- Generation 2...cubeX²
  This ultra-translucent zirconia was introduced to the dental market in 2016 as a translucent cubic 5Y TZP ceramic. cubeX² features a 5% yttria oxide formulation, providing a maximum 49% translucency with median strength (>750 MPa's of flexural strength/4.8 K1C fracture toughness).

- Generation 3...cubeONE
  The new cubeONE is a third generation zirconia that blends the best features of the first two generations...ideal translucent esthetics with maximum strength. cubeONE is a 4Y TZP formulation, providing a 45% translucency, maximum strength (>1,000 MPa's of flexural strength), and an increased 9.0 K1C fracture toughness. Additionally, cubeONE features the original Phase Toughening Effect for high impact resistance that is characteristic of the first generation full strength zirconia materials.

All data according to manufacturer data sheet at RU October 2017. 4-point test according to ISO 6872.

"Dentistry has been looking for the perfect crown and bridge material for a long time. The ideal material will have natural esthetics with superior strength. cubeONE just might be the closest thing yet. cubeONE is my new "go to" material for crown and bridge restorations."

Leonard Hess, DDS, PA
Private Practice, Monroe, NC
Senior Faculty Member at The Dawson Academy

Case #2 - cubeONE Full Mouth Rehabilitation
"Due to functional and aesthetic deficiencies, this patient required a full mouth rehabilitation. Failing PFM restorations were replaced with natural looking cubeONE restorations. The aesthetic demands and functional risk were high for this patient. cubeONE offered an ideal choice to meet both requirements for such a challenging case."
Dental Arts Laboratories, Inc. is excited to announce the arrival of the next generation of zirconia...cubeONE. The new cubeONE material combines the maximum strength of full strength BioZ\textsuperscript{2} zirconia with the translucency of the ultra-translucent cubeX\textsuperscript{2} zirconia, making it the ideal choice for all tooth positions and bridgework up to 14 units.*

The “Perfect” Zirconia

The “Perfect” Blend of High Translucency and High Strength for All Indications!

**THE EVOLUTION OF TODAY’S ZIRCONIA**

- **Generation 1...BioZ\textsuperscript{2}**
  The traditional full strength zirconia options which were initially established in the dental field, like BioZ\textsuperscript{2}, can be grouped together as 3Y TZP ceramics. These materials feature a 3% yttria oxide formulation, providing maximum strength (>1,250 MPa’s of flexural strength/8.3 K\textsubscript{1C} fracture toughness) with approximately 40% translucency.

- **Generation 2...cubeX\textsuperscript{2}**
  This ultra-translucent zirconia was introduced to the dental market in 2016 as a translucent cubic 5Y TZP ceramic. cubeX\textsuperscript{2} features a 5% yttria oxide formulation, providing a maximum 49% translucency with median strength (>750 MPa’s of flexural strength/4.8 K\textsubscript{1C} fracture toughness).

- **Generation 3...cubeONE**
  The new cubeONE is a third generation zirconia that blends the best features of the first two generations...ideal translucent esthetics with maximum strength, cubeONE is a 4Y TZP formulation, providing a 45% translucency, maximum strength (>1,000 MPa’s of flexural strength), and an increased 9.0 K\textsubscript{1C} fracture toughness. Additionally, cubeONE features the original Phase Toughening Effect for high impact resistance that is characteristic of the first generation full strength zirconia materials.

---

**Flexural Strength**

<table>
<thead>
<tr>
<th>Material</th>
<th>1,250 MPa’s</th>
<th>1,000 MPa’s</th>
<th>720 MPa’s</th>
<th>500 MPa’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>3Y TZP Zirconia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BioZ\textsuperscript{2}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4Y TZP Zirconia</td>
<td>1,000 MPa’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cubeONE</td>
<td>1,000 MPa’s</td>
<td>720 MPa’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Translucency</td>
<td>720 MPa’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zirconia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cubeX\textsuperscript{2}</td>
<td>500 MPa’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultra High</td>
<td>500 MPa’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucency Zirconia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cubeX\textsuperscript{2}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithium Disilicate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPS e.max®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All Data according to manufacturer data sheet or IFU October 2017. 4-point test according to ISO 6872.

---

**Fracture Toughness**

<table>
<thead>
<tr>
<th>Material</th>
<th>9.0</th>
<th>8.3</th>
<th>4.8</th>
<th>2.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>cubeONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BioZ\textsuperscript{2}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cubeX\textsuperscript{2}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithium Disilicate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All data according to DentalDirekt data sheet. Test method SOEM according to ISO 6872.

---

**Leonard Hess, DDS, PA**
Private Practice, Monroe, NC
Senior Faculty Member at The Dawson Academy

"Dentistry has been looking for the perfect crown and bridge material for a long time. The ideal material will have natural esthetics with superior strength; cubeONE just might be the closest thing yet. cubeONE is my new “go to” material for crown and bridge restorations."

**Case #1 - cubeONE Monolithic Crowns #7-10**
"Many times older PFM restorations look anything but natural. Failing PFM crowns were replaced with fully monolithic cubeONE restorations. The result is maximum esthetics with maximum strength."

**Case #2 - cubeONE Full Mouth Rehabilitation**
"Due to functional and esthetic deficiencies, this patient required a full mouth rehabilitation. Failing PFM restorations were replaced with natural looking cubeONE restorations. The esthetic demands and functional risk were high for this patient. cubeONE offered an ideal choice to meet both requirements for such a challenging case."
The “Perfect” Zirconia

- High Translucency for both Anterior and Posterior Applications
- High Flexural Strength of >1,000 MPa’s
- Maximum Fracture Toughness of 9.0 (K1C Value), Matching Full Strength Zirconia
- Phase Toughening Effect for High Impact Resistance
- Conventional Cementation
- Indicated for All Tooth Positions and Bridgework Up to 14 Units*

**Indications**

**BioZ X2** – Full Strength Zirconia

Ideal when maximum strength and maximum masking of undesirable color is desired
- Conventional and Implant Retained Single Unit Restorations in All Tooth Positions and Any Span Bridgework Up to 14 Units
- Monolithic and Layered

**cubeONE – Translucent High Strength Zirconia**

Ideal when maximum strength is required with added translucency, masking capability and esthetics
- Conventional and Implant Retained Single Unit Restorations in All Tooth Positions and Long Span Bridgework Up to 14 Units (maximum of two teeth per pontic span)
- Monolithic and Layered

**cubeX2 – Ultra Translucent Zirconia**

Ideal for maximum translucency and minimal masking capability
- Conventional and Implant Retained Single Unit Restorations in the Esthetic Zone (Bicuspid Forward) and 3 Unit Bridges

**Preparation Requirements**

- cubeONE requires less tooth preparation than is required for lithium disilicate.
- Ideally, a .8 mm chamfer or rounded shoulder prep is preferred, however a feather-edge margin is acceptable with 1.0 - 1.5 mm occlusal reduction.

**Cementation**

Research has shown that saliva contamination can hinder the bonding of zirconia based products. When a zirconia crown or bridge is tried in the patient’s mouth and comes in contact with saliva, the phosphate groups in the saliva bind to the zirconia oxide and cannot be rinsed out with water. Attempting to use phosphoric acid (which is full of phosphate groups) to ‘clean out’ the saliva only makes the problem worse.

To successfully remove saliva, it is now suggested that after try-in and before priming, the crown should be cleaned with Ivoclean, a zirconia oxide solution from Ivoclar Vivadent. This zirconia oxide solution is placed inside the restoration for 20 seconds and then rinsed out. Due to the large concentration of free zirconia oxide in the Ivoclean, it acts as a sponge and binds to the phosphate groups that were previously bonded to the restoration.

**Suggested Cementation Protocol:**
1. Try-in zirconia-based restoration
2. Rinse saliva out of restoration with water
3. Place Ivoclean in restoration for 20 seconds, rinse and dry
4. Apply primer and then cement with product of your choice

**Cementation Recommendations:**
- Ceramir® Crown & Bridge (Doxa Dental) or a resin-reinforced glass ionomer cement such as RelyX® Luting Cement (3M ESPE) or GC Fuji Plus® (GC America)
- For short or over-tapered preparations, use a resin cement such as RelyX Unicem (3M ESPE) or Panavia® F2.0 (Kuraray)

**Finishing and Polishing**

DAL recommends the Brasseler USA® Dialite® ZR Kit for finishing and polishing cubeONE zirconia. This two-step system allows you to quickly achieve maximum surface smoothness, enhancing your restoration’s longevity and minimizing wear to opposing dentition.

**Adjustment of occlusion using**
- Football-shaped red-band Dialite™ finishing diamond (8369DF)
  - Recommended speed: 100K rpm
- Dialite ZR green medium polishing cup (W17MZR) for pre-polishing
  - Recommended speed: 5K-7K rpm
- Dialite ZR orange fine polishing cup (W17FZR) for high shine
  - Recommended speed: 5K rpm

**Ivoclean cleaning paste from Ivoclar Vivadent**

**Brasseler USA Dialite ZR Kit for Zirconia Restorations**

Dental Arts Laboratories, Inc.
241 NE Perry Avenue, Peoria, IL 61603-3625
1.800.227.4142
www.dentalartslab.com

**Dental Arts Laboratories, Inc.**
PEORIA, IL • CHICAGO, IL • LINDON, UT • LANSING, IL • ARLINGTON HEIGHTS, IL • PRINCETON, IL • GALESBURG, IL • SPRINGFIELD, IL • ST. JOSEPH, MI • ST. LOUIS, MO • DAVENPORT, IA • INDIANAPOLIS, IN

*Maximum of two teeth per pontic span*