ZirCAD
The innovative zirconium oxide
Extraordinary zirconium oxide

IPS e.max® ZirCAD is the impressive zirconium oxide to fulfil your requirements. It unites natural esthetics with mechanical resilience to an outstanding degree. With a perfect balance between thin wall thickness and optimal translucency, tooth preserving and natural-looking restorations can be produced.

The comprehensive portfolio provides modern laboratories with versatility and flexibility and it therefore allows freedom of individuality and high quality to be achieved.

Exceptional esthetics

as expected from IPS e.max

High strength

850 – 1200 MPa

Efficient production

life-like Multi translucency

Utmost reliability

IPS e.max ZirCAD is based on the IPS e.max all-ceramic system, which dentists, dental technicians and patients have been relying on for many years. It is therefore the product of extensive knowledge and experience and exceptional passion.
The only zirconium oxide that can be called IPS e.max®
IPS e.max ZirCAD provides a wide range of solutions. The zirconium oxide can be used for a wide variety of indications: From the minimally invasive single, anterior tooth crown to large-spanned bridges and frameworks.

A particular feature is the composition of two material classes in one restoration: In the incisal area, the translucent class 5Y-TZP zirconium oxide ensures a high level of translucency. At the same time, the more opaque class 4Y-TZP zirconium oxide in the dentin region provides a high level of stability (850 MPa1) – e.g. for minimally invasive solutions.

The natural-looking progression of shade and translucency, from a natural dentin opacity to a translucency typical of the incisal region and from a dentin shade effect to an enamel shade effect, impart the monolithic restorations with a natural esthetic appearance, even without additional characterization.

The combination of two translucency levels creates an outstandingly realistic result in just a few working steps - and this together with high stability.

1 Mean biaxial flexural strength, R&D Ivoclar Vivadent, Schaan, Liechtenstein
Two raw materials for a realistic, natural level of translucency

- **20% incisal zone**
  - 5Y-TZP

- **20% transition zone**
  - 4Y-TZP & 5Y-TZP

- **60% dentin zone**
  - 4Y-TZP
The portfolio of the versatile zirconium oxide is comprehensive and well thought out. The coordinated shade and translucency system and the wide range of possibilities provides a high level of individual freedom.

The varying degrees of translucency are suitable for a wide range of processing techniques and indications.

<table>
<thead>
<tr>
<th>Polychromatic</th>
<th>Monochromatic</th>
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<tbody>
<tr>
<td><strong>IPS e.max ZirCAD MT Multi</strong></td>
<td><strong>IPS e.max ZirCAD MT</strong></td>
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<tr>
<td><strong>Translucency</strong></td>
<td>Medium translucency</td>
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<tr>
<td>Shade and translucency progression (medium and high translucency) from the dentin to the enamel</td>
<td></td>
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<tr>
<td><strong>Material class</strong></td>
<td>Enamel: 5Y-TZP</td>
</tr>
<tr>
<td>Translucency value</td>
<td>Dentin: 4Y-TZP</td>
</tr>
<tr>
<td><strong>Shades</strong></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>8</td>
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<tr>
<td></td>
<td>15</td>
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<tr>
<td><strong>Sizes</strong></td>
<td>Discs: Ø 9.85 mm in 16, 20 mm Blocks: C17, B45</td>
</tr>
<tr>
<td></td>
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<tr>
<td><strong>Flexural strength</strong></td>
<td>850 MPa</td>
</tr>
<tr>
<td></td>
<td>1,200 MPa</td>
</tr>
<tr>
<td><strong>Fracture toughness</strong></td>
<td>3.6 MPa • m(^{1/2})</td>
</tr>
<tr>
<td></td>
<td>5.1 MPa • m(^{1/2})</td>
</tr>
<tr>
<td><strong>Minimum wall thickness (crown)</strong></td>
<td>Anterior: 0.8 mm Posterior: 1.0 mm</td>
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<tr>
<td></td>
<td>Anterior: 0.4 mm Posterior: 0.6 mm</td>
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<tr>
<td><strong>Indications</strong></td>
<td>Full-contour crowns Full-contour 3-unit bridges, implant-supported superstructures</td>
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<tr>
<td></td>
<td>Full-contour crowns Full-contour 4-unit to multi-unit bridges with max. 2 pontics Crown frameworks 3-unit to multi-unit bridge frameworks with max. 2 pontics Implant-supported superstructures</td>
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<tr>
<td><strong>Technique</strong></td>
<td>Staining technique Infiltration with MT Colouring and Effect Shade liquids Cut-back technique</td>
</tr>
<tr>
<td></td>
<td>Staining technique Infiltration with LT Colouring and Effect Shade liquids Layering technique Press-over technique</td>
</tr>
</tbody>
</table>

1 Translucency values according to raw material manufacturers for white zirconium oxide for a test sample thickness of 0.5 mm.
2 Mean biaxial flexural strength, R&D Ivoclar Vivadent, Schaan, Liechtenstein
The range of blocks varies depending on the CAD/CAM system and block size (depending on the software solution). The range of shades and sizes offered may vary from country to country.
Five easy steps to finding the correct shade and translucency level

IPS e.max Shade Navigation App

IPS e.max ZirCAD MO

- Medium opacity
- 3Y-2ZP | 35%
- 5
  - (0, 1, 2, 3, 4)

Discs: Ø 98.5 mm in 10, 14, 18, 20, 25 mm
Blocks: C13, C15, C15L, B40, B40L, B55, B65, B65L-17, B85L-22

- 1,150 MPa
- 5.1 MPa • m^{1/2}

Anterior: 0.4 mm
Posterior: 0.6 mm

Crown frameworks
3-unit to multi-unit bridge frameworks with max. 2 pontics
Implant-supported superstructures

Layering technique
Press-over technique
CAD-on technique

Indications
- Full-contour crowns
- Full-contour 3-unit bridges, implant-supported superstructures
- Full-contour crowns
- Full-contour, 4-unit to multi-unit bridges with max. 2 pontics
- Crown frameworks
- 3-unit to multi-unit bridge frameworks with max. 2 pontics
- Implant-supported superstructures

Technique
- Staining technique
  - Infiltration with MT Colouring and Effect Shade liquids
- Cut-back technique
- Layering technique
- Press-over technique
- CAD-on technique

Monochromatic
Complete confidence in this innovative material
Complete confidence in this innovative material.
“IPS e.max ZirCAD MT Multi restorations offer a solution where both high esthetics and high strength are required. A marvellous material.”

Matt Roberts
USA
Individualized esthetics

Clinical cases with exquisite, natural-looking outcomes

Two three unit bridges (11 – 13 and 21 – 23):
IPS e.max® ZirCAD MT Multi, staining technique
Dr Roberto Montauti / Michele Temperani, Italy

Crowns (45, 46):
IPS e.max® ZirCAD MT Multi, staining technique
Dr Tatiana Repetto-Bauckhage / Dr Lukas Enggist / Marie Reinhardt, Ivoclar Vivadent AG, Schaan, Liechtenstein
Superb quality

MT Multi: clearly superior

850 MPa² naturally reliable

1 Biaxial flexural strength according to manufacturer information
2 Mean biaxial flexural strength, R&D Ivoclar Vivadent, Schaan, Liechtenstein
4 Thickness of the test sample: 1 mm, R&D Ivoclar Vivadent, Schaan, Liechtenstein (2018)
6 These trademarks are not registered trademarks of Ivoclar Vivadent AG.
Complete confidence

IPS e.max ZirCAD MT Multi has a high level of fatigue resistance. This suggests a low risk of failure as well as a long lifespan. Fatigue resistance defines the load limit at which a material resists dynamic stresses, without showing material fatigue or other signs of failure.

Realistic, natural progression of translucency

A natural progression of translucency means there is a high degree of translucency in the incisal area and high opacity in the dentin area – an appearance resembling that of natural dentition. The difference in translucency between the dentin and incisal areas in IPS e.max ZirCAD MT Multi is 7.6%.

Superior strength

IPS e.max has a high level of flexural strength and fracture toughness. In this respect, the material is superior to its competitors in the material class of SY-TZP.

Flexural strength MPa

<table>
<thead>
<tr>
<th>Material</th>
<th>Flexural Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katana UTML*</td>
<td>557</td>
</tr>
<tr>
<td>BruxZir Anterior*</td>
<td>650</td>
</tr>
<tr>
<td>IPS e.max ZirCAD MT / MT Multi</td>
<td>850</td>
</tr>
</tbody>
</table>

High flexural strength is of major importance for load-bearing restorations. It is measured as the load or force at the point of fracture.

Fracture strength [MPa · m$^{1/2}$]

<table>
<thead>
<tr>
<th>Material</th>
<th>Fracture Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katana UTML*</td>
<td>2.2</td>
</tr>
<tr>
<td>BruxZir Anterior*</td>
<td>2.5</td>
</tr>
<tr>
<td>IPS e.max ZirCAD MT / MT Multi</td>
<td>3.6</td>
</tr>
</tbody>
</table>

A high fracture toughness is achieved due to the resistance to crack propagation. The higher the reading, the better the long-term clinical behaviour.

Tested bridge dimensions:
Posterior bridge 4x4 mm connector, bridge anchor 1.0 mm
Outstanding interplay for **impressive results**

The IPS e.max Shade Navigation App (SNA) assists you in finding the most suitable shade and translucency – for reliable and relaxed working.

**1 Simplified selection**

The stains and glazes of the IPS Ivocolor® assortment enable you to customize all IPS ceramic materials.

- Simplified handling due to innovative paste formulation
- High gloss at a firing temperature of only 710 °C
- Fluorescence with IPS Ivocolor Glaze Fluo

**7 Appropriate cementation**

SpeedCEM® Plus is a self-adhesive, self-curing resin cement with optional light-curing properties. It offers the ideal combination of high performance and ease of use: ideal for zirconium oxide restorations in combination with Ivoclean®, the universal cleaning paste.

Finding your way out of the cements maze: www.cementation-navigation.com

**6 Precision characterization**

The stains and glazes of the IPS Ivocolor® assortment enable you to customize all IPS ceramic materials.

- Simplified handling due to innovative paste formulation
- High gloss at a firing temperature of only 710 °C
- Fluorescence with IPS Ivocolor Glaze Fluo
Fast, precision milling

Coordinated with IPS e.max ZirCAD: IPS e.max ZirCAD is efficiently and rapidly machined in the PrograMill PM7 milling machine to produce high precision results.

Creative infiltration

The A-D Colouring Liquids and Effect Shade liquids ensure that a high level of individual design can be achieved before sintering.

Precise sintering

The Programat® S1 1600 unites impressive esthetics and efficiency – for example, with the speed sintering programs and the Programat Dosto-Tray sintering table. The sintering programs are ideally coordinated with IPS e.max ZirCAD.

Perfect ceramic layers

IPS e.max Ceram is a versatile layering ceramic featuring intuitive modelling properties and excellent stability.

- Consistent layering scheme
- Harmonious shade adjustment
- Excellent firing behaviour