

# IPS<sup>®</sup> e.max

INFORMATION FOR DENTAL TECHNICIANS

IPS e.max<sup>®</sup> –  
one system for every indication



## IPS e.max® – one system for every indication



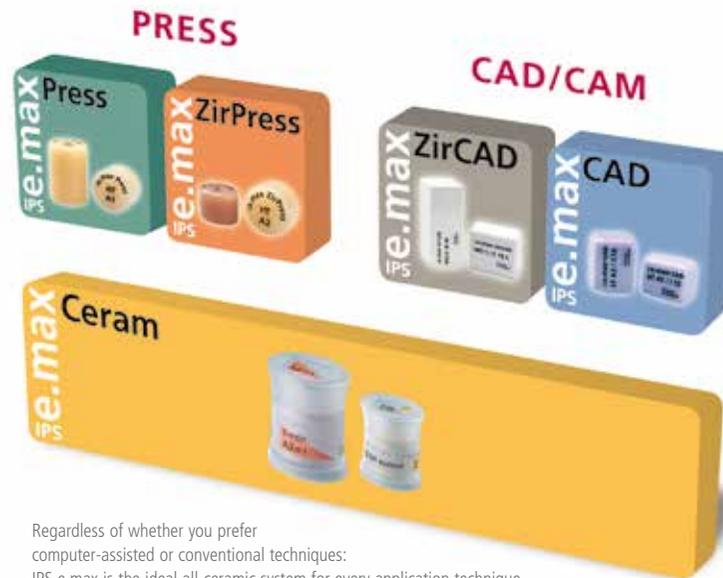
Laboratory work: O. Brix  
Clinician: Prof. Dr D. Edelhoff

Overcoming the challenges of everyday laboratory work has never been easier – with IPS e.max®, the system that covers the entire spectrum of all-ceramic indications, from thin veneers to 12-unit bridges.

IPS e.max combines uniqueness with high performance in the most impressive way, as it comprises materials that demonstrate exceptional esthetics as well as high strength. These materials are available for both press and CAD/CAM applications.

The decision to use IPS e.max is a decision to take advantage of the unlimited possibilities of all-ceramics and to benefit from easy handling and outstanding esthetics.

The requirements and aims of every case differ. IPS e.max meets these requirements, because due to the system components, you obtain exactly what you need.



Regardless of whether you prefer computer-assisted or conventional techniques: IPS e.max is the ideal all-ceramic system for every application technique.



Total restoration with IPS e.max  
(Prof. Dr D. Edelhoff / O. Brix, Germany)

## A sophisticated concept

IPS e.max is the sum of many good ideas. The well-thought-out system comprises innovative lithium disilicate ceramics ( $LS_2$ ), which are predominantly used in the fabrication of single-tooth restorations, as well as high-strength zirconium oxide materials, which are suitable for producing long-span bridges. As only one layering ceramic is used for all system components, you can benefit from a consistent layering scheme and exact shade match in combination works.

The IPS e.max Press and CAD lithium disilicate glass-ceramics are characterized by their outstanding esthetics and high strength (360–400 MPa). Depending on your personal preference, you can process the materials using the

traditional press or modern CAD/CAM technology. The restorations may even be conventionally cemented, if this is appropriate to the indication.

The IPS e.max ZirCAD zirconium oxide ceramic is the material of choice for fabricating larger restorations, for example, posterior bridges, because of its outstanding final strength.

Variety makes dental lab technology so interesting. Luckily, there is a system that takes this aspect into account.

### The highlights

- One system for every all-ceramic indication
- Maximum versatility due to the modular design of the system
- Possibility of combining lithium disilicate ( $LS_2$ ) and zirconium oxide ( $ZrO_2$ )
- One layering ceramic for the IPS e.max system
- Adhesive, self-adhesive and conventional cementation



## IPS e.max Press: All you need for the press technique

Lithium disilicate ( $LS_2$ ) glass-ceramic



The press technique has been successfully used to fabricate highly esthetic, precision-fit restorations for over 20 years.

The **IPS e.max Press** lithium disilicate glass-ceramic offers all the benefits expected of a dental pressed ceramic and therefore produces restorations that show excellent fit, form and function. At the same time, it demonstrates high strength of 400 MPa. The ceramic combines economy with esthetics, as the restorations can either be efficiently characterized or built up in highly esthetic layers. In addition, minimally invasive restorations (e.g. thin veneers) can now be pressed with this method.

Depending on the indication at hand, the restorations may be conventionally cemented. The fact that this efficient procedure can be used heightens the material's acceptance among dentists.



### Indications

IPS e.max Press can be used to fabricate single-tooth restorations, bridges in the anterior and premolar region and implant superstructures. Minimally invasive inlays and onlays (1 mm), thin veneers (0.3 mm) as well as hybrid abutments and hybrid abutment crowns round off the ceramic's indication range.

The IPS e.max Press ingots are available in 4 levels of translucency (HT, LT, MO, HO) and 2 sizes each. The range also includes Impulse ingots (Value, Opal). As a result, you have a wide selection of ingots from which to choose the one that suits your preferred processing technique (staining, cut-back or layering technique) and the case to be treated (e.g. discoloured preparation).

The restorations are characterized or veneered with matching IPS e.max Ceram staining materials or layering ceramic.

The Press material for the staining or cut-back technique is available in 16 A–D, 4 Bleach BL as well as 3 Value and 2 Opal shades. For the layering technique, the ingots are supplied in 5 group shades.

*"The dream of fabricating fixed restorations for all the different indications with only one system and choosing the most appropriate opacity or translucency of the ingot for pressing bridges, veneers, partial crowns and inlays has become a reality. The different types of ingots, that is, HO, MO, LT and HT, offer complete freedom in the fabrication of exceptionally esthetic all-ceramic restorations. All-ceramics never cease to fascinate me."*



O. Brix, Germany



## All you need for natural-looking restorations



### HT ingots

The highly translucent (HT) ingots are suitable for producing minimally invasive full-contour restorations, such as inlays, onlays and veneers. The restorations are customized with IPS e.max Ceram staining materials (Shades/Essence).



### LT ingots

These ingots showing low translucency (LT) are used in the fabrication of full-contour partial and full crowns. In the anterior region in particular, the esthetic appearance of the restorations is maximized by employing the cut-back technique in conjunction with IPS e.max Ceram.



### MO ingots

Frameworks that are placed on vital or slightly discoloured prepared teeth are best fabricated with the ingots of medium opacity (MO). They form an ideal base for lifelike restorations completed with IPS e.max Ceram layering material. They are available in five shade groups (MO 0–MO 4).

### HO ingots

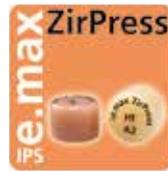
In cases where the prepared tooth structure is discoloured or titanium abutments are used, you do not have to forgo esthetic all-ceramic IPS e.max Press restorations. The HO ingots featuring high opacity successfully mask dark backgrounds to achieve highly esthetic results. The ingots are available in three different shades (HO 0, HO 1, HO 2).

### Impulse ingots

The Impulse ingots are available in three brightness values (Value 1, 2, 3) and two opalescent shades (Opal 1, 2). These ingots are mainly used in the fabrication of veneers, partial and single crowns. The different brightness values of the Value ingots allow an optimum integration of the restoration into the surrounding tooth structure. The two Opal ingots are used to optimally imitate a lifelike opalescent effect in veneers, and particularly in thin veneers.

### The highlights

- High strength (400 MPa) and outstanding esthetics
- Minimally invasive restorations
- Various translucency levels for lifelike esthetics and maximum versatility
- Depending on the indication, adhesive, self-adhesive and conventional cementation
- Pressed hybrid abutment solutions from your laboratory



## IPS e.max ZirPress: All you need for the press-on technique

Fluorapatite glass-ceramic



1 | Application of ZirLiner



2 | Wax-up



3 | Pressed restoration



4 | Completed bridge

**IPS e.max ZirPress** responds to the needs of modern dental technicians. IPS e.max ZirPress allows you to combine the press and the CAD/CAM technique and to benefit from the precision fit and high strength offered by zirconium oxide-based restorations.

The fluorapatite glass-ceramic ingots are designed for pressing onto IPS e.max ZirCAD, Zenostar and other  $ZrO_2$  frameworks with a CTE of 10.5 to 11.0.

The working procedure in the fabrication of long-span bridges is simplified in particular due to the fact that the restoration is built up in wax and then faithfully reproduced in ceramic. You can concentrate on reproducing the form and function of the tooth, because the fluorapatite material takes care of the esthetic appearance and translucency of the tooth and the precision fit of the ceramic shoulder.

### Indications

The press-on technique efficiently produces zirconium oxide-supported (multi-unit) bridges and crowns as well as implant superstructures. IPS e.max ZirPress may also be used to reproduce gingival parts and to press veneers..



INN-Keramik, Austria

*"IPS e.max ZirPress restorations are waxed up either fully or partially anatomically and subsequently pressed. Particularly with multiple firing cycles, I can achieve ceramic shoulders with excellent fit and firing stability, also in the pontic area. As IPS e.max ZirPress ingots are available for both the staining and layering technique, restorations can be characterized or layered with IPS e.max Ceram depending on the preference and patient case – shade adjustments are a thing of the past."*



Jürgen Seger, Ivoclar Vivadent, Liechtenstein



## All you need for the staining and layering techniques



IPS e.max ZirPress ingots are offered in 3 different levels of opacity in A–D shades and in 4 Bleach BL shades. In addition, two gingiva shades are available. As several ingots can be pressed in the IPS Investment Ring System at the same time, they are supplied in only one size. The restorations are characterized with the staining materials or veneered with the layering materials of the IPS e.max Ceram assortment.



### HT ingots

These highly translucent ingots are used for the fully anatomical technique. The restorations are customized with the IPS e.max Ceram staining materials. This technique also allows inlay-retained bridges to be fabricated with all-ceramic materials without additional effort.

### LT ingots

These ingots showing low translucency are ideal for the cut-back technique. After the partially anatomical restorations have been pressed on the frameworks, you can complete the incisal area individually as you wish using the IPS e.max Ceram materials.

### MO ingots

The MO ingots are used for pressing accurately fitting ceramic shoulders, bridge pontics and the cervical third before the restoration is completed with the IPS e.max Ceram material.

### Gingiva ingots

These two ingots facilitate the fabrication of gingiva parts, particularly of large (implant) restorations, since the material does not shrink and therefore helps to reduce the number of firing cycles.



T. Michel, Germany

### The highlights

- Simple, efficient and quick procedure
- Four processing techniques cater to different preferences
- Precision-fit firing-resistant ceramic shoulders
- Innovative gingiva technique for the fabrication of implant superstructures



## IPS e.max ZirCAD: All you need for the CAD/CAM technique

Yttrium-stabilized zirconium oxide (ZrO<sub>2</sub>)



Due to its excellent final strength, **IPS e.max ZirCAD** is the material of choice in situations where high strength is required, for example, in posterior bridges.

IPS e.max ZirCAD is processed in a partially sintered "chalk-like" state with the inLab® or inLab® MC-XL System\*). The frameworks are designed with the dedicated software. Subsequently, the restoration is machined in detail. At this stage, it is about 20 percent larger than its final size. Next, the restoration is sintered in the Programat® S1 high-temperature furnace. In this process, the framework shrinks to its final size. Furthermore, the homogeneous microstructure produced during the sintering process imparts the material with its typical high fracture toughness. Inaccuracies are kept to a minimum due to the fact that the sintering program is matched to the IPS e.max ZirCAD material.

The IPS e.max ZirCAD frameworks are conventionally veneered with the IPS e.max Ceram layering ceramic. Alternatively, IPS e.max ZirPress is pressed onto them. The specially developed zirconium liner helps to generate a sound bond, irrespective of the technique that you use. The IPS e.max CAD-on technique also allows users to create veneering structures made of IPS e.max CAD material.

### Indications

IPS e.max ZirCAD is indicated for long-span bridge frameworks in the anterior and posterior region. In addition, it can be used to fabricate primary components for the telescope technique as well as implant superstructures and crowns.

\*) inLab is not a registered trademark of Ivoclar Vivadent AG.



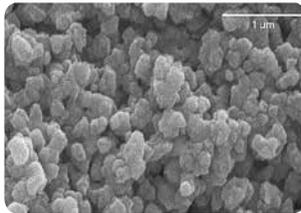
*"Zirconium oxide restorations no longer have the reputation of looking artificially white. Whether their lifelike appearance is achieved by using the sophisticated build-up technique or coloured frameworks is unimportant. IPS e.max ZirCAD MO 1 and 2 are solidly coloured blocks in which the colour is evenly distributed. The brightness of the sintered frameworks is precisely adjusted to the related shade group. If you do not like white zirconium oxide, you will appreciate the coloured IPS e.max ZirCAD blocks. Their shade and brightness as well as their handling properties are of a very high standard."*



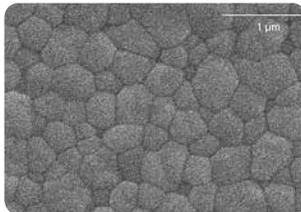
Volker Brosch, Germany



## All you need for efficient fabrication



1 | Before sintering



2 | After sintering

**IPS e.max ZirCAD** is supplied in seven block sizes and in three shades (MO 0, MO 1, MO 2). The smaller blocks are used to fabricate frameworks for copings, while the larger blocks are used to produce long-span bridge frameworks or for stack milling.

White lines at the transition between zirconium oxide-supported restorations and the gingiva as well as excessive brightness should be prevented, as they could impair the esthetics of the result. The coloured blocks (MO 1 and MO 2) are helpful in this respect.

Combination restorations are particularly difficult to produce. Therefore, the shade system of the IPS e.max ZirCAD blocks is coordinated with that of IPS e.max Press and CAD MO.

As a result, a sound colour basis is created for producing excellent esthetic veneering results irrespective of the IPS e.max framework material used (lithium disilicate or zirconium oxide).

It is important to know how to use every material within the system to full advantage.



### The highlights

- Fabrication of long-span bridges due to the outstanding strength of > 900 MPa and high fracture toughness
- Veneering of the framework with IPS e.max Ceram or pressing of IPS e.max ZirPress on the framework
- Application of the IPS e.max CAD-on technique in combination with IPS e.max CAD



## IPS e.max CAD: All you need for the CAD/CAM technique

Lithium disilicate ( $LS_2$ ) glass-ceramic

**IPS e.max CAD** – the impressive combination of uniqueness and high performance!

The unique lithium disilicate ceramic ( $LS_2$ ) fulfils the highest esthetic demands and unites state-of-the-art technology with exceptional user friendliness.

The material is designed for fabricating esthetic, high-strength restorations using efficient CAD/CAM processing technology – zirconium oxide-supported also for posterior bridges. The ceramic is machined in a “soft” intermediate state in which it has exceptional milling properties and an unusual “bluish” colour. In this state, the material can be manually adjusted or cut back in a few quick and easy steps and the fit can be checked. Subsequently, the material is

crystallized at 850 °C. In this process, IPS e.max CAD acquires its final strength of 360 MPa and the desired esthetic properties, such as tooth colour, translucency and brightness. Depending on the requirements, the frameworks are either esthetically built up with IPS e.max Ceram or the full-contour monolithic restorations are efficiently characterized.

### Indications

Single-tooth restorations, such as thin veneers, veneers, inlays, partial crowns, crowns and implant superstructures, which may also be conventionally cemented, depending on the indication. In addition, anterior and premolar bridges as well as hybrid abutments and hybrid abutment crowns can be fabricated. Zirconium oxide-based posterior bridges complement the indication range.



*“The addition of various levels of opacity to the product range opens up new possibilities for achieving outstanding shade results. The new HT ingots can be used to fabricate highly translucent veneers in which the natural tooth colour dominates the final shade.”*



August Bruguera, Spain



## All you need to produce highly esthetic CAD/CAM restorations

**IPS e.max CAD** blocks are available in three levels of translucency and in two sizes. On the basis of the individual case, you choose the appropriate block and your preferred processing technique (staining, cut-back or layering technique).

The blocks for fabricating full-contour restorations are supplied in 16 A–D and 4 Bleach BL shades, while 5 group shades are available for the layering technique. Two special blocks, A14 and A16, feature a special interface, e.g. for the Sirona Ti-Base.



### HT blocks

These highly translucent (HT) blocks are used to machine minimally invasive full-contour restorations, for example, inlays, onlays and veneers. HT Blocks in the size B40 are available for the IPS e.max CAD-on technique.

These restorations are subsequently characterized with staining materials.



### LT blocks

These blocks showing low translucency (LT) are suitable for fabricating full-contour partial and full crowns as well as 3-unit anterior bridges. The cut-back technique and subsequent layering with IPS e.max Ceram produces enhanced esthetic results.

### MO blocks



Because of their high opacity, IPS e.max CAD MO blocks are used to produce frameworks that are placed on vital and slightly discoloured prepared teeth. They are veneered with IPS e.max Ceram and they are available in 5 group shades (MO 0–MO 4).

### Impulse Blocks (Value, Opal)

The Impulse ingots are available in three Value shades with different brightness values (Value 1, 2, 3) and two opalescent shades (Opal 1, 2). They are mainly used for the fabrication of thin veneers, veneers, partial and single crowns.

### The highlights

- High strength (360 MPa) and high level of esthetics
- Comprehensive indication range
- Minimally invasive restorations
- Adhesive, self-adhesive and conventional cementation depending on the indication



## IPS e.max Ceram: All you need for the layering technique

Nano-fluorapatite layering ceramic



Fluorescence, opalescence, lifelike light scattering as well as excellent chroma enhance the esthetic appearance and vitality of IPS e.max Ceram restorations.

T. Michel, Germany

The lifelike esthetic appearance of the **IPS e.max Ceram** layering ceramic is certain to impress you. The unique combination of translucency, brightness and opalescence produces true-to-nature light scattering and a balanced relationship between the brightness and chroma of the restoration.

Forget the challenging task of having to adjust the shade of different restorations when you are working with a variety of framework materials. A common veneering material is the key to producing highly esthetic results with the different IPS e.max materials, irrespective of whether the substructure is made of lithium disilicate (LS<sub>2</sub>) or zirconium oxide. You benefit from one, common layering scheme and accurate shade matching. Furthermore, dental professionals and patients alike will appreciate the fact that all the restorations exhibit the same clinical behaviour and therefore, comparable wear and surface gloss.

### Indications

- One layering ceramic for the IPS e.max system
- Suitable for fabricating veneers



IPS e.max Ceram on IPS e.max Press  
(Dr U. Brodbeck, Switzerland /  
J. Seger, Ivoclar Vivadent, Liechtenstein)

*"Their structure and lustre make teeth unique. In order to replicate the surface structure of natural teeth, I need an excellent layering material. IPS e.max Ceram fulfils all my requirements. The material shows high stability during firing and produces an overall harmonious and natural-looking effect."*



Michele Temperani, Italy



## All you need to achieve consistent esthetics and shading



Internal characterization



External characterization



You do not have to be an absolute high-end user or an artist to use the IPS e.max system. IPS e.max Ceram takes into account that every user has different esthetic expectations. In addition to the conventional dentin and incisal materials in A–D, Chromascop and Bleach shades, a comprehensive range of supplementary materials is available.

The Essence powders offer a convenient “3-in-1 effect”. It is up to you to decide whether you want to use them for the internal and external characterization of the restoration or if you prefer to mix them with other IPS e.max Ceram powders to obtain the exact shade that corresponds to your individual requirements.

The Gingiva ceramic materials are used to create lifelike vestibular gingival parts, which are particularly important in implant-retained restorations. The shades range from orange

and reddish to bluish. A special coloured IPS e.max ZirLiner Gingiva is available for use on zirconium oxide.

The **IPS e.max Ceram** Glaze Spray allows you to glaze IPS e.max restorations quickly and easily. The spray’s benefits include its unchanging consistency and the fact that it is applied in a thin layer which helps to maintain the surface texture of the restoration and to produce an even gloss. The spray can be used on both full-contour and veneered IPS e.max restorations.\*)

\* IPS e.max CAD Crystall./Glaze Spray is available for glazing **uncrystallized**, full-contour IPS e.max CAD restorations.



IPS e.max restoration with gingival parts  
T. Michel, Germany

### The highlights

- One layering ceramic for lithium disilicate (LS<sub>2</sub>) and zirconium oxide (ZrO<sub>2</sub>) frameworks
- Predictable shade results and the same clinical behaviour – e.g. wear and surface gloss – irrespective of the type of framework
- Nano-fluorapatite is responsible for highly esthetic properties
- Low firing temperature (750 °C) for fast results

## All you need for cementation



Cementation with Variolink Veneer  
(Dr S. Kina, Brazil / A. Bruguera, Spain)

For the cementation of IPS e.max restorations your dentist can choose between proven adhesives and conventional cementation materials from Ivoclar Vivadent, depending on the indication at hand.

IPS e.max crowns and bridges can be cemented according to adhesive, self-adhesive and conventional methods. Inlays, (thin) veneers and occlusal veneers are cemented adhesively as usual.

### **Variolink® II / Variolink® Veneer**

The dual-curing, highly esthetic luting composite Variolink II has been successfully used for more than fifteen years and offers excellent clinical results. The light-curing Variolink Veneer is especially indicated for the adhesive cementation of veneers.

### **Multilink® Automix**

The universal, dual-curing luting composite offers a wide range of indications. Furthermore, it generates a very strong and lasting bond. Used together with the Primer A/B, Multilink Automix seals the dentin and establishes a good marginal seal.

### **SpeedCEM®**

The self-adhesive luting composite is even easier to use than a conventional cement. At the same time, it offers the additional advantages of a composite, such as higher bond strength and translucency, as well as lower water solubility.

### **Vivaglass® CEM**

The classical self-curing glass ionomer cement is suitable for the cementation of high-strength ceramic materials, such as IPS e.max, among others. It contains a particularly transparent glass filler for achieving esthetic results.



Cementation with Multilink Automix  
(Dr A. Kurbad / K. Reichel, Germany)



Cementation with Vivaglass CEM  
(Dr A. Kurbad / K. Reichel, Germany)



## All you need for best results



Programat S1

The latest furnace generation from Ivoclar Vivadent is specially coordinated with the IPS e.max materials. The furnaces produce excellent firing and press results in the fabrication of ceramic restorations.

The furnaces in the Programat series – **Programat® P310**, **Programat® P510** and **Programat® P700/G2** – are characterized by high quality, innovative features and many years of successful use. The new QTK muffle technology represents the core of this new furnace generation. It enables the firing procedure to be precisely controlled and ensures even heat distribution in the firing chamber. This comprehensive range of Programat furnaces allows you to choose the one that best fulfills your requirements.

**Programat EP 3010** and **Programat EP 5010** are combination furnaces which can be used both as press and ceramic furnaces. These furnaces are also equipped with the proven QTK muffle technology. The electronic press drive with precise force control ensures optimum press result.

The **Programat S1** is a light-weight and compact sintering furnace. The major advantage of this furnace is the short process time, which has a positive effect on the fabrication time of ZrO<sub>2</sub> crown and bridge frameworks.

Furthermore, the Programat appliances are equipped with Power Saving Technology, which reduces the energy consumption in the stand-by mode by up to 40 percent.



Programat P310



Programat P510



Programat P700/G2



Programat EP 3010



Programat EP 5010



## Fixed Prosthetics

IPS e.max® forms a part of the “Fixed Prosthetics” product category. The products of this category cover the procedure involved in the fabrication of fixed prosthetic restorations – from temporization to restoration care. The products are optimally coordinated with each other and enable successful processing and application.



### THESE ARE FURTHER PRODUCTS OF THIS CATEGORY:

#### Programat®

Press and ceramic furnaces for demanding requirements



Packed with proven technology and advanced innovations

- Outstanding press and firing results
- Ideally coordinated with the ceramic materials of Ivoclar Vivadent
- Easy operation

#### Multilink® Automix

The adhesive cementation system



A strong bond, proven performance

- Strong hold – both dual and self-curing
- Universal – suitable for silicate and oxide ceramics as well as metal
- Clinically proven – numerous long-term studies

Would you like to know more about the products of the “Fixed Prosthetics” category? Simply get in touch with your contact person at Ivoclar Vivadent or visit [www.ivoclarvivadent.com](http://www.ivoclarvivadent.com) for more information.