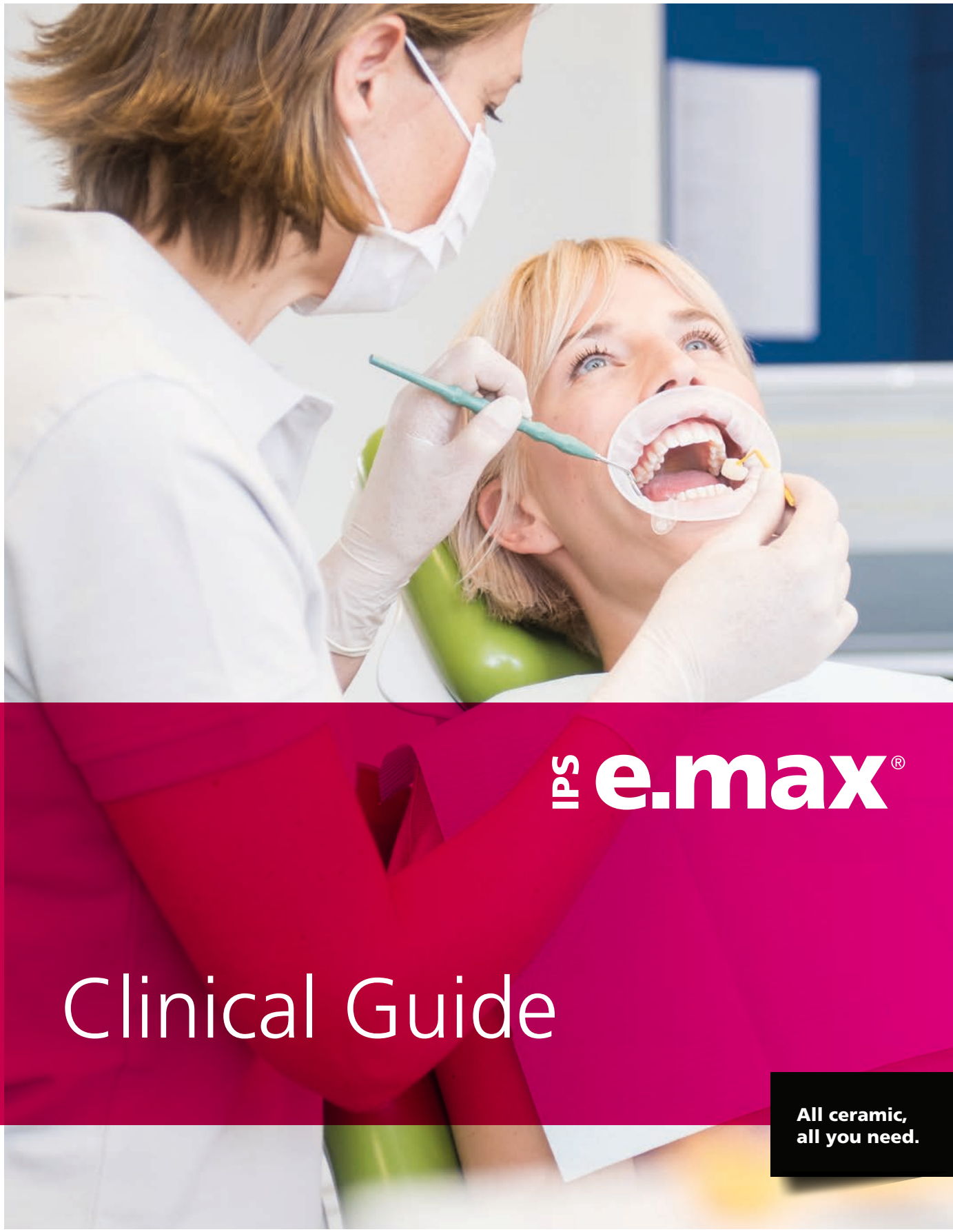


IPS e.max®

Clinical Guide

All ceramic,
all you need.

ivoclar vivadent®
passion vision innovation

All ceramic, all you need

An all-ceramic system for all applications
in fixed denture prosthetics

Table of contents

IPS e.max – all ceramic, all you need

IPS e.max is synonymous with exceptional esthetics and dependability. It is the most widely used all-ceramic system in the world [1]. Since the system's introduction more than a decade ago, its innovative and reliable components have thoroughly impressed scientists, dentists and patients alike.

Exceptional **esthetics**

like the natural model

Maximum **flexibility**

adhesive, self-adhesive or conventional cementation

Complete **confidence**

96% survival rate[2]: More than 10 years of documented clinical success

Extensive **application spectrum**

an appropriate material for every situation

[1] Based on sales figures
[2] IPS e.max Scientific Report, vol. 03 / 2001 – 2017, Ivoclar Vivadent AG, Schaan, Liechtenstein

An all-ceramic system for all applications

The reliable IPS e.max materials offer suitable solutions for all types of all-ceramic applications – from thin veneers to long-span bridges.

The system comprises two different types of materials: proven lithium disilicate glass-ceramic and high-strength zirconium oxide. The materials ideally complement each other and open up a wide range of possibilities to simplify and streamline restorative processes – from minimally invasive preparation to conventional cementation.

Lithium disilicate glass-ceramic (LS_2)

Lithium disilicate glass-ceramic is ideally suited for the fabrication of hybrid abutments and monolithic single crowns and can even be used for 3-unit bridges in the premolar region. The patented glass-ceramics IPS e.max® CAD and IPS e.max® Press have been clinically proven a million times over since their introduction. They impress users with their exceptional strength and high-end esthetics.

Zirconium oxide (ZrO_2)

High-strength zirconium oxide is one of the most efficient all-ceramic materials for dental applications. IPS e.max® ZirCAD zirconium oxide is characterized by its excellent biocompatibility and low heat conductivity. It can be used to create single-tooth restorations and long-span bridges. Zirconium oxide can be veneered with IPS e.max® Ceram fluorapatite glass-ceramic.

IPS e.max® ZirCAD Prime is a material of the IPS e.max ZirCAD portfolio which is distinguished by a unique combination of raw materials (3Y-TZP and 5Y-TZP), together with Gradient Technology (GT), the new innovative manufacturing technique. Among other things, this technology is responsible for producing a continuous, seamless progression of the shade and translucency within the material that results in exceptional esthetics comparable to that of lithium disilicate glass-ceramics. As a result of its high strength, IPS e.max ZirCAD Prime covers all applications – from single-tooth crowns to long-span bridges.

Fluorapatite glass-ceramic

IPS e.max Ceram is the highly esthetic layering ceramic within the IPS e.max system. All IPS e.max restorations veneered with IPS e.max Ceram exhibit the same wear properties and surface gloss. Zirconium oxide frameworks pressed over with IPS e.max® ZirPress, which are either stained or veneered, present an alternative to conventionally veneered frameworks.

Fields of application

	Lithium disilicate glass-ceramic (LS_2)	Zirconium oxide (ZrO_2)
Thin veneers 	✓	
Veneers 	✓	
Inlays 	✓	
Onlays (e.g. occlusal veneers, partial crowns) 	✓	
Crowns 	✓	✓
3-unit bridges 	✓ (1)	✓
4- to multi-unit bridges 		✓
Hybrid abutments 	✓	
Hybrid abutment crowns 	✓	

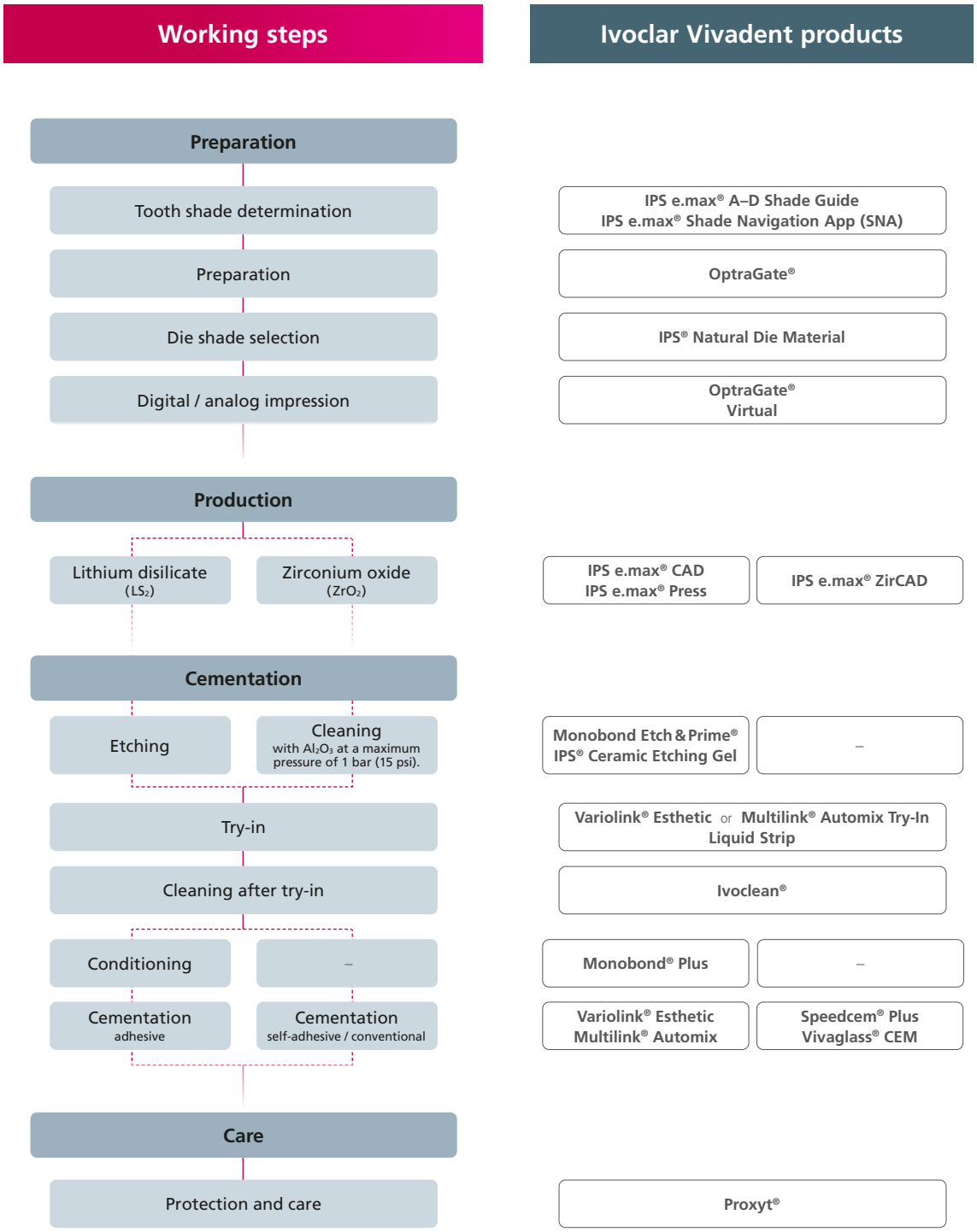
[1] Up to the second premolar

Limitations of use:

- Very deep subgingival preparations
- Patients with substantially reduced residual dentition
- Parafunctions, e.g. bruxism
- Provisional insertion or trial wearing
- Any other uses that are not included in the range of applications

Working steps

for restorations made with IPS e.max materials



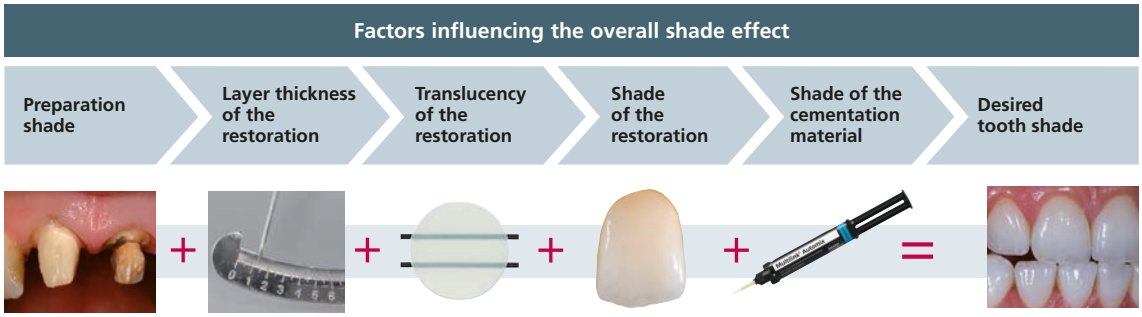
Tooth shade determination

Optimum shade and shape matching in the oral cavity of the patient is the prerequisite for a true-to-nature restoration. Shade differences between the restoration and the natural residual dentition in particular, detrimentally affect the overall esthetic appearance.

To achieve optimum shade matching, the following guidelines and notes must be observed.

The overall esthetic appearance of a restoration is influenced by the following factors:

- The **shade of the prepared tooth** (natural tooth structure, core build-up, abutment, implant)
- The **shade**, **translucency** and **thickness of the restoration**,
- The **shade of the cementation material**.



Tips on shade determination:

- The tooth shade is determined on the non-prepared tooth or adjacent teeth after cleaning.
- Individual characteristics need to be taken into account.
- The shade should be determined by daylight.
- The patient should not wear clothes and/or lipstick of intensive colour.
- It is recommended to additionally take a digital photo of the starting situation.

IPS e.max® **S**hade **N**avigation **A**pp

Shade selection made easy

The free IPS e.max Shade Navigation App makes it easier for you and your dental lab to find the suitable material in the correct shade and translucency level.

The intelligent Shade Navigation App takes all important factors into account and provides support in selecting the optimal material and the correct shade. It represents an ideal basis for your communication with the lab.

A few entries suffice, and your dental technician will be presented with a suggestion for the optimal ingot or the suitable disc in five easy steps.

Your lab merely requires the following information:

- Tooth shade
- Application
- Material
- Shade of the preparation
- Layer thickness

IPS e.max SNA

Download on the App Store

GET IT ON Google Play

WATCH THE ANIMATION NOW:

www.ivoclarvivadent.com/SNA

For easy communication of shades to your laboratory

General preparation guidelines for all-ceramics

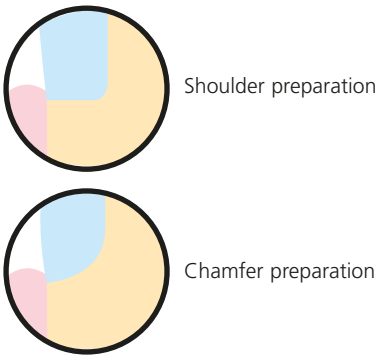
Successful results with IPS e.max can only be achieved if the preparation guidelines and minimum layer thicknesses are strictly observed.

In general, the following rules apply for all-ceramic restorations:

- Do not prepare any angles or edges.
- The ideal preparation is a shoulder with rounded inner angles or a chamfer preparation.
- Evenly reduce the anatomical shape while observing the stipulated minimum wall thicknesses.

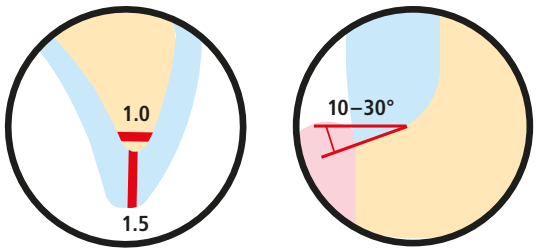
For **CAD/CAM-fabricated restorations,** the incisal edge of the preparation should be at least 1 mm (milling tool geometry) in order to allow optimum milling of the incisal portion during CAM processing.

The dimensions indicated on the following pages reflect the minimum thicknesses for IPS e.max restorations.



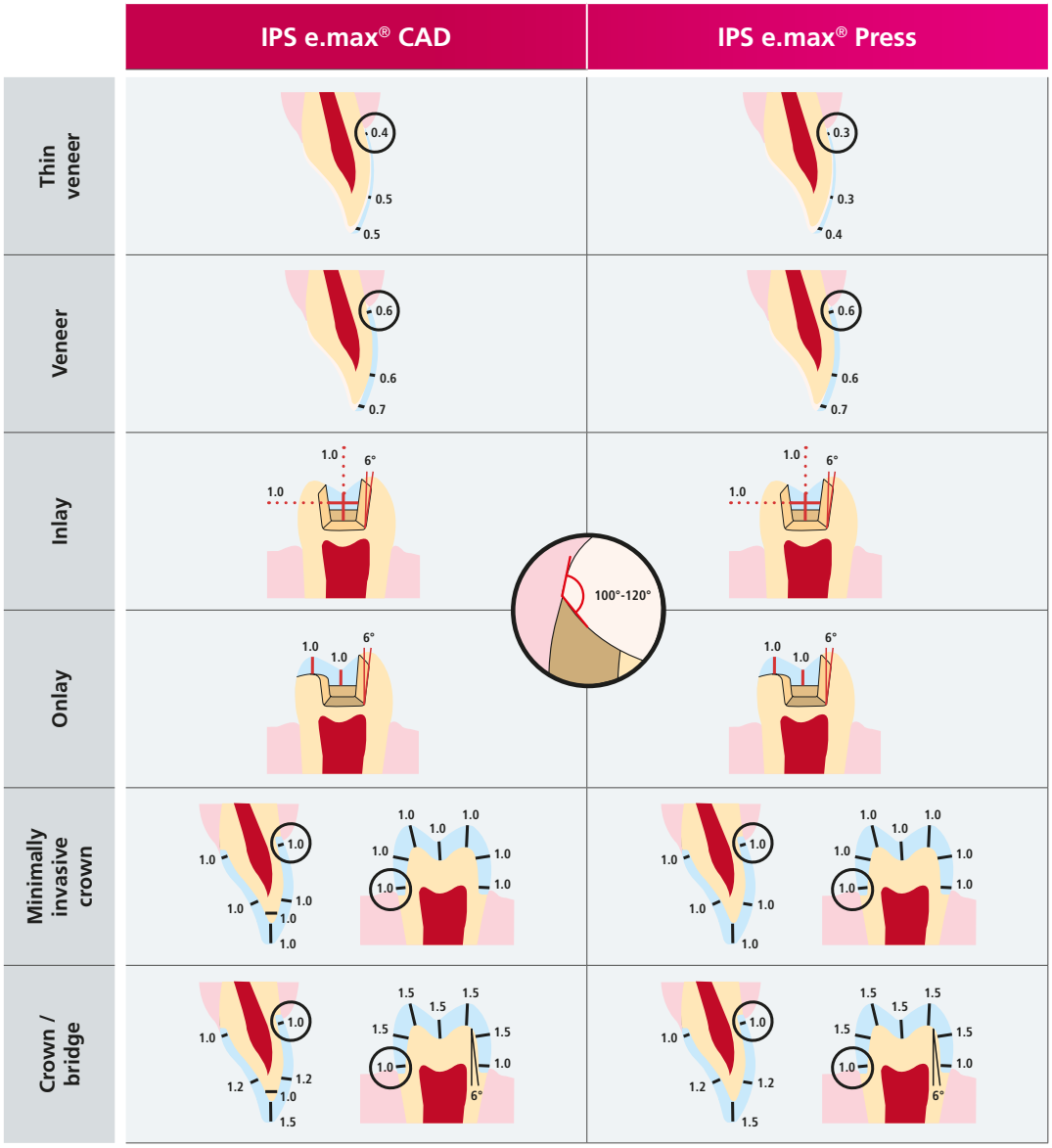
Shoulder preparation

Chamfer preparation



Preparation guidelines for lithium disilicate glass-ceramics (LS_2)

The availability of sufficient space represent an important basis for achieving successful results with the material selected. The minimum layer thicknesses for IPS e.max CAD and IPS e.max Press restorations indicated below must be observed when preparing the tooth.



Failure to observe the stipulated framework design criteria and minimum thicknesses may result in clinical failures, such as cracks, delamination or fracture of the restoration.

In combination with adhesive cementation, IPS e.max lithium disilicate crowns (500 MPa)[1] should have a minimum wall thickness of at least 1 millimetre.

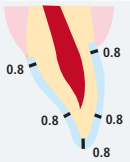
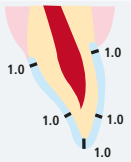
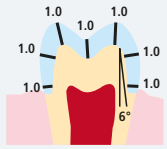
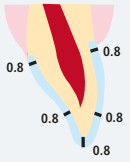
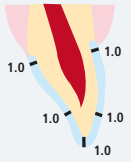
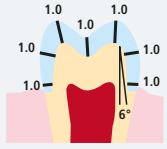
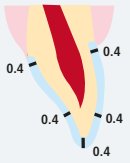
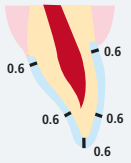
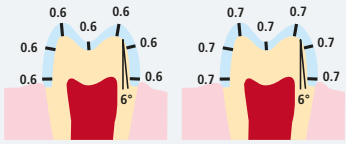
[1] Mean biaxial flexural strength over a period of 10 years (IPS e.max CAD 530 MPa, IPS e.max Press 470 MPa), R&D Ivoclar Vivadent AG, Schaan, Liechtenstein

Preparation guidelines for zirconium oxide (ZrO_2)

In addition to the general preparation guidelines, the guidelines and minimum wall thicknesses indicated below must be observed for IPS e.max ZirCAD zirconium oxide.

– For conventional and/or self-adhesive cementation, retentive surfaces must be created (preparation height at least 4 mm).
– The indicated dimensions reflect the minimum thicknesses for IPS e.max ZirCAD restorations.

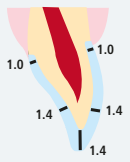
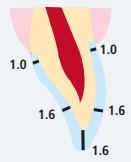
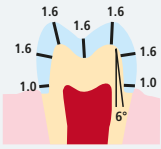
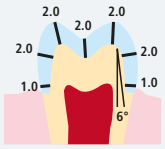
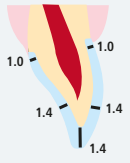
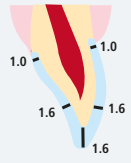
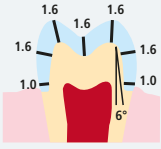
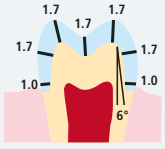
Minimum preparation depth for monolithic restorations:

		Anterior crowns	Anterior bridge abutments	Posterior crowns and bridges
Polychromatic	IPS e.max® ZirCAD Prime IPS e.max® ZirCAD MT Multi			
Monochromatic	IPS e.max® ZirCAD MT			
	IPS e.max® ZirCAD LT			

The required minimum wall thicknesses vary depending on the material used. The respective preparation guidelines need to be observed in this context. If necessary, ask your dental lab.

When using the cut-back technique, care must be taken to further reduce the dental hard tissue by another millimetre in the area of the veneer.

Minimum preparation depth for veneered restorations:

		Anterior crown coping	Anterior bridge abutment framework	Posterior crown coping	Posterior bridge framework
Polychromatic	IPS e.max® ZirCAD Prime				
Monochromatic	IPS e.max® ZirCAD LT IPS e.max® ZirCAD MO				

Guidelines for bridges made with lithium disilicate glass-ceramics (LS_2) and zirconium oxide (ZrO_2)

The availability of sufficient space represents an important basis for achieving successful results with the material selected and thus for producing long-lasting restorations. In this context, it is important to observe the material-specific occlusal minimum layer thicknesses and connector dimensions.

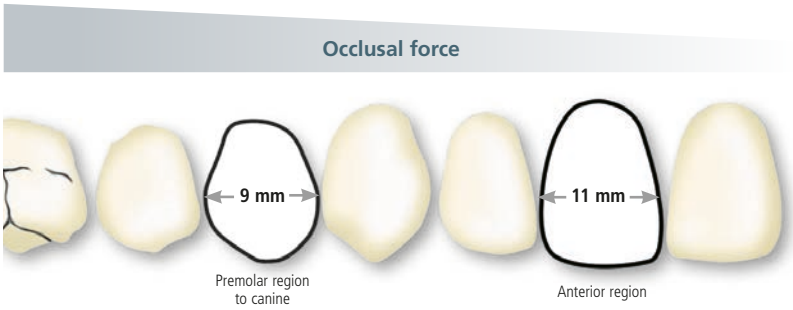
Aim for the largest possible dimensions when designing the connectors:

- The height of the connector is more important for the stability than its width. Doubling the width only results in double the stability, while doubling the height results in up to four times the stability.
- The greater the distance between the abutment teeth, the higher the mechanical stress on the construction and the exerted masticatory forces are going to be.

  Therefore, no bridge restorations with more than one pontic may be constructed with **IPS e.max CAD (flexural strength of 530 MPa[1])**, **IPS e.max Press (flexural strength of 470 MPa[1])** and **IPS e.max ZirCAD MT / MT Multi (flexural strength of 850 Mpa[1])**, and no bridge restorations with more than two pontics may be constructed with **IPS e.max ZirCAD Prime / LT / MO (flexural strength of 1200 MPa[2])**.

Note on lithium disilicate glass-ceramic (LS_2) bridges:

Given the different masticatory forces, the maximum acceptable pontic width is different in the anterior and premolar region.



The pontic width is determined on the unprepared tooth:

- In the anterior region, the pontic width should not exceed 11 mm.
- In the premolar region (canine to the 2nd premolar), the pontic width should not exceed 9 mm.

[1] Mean biaxial flexural strength over a period of 10 years, R&D Ivoclar Vivadent, Schaan, Liechtenstein
[2] Typical mean value of biaxial strength (MO and LT) or typical of biaxial flexural strength in the dentin region (Prime), R&D Ivoclar Vivadent AG, Schaan, Liechtenstein

Shade determination on the prepared tooth

In order to facilitate the reproduction of the desired tooth shade, the shade of the preparation is determined in the most heavily discoloured area with the help of the IPS Natural Die Material shade guide.

This enables the dental lab technician to fabricate a model similar to the prepared tooth of the patient, on the basis of which the correct shade and brightness values of the all-ceramic restorations may be selected.

The example below shows which influence the various shades of the preparation / natural tooth structure have on the final result when the same restoration is used. The restoration (veneer made of LS_2, 0.5 mm) remains unchanged.

ND 1 | ND 2 | ND 3 | ND 4 | ND 5 | ND 6 | ND 7 | ND 8 | ND 9

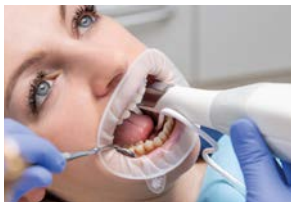
Restoration:
Veneer (0.5 mm, IPS e.max CAD HT B1)

Cementation material:
Variolink Esthetic neutral

Preparation shade:
IPS Natural Die Material, ND 1 – ND 9

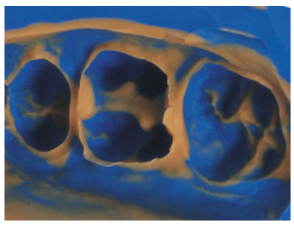
Digital / analog impression

Impressions and intraoral scans are an important link between the dental practice and the dental lab. They form the basis for successful restorations.



Digital impression

In order to obtain an adequate and clear view of the treatment field, we recommend using a latex-free lip and cheek retractor (e.g. OptraGate).



Analog impression

An efficient, reliable impression material is required to produce highly precise models and consequently highly precise permanent restorations.

The impression is taken using
- silicone (e.g. Virtual)
- polyether

For detailed information on the scan process and the CAD/CAM processing procedure, please refer to the corresponding instructions for use / operating manual of the respective CAD/CAM system. The directions of the manufacturer need to be observed.

Temporary restoration

Temporary restorations enable the function, phonetics and esthetics to be determined in advance and to adjust them at a later stage, if necessary.

The Telio product system is designed for dentists (Telio CS) and dental technicians working with CAD/CAM systems (Telio CAD). All the materials are ideal for the manufacture of conventional and implant-supported temporaries. The materials are fully compatible and their shades are optimally coordinated.

Temporary restorations are cemented with a provisional, eugenol-free cement such as the dual-curing Telio CS Link.

Try-in / Cleaning of the restoration

Shade simulation with the help of try-in pastes (e.g. Varliolink Esthetic or Multilink Automix try-in pastes) must always be carried out before the working field is isolated or the teeth are dried, since drying temporarily lightens the tooth structure. The glycerine-containing pastes are water soluble and can be rinsed off easily under running tap water or removed with an ultrasonic cleaner.

For the try-in of the **permanent restoration** glycerine gel (e.g. Liquid Strip) can be used. The gel is also suitable for preventing an oxygen-inhibited layer on composite resin and for protecting the etch pattern on lab-fabricated all-ceramic restorations.

The universal cleaning paste Ivoclean is used for the extraoral **cleaning** of pretreated ceramic restoration surfaces that have become contaminated during intraoral try-in procedures.

Preparing for cementation

Enjoy complete flexibility when cementing IPS e.max restorations. Depending on the area of application, you can use adhesive, self-adhesive or conventional cementation. Choosing the right cement is essential to achieving long-lasting restorations.

	IPS e.max IPS e.max Press | IPS e.max CAD				
Material	**Lithium disilicate (LS_2)**				
Applications	**Thin veneers, veneers, occlusal veneers, inlays, onlays, partial crowns, minimally invasive crowns**	**Crowns, 3-unit bridges up to the 2nd premolar**	**Hybrid abutment**	**Crown on hybrid abutment**	**Hybrid abutment crown**
Cementation method	Adhesive	Self-adhesive / conventional[1]	Screw-retained	Self-adhesive	Screw-retained
Sterilization	–	–	Steam sterilization 132 °C / 270 °F (3 min)	–	Steam sterilization 132 °C / 270 °F (3 min)
Etching / Conditioning of bonding or screw channel surfaces	**Option 1** Apply Monobond Etch & Prime for 20 seconds and allow it to react for another 40 seconds.		**Option 2** Etching: 20 seconds with IPS Ceramic Etching Gel Conditioning: 60 seconds with Monobond Plus [2]		
Sealing of the screw channel (intraoral)	–	–	Application of the bonding agent and sealing of the screw channel with temporary composite resin (e.g. Telio Inlay)	–	Application of the bonding agent and sealing of the screw channel with composite resin (e.g. Tetric Evo Ceram)
Luting system	Variolink Esthetic, Multilink Automix [3]	Speedcem Plus, Vivaglass CEM	–	Speedcem Plus	–

Variolink Esthetic

Esthetic, light- and dual-curing luting composite offering exceptional esthetics and user-friendly processing. Adhesive luting of

- glass-ceramics
- lithium disilicate glass-ceramics
- composite resin restorations (inlays, onlays, partial crowns, crowns, bridges)

	IPS e.max® IPS e.max ZirCAD	
Material	**Zirconium oxide (ZrO_2)**	
Applications	**Crowns and bridges**	
Cementation method	Adhesive	Self-adhesive / conventional
Cleaning	With Al_2O_3 (25–70 µm) at a maximum pressure of 1 bar (15 psi) Cleaning with Ivoclean after try-in	
Conditioning	60 seconds with Monobond Plus	–
Luting system	Multilink Automix	Speedcem Plus Vivaglass CEM

Please read the corresponding Instructions for Use.

[1] Wall thickness of crowns min. 1.5 mm
[2] Conventional cementation does not involve a conditioning step.
[3] Not recommended for veneers

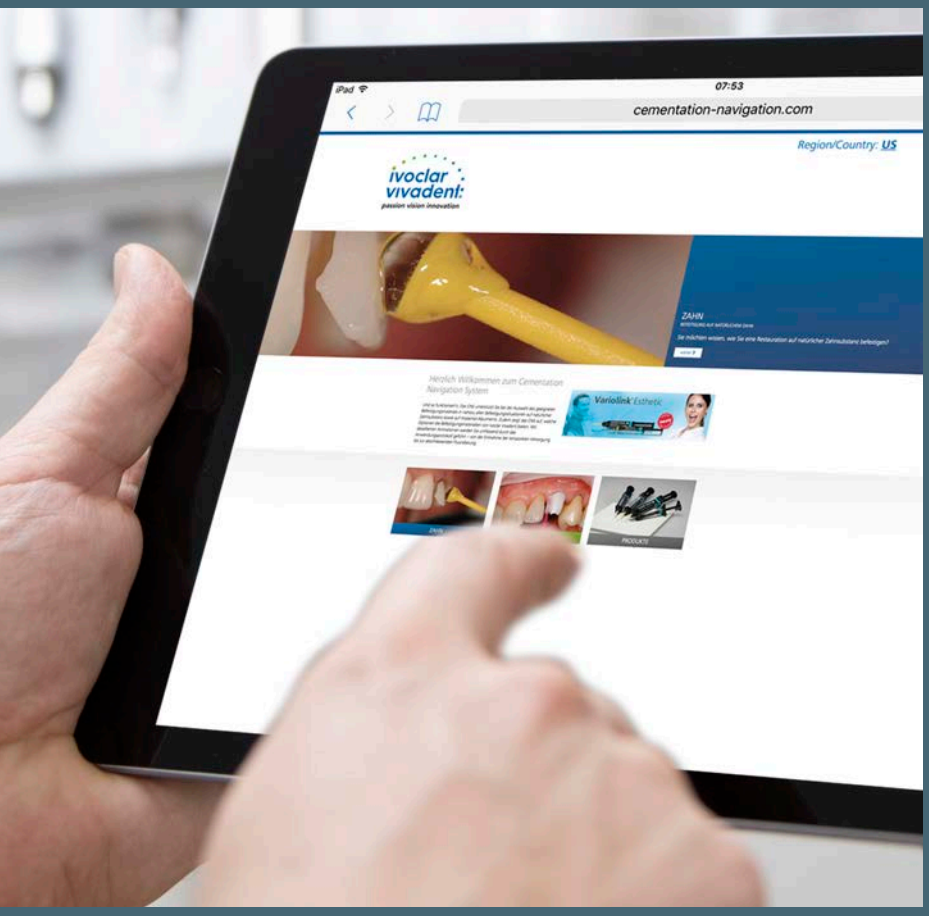
The range of available products may vary from country to country.

Speedcem Plus

Self-adhesive, self-curing resin cement with optional light-curing for the self-adhesive, self-curing cementation of

- high-strength all-ceramics (zirconium oxide / lithium disilicate)
- restorations on implant abutments
- metal or metal-supported restorations

Cementation **N**avigation **S**ystem



Finding your way out of the cements maze

Proper cementation

The Cementation Navigation System, the popular multimedia application, offers practical orientation and guidance for cementation cases.

The app helps you to find the most suitable luting material for almost any cementation task, irrespective of the substrate: tooth structure or implant abutments.

The app is easy to use and contains detailed 3D animations. Step-by-step instructions guide you through the application procedure.

CNS

TRY NOW:

www.cementation-navigation.com

Adjustments and intraoral / extraoral polishing

	Monolithic		Veneered
	Lithium disilicate glass-ceramic (LS_2)	**Zirconium oxide (ZrO_2)**	**Lithium disilicate glass-ceramic (LS_2) and zirconium oxide (ZrO_2)**
Extensive adjustments	Fine diamonds [2, 3] 	Fine diamonds [2, 3] 	Extrafine diamonds [2, 3] 
Small adjustments	Extrafine diamonds [2, 3] 	Fine diamonds [2, 3] 	Extrafine diamonds [2, 3] 
Polishing	Polishing in two steps using OptraGloss [1] 	Polishing in two steps using OptraGloss [1] 	Polishing in two steps using OptraGloss [1] 

General notes:

- Perform wet processing intraorally and dry processing extraorally
- The directions of the grinding tool manufacturer regarding the correct use (e.g. low rotation speed) need to be observed.
- Use low pressure to avoid overheating.

[1] Maximum rotation speed 10 000 rpm
[2] Intraoral: Maximum rotation speed 15 000 rpm
[3] Extraoral: Maximum rotation speed 20 000 rpm

Protection / Care

Systematic professional cleaning and polishing of the teeth, restorations and implants is essential in the prevention of caries, periodontal and peri-implant disease.

Professional oral care using suitable products (e.g. Proxyt) not only promotes oral health, but also pink-white esthetics.


Gentle care for IPS e.max Press restorations


Optimum pink-white esthetics

Clinical cases

with IPS e.max zirconium oxide (ZrO_2)

Posterior crown made with IPS e.max zirconium oxide cemented with Speedcem Plus

Dr Lukas Enggist,
Ivoclar Vivadent, Liechtenstein

Starting situation with temporary restoration (e.g. Telio CS C&B).

Remove the temporary restoration from tooth 25.

Prepared tooth, exposed and cleaned

Try-in of the zirconium oxide restoration using try-in paste (e.g. Varliolink Esthetic Try-In Paste)

Clean the bonding surface after try-in using Ivoclean cleaning paste. Then thoroughly rinse with water.

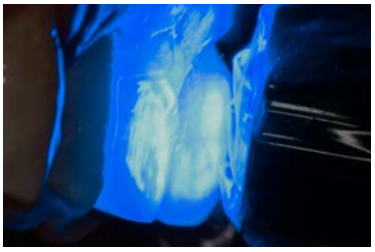
Thoroughly clean the prepared tooth using a polishing brush and oil- and fluoride-free prophy paste (e.g. Proxyt). Thoroughly rinse with water spray.

Dispense the desired amount of Speedcem Plus directly into the restoration.

Seat the restoration and pre-cure any cement excess for approx. 2 seconds using a curing light (e.g. Bluephase PowerCure in the PreCure mode).

Any excess can be easily removed with a suitable instrument.

Apply glycerine gel / airblock (e.g. Liquid Strip) to the cement line to avoid the formation of an oxygen-inhibited layer.



Cure the restoration from 4 different aspects for 20 seconds each and from the occlusal aspect for 10 seconds using a curing light (e.g. Bluephase PowerCure).

Polish the cement line under water cooling using a suitable polisher (e.g. OptraGloss).

Buccal view of the seated premolar crown made from zirconium oxide

Final restoration in situ at the recall examination

Posterior bridge made with IPS e.max zirconium oxide
cemented with Speedcem Plus

Dr Lukas Enggist,
Ivoclar Vivadent, Liechtenstein

Starting situation:
old metal-ceramic bridge

Situation after the removal of the bridge

Preparation with build-up

Monolithic 3-unit zirconium oxide bridge

Blast the bonding surfaces using aluminium oxide (Al_2O_3) at a pressure of maximum 1 bar (15 psi).

Clean the restoration with Ivoclean after try-in. Then rinse thoroughly with water.

Apply Speedcem Plus directly to the bonding surface.

Subsequently, seat the restoration and retain it in place exerting uniform pressure.

Pre-cure any cement excess at a distance of maximum 10 mm for two seconds per quarter surface using a curing light (e.g. Bluephase PowerCure in the PreCure mode). Retain the restoration in place during the process.

Remove pre-cured excess using a suitable instrument.

Polish the cement line under water cooling using suitable polishers (e.g. OptraGloss).

As a final step, check the occlusion of the restoration.

Apply a thin, uniform layer of Fluor Protector S fluoride varnish in the cervical area. Dry the varnish with the air syringe.

Final 3-unit, monolithic bridge made from IPS e.max ZirCAD LT after insertion

Clinical cases

with IPS e.max lithium disilicate (LS_2)

Veneer
made with IPS e.max lithium disilicate
cemented with Variolink Esthetic

Dr Arnd Peschke / DT Dieter Grübel,
Ivoclar Vivadent, Liechtenstein

Starting situation:
Retruded tooth 11 with a crack on the vestibular enamel surface

Fabricate a mock-up using a self-curing temporary crown and bridge material (e.g. Telio CS C&B).

Try in the veneer on tooth 11 using Variolink Esthetic Try-In Paste neutral. Then carefully rinse off the try-in paste with water.

Clean the preparation with fluoride-free prophy paste (fluoride-free Proxyt).

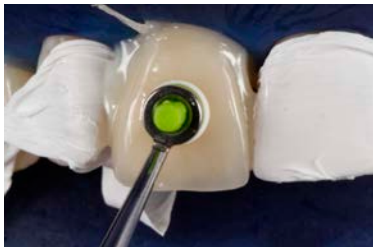
Etch the inner surfaces of the ceramic restoration using etching gel (e.g. IPS Ceramic Etching Gel).

Apply the bonding agent / primer (e.g. Monobond Plus) to the inner surfaces of the restoration.

Etch the enamel with 37% phosphoric acid gel (e.g. Total Etch). Then thoroughly rinse with water.

After phosphoric acid etching, the enamel surface appears chalky white (acid-etch pattern).

Scrub the single-component adhesive Adhese Universal into the prepared tooth surface for at least 20 seconds. Subsequently, disperse the adhesive with air and light-cure it.



Apply Variolink Esthetic to the inner surfaces of the restoration. Position the restoration on the tooth and retain it in place with OptraSclup Pad.

Remove any excess by running a brush transversely to the cement line (wiping technique).

To prevent the formation of an oxygen-inhibited layer, cover the cement line with glycerine gel / airblock (e.g. Liquid Strip).

Finally, cure for 10 seconds per mm ceramic and segment using a curing light with a light intensity of at least 1000 mW/cm^2 (e.g. Bluephase PowerCure).

Esthetic result ten days after the successful seating of the veneer

Onlay
made with IPS e.max lithium disilicate
cemented with Variolink Esthetic

Dr Stephanie Huth,
Ivoclar Vivadent, Liechtenstein (2014)

Starting situation:
Tooth 36 with defective composite resin filling

Prepare the tooth for the IPS e.max CAD onlay according to the guidelines for all-ceramic restorations. In order to achieve optimum esthetic results, you can check the shade with the help of a try-in paste (e.g. Variolink Esthetic Try-In).

After try-in, use water spray to thoroughly wash the try-in paste off the restoration and dry the restoration with oil- and moisture-free air.

Place a rubber dam and clean the preparation with fluoride-free Proxyt.

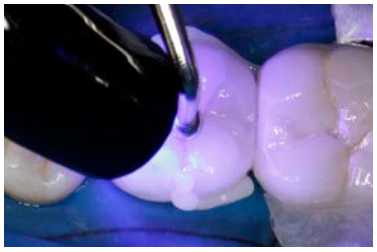
Apply the self-etching Monobond Etch & Prime to the bonding surface using a microbrush and scrub it into the surface for 20 seconds. Allow to react for another 40 seconds.

Then thoroughly rinse off Monobond Etch & Prime with water and dry the restoration with a strong jet of water- and oil-free air for approximately 10 seconds.

Etch the cavity surfaces with 37% phosphoric acid using the total-etch technique.

Apply Adhese Universal to the bonding surfaces for 20 seconds. Then disperse the adhesive with the air syringe and polymerize it for 10 seconds.

Apply Variolink Esthetic luting composite directly to the restoration and seat the restoration in the cavity using OptraStick.



Pre-cure any cement excess at a distance of maximum 10 mm for two seconds per quarter surface using a curing light (e.g. Bluephase PowerCure in the PreCure mode).

Remove any excess with a scaler. Make sure to continue exerting pressure on the restoration until final light-curing.

Apply a glycerine gel / airblock (e.g. Liquid Strip) to the cement line to prevent the formation of an oxygen-inhibited layer.

Finally, cure for 10 sec. per mm ceramic and segment using a curing light with a light intensity of at least 1000 mW/cm^2.

Situation after seating the restoration and checking the occlusion

Finish and polish the restoration margins and the cement line using suitable polishers (e.g. OptraGloss).

Apply a fluoride-containing protective varnish (e.g. Fluor Protector S) to all tooth surfaces.

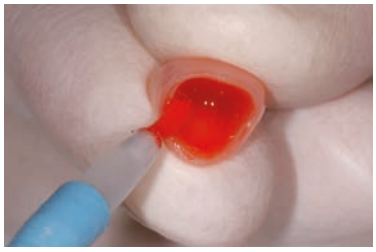
Final result one week after cementation

Anterior crown made with IPS e.max lithium disilicate cemented with Multilink Automix

Dr Ronny Watzke / DT Franz Perkon,
Ivoclar Vivadent, Liechtenstein

Remove the temporary restoration. Use a polishing brush and oil- and fluoride-free prophy paste (e.g. fluoride-free Proxyt) to clean the preparation and then rinse with water spray. Dry with oil-free air.

Try in the permanent restoration. To check the esthetic appearance, use Multilink Automix Try-In Paste if necessary. After try-in, use water spray to thoroughly rinse the try-in paste off the restoration and dry the restoration with oil- and moisture-free air.



Etch the inner restoration surfaces with 5% hydrofluoric acid (e.g. IPS Ceramic Etching Gel) for 20 seconds. Subsequently, rinse thoroughly with water and dry with oil-free air.

Apply Monobond Plus bonding agent / primer to the pretreated restoration surfaces and leave it to react for 60 seconds. Subequently, disperse it thoroughly with air.

Clean the preparation again according to the procedure described. Subsequently, dry with oil-free air. Avoid overdrying!

Apply the mixed Multilink Primer A/B to the entire bonding surface with a microbrush (starting from the enamel) and scrub it in for 30 seconds.

Disperse Multilink Primer excess with the air syringe until the mobile liquid film is no longer visible.

Extrude Multilink Automix luting composite from the automix syringe and apply it directly onto the restoration.

Seat the restoration and retain it in place exerting uniform pressure.

Pre-cure any cement excess at a distance of maximum 10 mm for two seconds per quarter surface using a curing light (e.g. Bluephase PowerCure in the PreCure mode).

Any excess can be easily removed with a scaler.

To prevent the formation of an oxygen-inhibited layer, cover the restoration margins with glycerine gel / airblock (e.g. Liquid Strip) immediately after excess removal.

Subsequently, light-cure all cement lines again for 20 seconds (at approx. 1200 mW/cm^2). If a non-translucent, opaque restorative material is used, wait for the self-curing mechanism to take effect. Subsequently, rinse off Liquid Strip.

Final situation after having finished the proximal areas with finishing and polishing strips and after having checked the occlusion and functional movements and polished the restoration margins with suitable polishers (e.g. OptraGloss)

Anterior bridge made with IPS e.max lithium disilicate
cemented with Speedcem Plus

Dr Ronny Watzke / DT Franz Perkon,
Ivoclar Vivadent, Liechtenstein

Remove the temporary restoration. Clean the preparation with a polishing brush and an oil- and fluoride-free cleaning paste (e.g. fluoride-free Proxyt). Rinse with water spray and subsequently dry with oil-free air.

Try in the permanent restoration. Next, check the shade, fit and occlusion of the restoration.

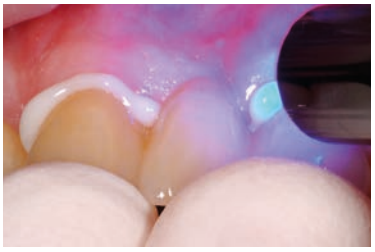
Etch the inner surfaces of the restoration with 5% hydrofluoric acid (e.g. IPS Ceramic Etching Gel) for 20 seconds. Subsequently, rinse thoroughly with water spray and dry with oil-free air.

Apply Monobond Plus bonding agent / primer to the pretreated surfaces, leave to react for 60 seconds and then thoroughly disperse with a stream of air.

Clean the preparation(s) again using a polishing brush and oil- and fluoride-free cleaning paste (e.g. fluoride-free Proxyt) and rinse with water spray. Subsequenlty, dry with water- and oil-free air. Avoid overdrying!

Extrude Speedcem Plus resin cement from the automix syringe and apply the desired quantity directly onto the bonding surface of the restoration.

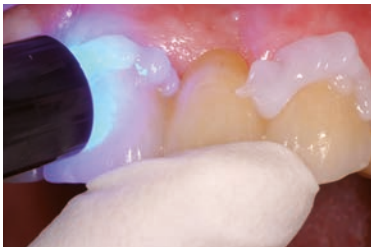
Seat the restoration and retain it in place exerting uniform pressure.



Pre-cure any cement excess at a distance of maximum 10 mm for 2 seconds per quarter surface using a curing light (e.g. Bluephase PowerCure in the PreCure mode).

The gel-like excess can be easily removed with a scaler.

To prevent the formation of an oxygen-inhibited layer, cover the restoration margins with glycerine gel / airblock (e.g. Liquid Strip) immediately after excess removal.



Subsequently, light-cure all cement lines again for 20 seconds (at approx. 1200 mW/cm^2). If non-translucent, opaque restoration material is used, wait for the self-curing mechanism to take effect.

Subsequently, rinse off Liquid Strip.

Apply finishing and polishing strips in the proximal regions. Check the occlusion and functional movements. Polish the restoration margins with suitable polishers (e.g. OptraGloss).

Apply a thin layer of fluoride varnish (e.g. Fluor Protector S). Evenly disperse and dry the varnish with an air syringe.

Hybrid abutment and crown made with IPS e.max lithium disilicate
cemented with Speedcem Plus

Dr Ronny Watzke / DT Jürgen Seger,
Ivoclar Vivadent, Liechtenstein

The abutment has been screwed in.

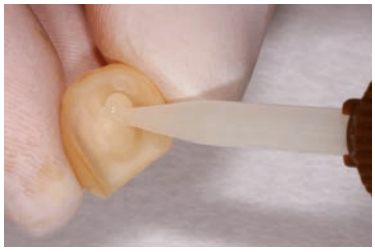
Try in the permanent restoration. Check the shade effect, accuracy of fit and occlusion.

Clean the abutment using a polishing brush and oil- and fluoride-free cleaning paste (e.g. Proxyt) and rinse with water spray. Dry with oil-free air.

Apply a thin layer of Monobond Plus bonding agent / primer to the abutment and leave it to react for 60 seconds. Subsequently, dry with water- and oil-free air.

Etch the inner surfaces of the restoration with 5% hydrofluoric acid (e.g. IPS Ceramic Etching Gel) for 20 seconds. Subsequently, rinse thoroughly with water spray and dry with oil-free air.

Apply Monobond Plus to the pretreated surfaces, leave it to react for 60 seconds and then thoroughly disperse with blown air.



Dispense Speedcem Plus resin cement from the automix syringe and apply the desired quantity directly onto the restoration.

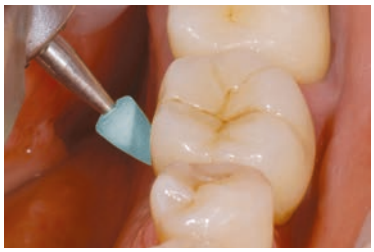
Seat the restoration and retain it in place exerting uniform pressure.

Pre-cure any cement excess at a distance of maximum 10 mm for 2 seconds per quarter surface using a curing light (e.g. Bluephase PowerCure in the PreCure mode).

The gel-like excess can be easily removed with a scaler. To prevent the formation of an oxygen-inhibited layer, cover the margins with glycerine gel / airblock (e.g. Liquid Strip) immediately after excess removal.

Subsequently, light-cure all cement lines again for 20 seconds (at approx. 1200 mW/cm^2). If non-translucent, opaque restoration material is used, wait for the self-curing mechanism to take effect.

Subsequently, rinse off Liquid Strip.



Apply finishing and polishing strips in the proximal regions. Check the occlusion and functional movements and make adjustments if necessary. Polish the restoration margins with suitable polishers (e.g. OptraGloss).

Apply a thin coat of a protective varnish containing chlorhexidine (e.g. Cervitec Plus). Let the varnish dry or dry it with a stream of air.

Screw-retained hybrid abutment crown made with IPS e.max lithium disilicate

Dr Ronny Watzke / DT Franz Perkon,
Ivoclar Vivadent, Liechtenstein

Remove the temporary restoration.

Manually screw in the hybrid abutment crown using the matching screw in order to try in the permanent restoration. Check the shade effect, accuracy of fit and occlusion.

Then cautiously remove the hybrid abutment crown in order to clean it extraorally. Clean the hybrid abutment crown, rinse with water spray and dry with oil-free air.

Etch the screw channel from the occlusal side with 5% hydrofluoric acid gel (e.g. IPS Ceramic Etching Gel) for 20 seconds.

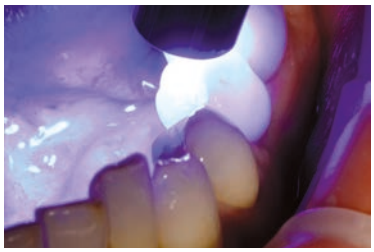
Subsequently rinse thoroughly with water spray and dry with oil-free air.

Insert the hybrid abutment crown intraorally into the implant, screw it in with the matching implant screw and tighten the screw using a torque wrench (observe the manufacturer's directions).

Apply Monobond Plus bonding agent / primer to the pretreated surfaces, leave it to react for 60 seconds and subsequently thoroughly disperse it with a stream of air.

Next, insert a cotton or foam pellet into the screw channel and apply the bonding agent (e.g. Heliobond).

Seal the screw channel with a composite resin material (e.g. Tetric EvoCeram) in the appropriate shade.



Light-cure using a curing light (e.g. Bluephase PowerCure).

After polymerization, check the occlusion / articulation and remove any rough spots with suitable fine-grit diamonds if necessary. Polish the restoration to a high gloss using suitable polishers (e.g. OptraGloss).

Apply a thin layer of protective varnish (e.g. Cervitec Plus). Let the varnish dry or dry it with a stream of air.

Documented clinical reliability

96 %
survival rate (1)

150 million
restorations (2)

98 %
customer satisfaction (3)

IPS e.max all-ceramic restorations provide an excellent highly esthetic alternative to metal ceramics for various indications and provide similarly positive survival rates.(4)

[1] IPS e.max Scientific Report, vol. 03 / 2001–2017, Ivoclar Vivadent AG, Schaan, Liechtenstein
[2] Based on sales figures
[3] Corporate Market Insight, Ivoclar Vivadent AG, Schaan, Liechtenstein
[4] IPS e.max Scientific Report, vol. 03 / 2001–2017, Ivoclar Vivadent AG, Schaan, Liechtenstein (Pjetursson et al. 2007, Schley et al. 2010, Kern et al. 2012, Sailer et al. 2015)

Scientific data and results from more than 10 years of research

For many years, dentists and dental technicians around the world have shown their trust in Ivoclar Vivadent products. The reasons for this are manifold. The clinical reliability of the innovative Ivoclar Vivadent products and systems is what makes them particularly attractive to customers.

Since the beginning of its development, the IPS e.max system has been monitored by the scientific community. Many renowned experts have contributed to an excellent data base with their studies. The worldwide success story, the ever growing demand, as well as over 150 million fabricated restorations are testament to the excellent track record and the reliability of the system. More than 20 clinical in-vivo studies to date and even more in-vitro studies, as well as the continuously increasing number of clinical studies throughout the world show the long-term success of the IPS e.max system in the oral cavity of the patients.

The most important study results are compiled in the IPS e.max Scientific Report vol. 3. Further scientific data (i.e. on strength, wear, biocompatibility) are listed in the Scientific Documentations for the individual IPS e.max products. They can be obtained from Ivoclar Vivadent.

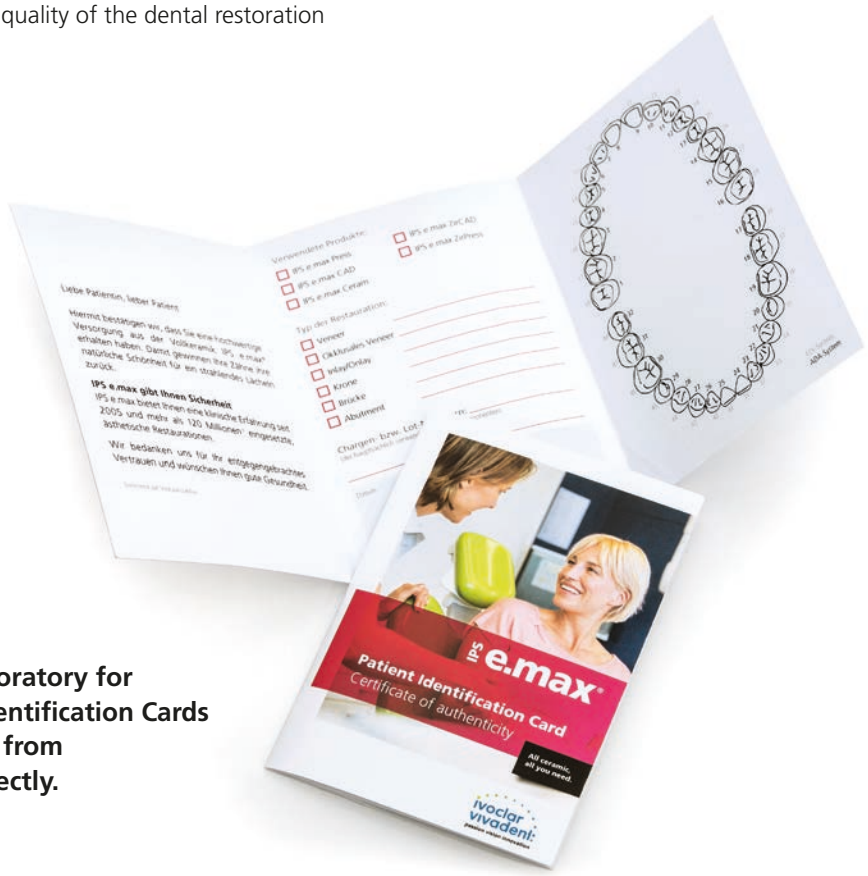
Additional information about the topic of all-ceramics and IPS e.max can be found in the Ivoclar Vivadent Reports Nos. 16 and 17, as well as in the IPS e.max ZirCAD Scientific Documentation. More detailed information on the luting composite Variolink Esthetic is provided in the Ivoclar Vivadent Report No. 22 and the Variolink Esthetic Scientific Documentation, while details on Multilink Automix are contained in the Multilink Automix Scientific Report 2/2016.

IPS e.max
Patient Identification Card

If you use IPS e.max in your dental practice, you can take advantage of the new IPS e.max Patient Identification Card to prove to your patients that you use only authentic materials.

You will receive the Patient Identification Card from your dental laboratory. It contains all the important details about the materials used as well as the type of restoration manufactured.

All you have to do is add your practice stamp and hand the card over to your patient. This simple yet effective measure allows you to assure your patient of the high quality of the dental restoration you have placed.



Ask your dental laboratory for IPS e.max Patient Identification Cards or order free copies from Ivoclar Vivadent directly.

IPS e.max
Guarantee

10 Years GUARANTEE

Trust builds confidence: 10-year guarantee

More than 150 million restorations[1], over 96% survival rate[2], more than 15 years of experience. The 10-year IPS e.max Guarantee is as promising as the material itself.

Your trust; our promise.

By choosing IPS e.max materials you are making the right choice, because these materials have proven their long-lasting clinical performance on a daily basis.[3] Our promise to you, the dentist and the dental technician, is backed up by our guarantee. The laboratory will receive a once-off reimbursement or a replacement for the product, while the practitioner will be reimbursed for the replacement or repair of work previously accomplished.

The guarantee covers the following IPS e.max products: zirconium oxide (IPS e.max ZirCAD), lithium disilicate (IPS e.max Press and IPS e.max CAD) and layering ceramic (IPS e.max Ceram). We offer you a 10-year guarantee on newly placed restorations. It also applies retroactively for restorations that were permanently seated during the past 5 years.

Getting the most out of your IPS e.max restoration

High-quality restorations made of IPS e.max materials deserve special care and protection in order to maintain their proper function and esthetic appearance for a long time. The Proxyt prophy pastes gently clean dental hard tissue and restorations. The Cervitec line comprises chlorhexidine-containing products for professional teeth cleaning and germ control.

MORE INFORMATION:

guarantee.ipsemax.com

1 Based on sales figures
2 Ivoclar Vivadent, Scientific Report IPS e.max_Vol.3, 2018
3 Fasbinder D J. et.al, Study Report, 2017

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Manufacturer:
Ivoclar Vivadent AG, 9494 Schaan, Liechtenstein
www.ivoclarvivadent.com

Ivoclar Vivadent AG
Bendererstr. 2
9494 Schaan
Liechtenstein
Tel. +423 235 35 35
Fax +423 235 33 60
www.ivoclarvivadent.com

665082 / en / 2020-07

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