

e.max[®]
IPS

Press

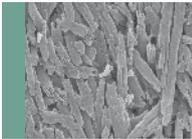
Abutment Solutions
Instructions for Use



all ceramic
all you need

ivoclar
vivadent[®]
technical

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IPS e.max® System

Given its versatility, its clinical long-term success and its wide range of indications, the IPS e.max® System is the most successful and most used all-ceramic system throughout the world.

It consists of a reliable lithium disilicate glass-ceramic (IPS e.max Press and CAD), an innovative zirconium oxide ceramic (IPS e.max ZirCAD) and a coordinated veneering ceramic (IPS e.max Ceram). The press-on ceramic IPS e.max ZirPress supplements the versatile system.

With the highly esthetic high-strength IPS e.max materials, all indications for fixed restorations, ranging from thin veneers to multi-unit bridges, can be realized. Hybrid restorations are also possible.

The coordinated shade concept within the system and the individual products enable flexible working procedures from the shade determination up to the material selection.

The ideal restoration shade is optimally reproduced by means of the IPS e.max Shade Navigation App. It facilitates the material selection, leads to results that feature optimum shade match and thus provides efficiency and reliability.

IPS e.max is the comprehensive high-quality all-ceramic system for all indications, esthetic requirements and patient cases: it is **all ceramic – all you need**.



IPS e.max® Pressing

The ingot with two options

IPS e.max® Press Solutions

IPS e.max Press is synonymous with individuality. Depending on the indication, users may select from two approaches. This ensures maximum flexibility in the work process.

IPS e.max® Press Monolithic Solutions

Efficient fabrication of full-contour restorations with high strength (470 MPa*) ranging from thin veneers to three-unit bridges.



IPS e.max® Press Abutment Solutions

Conventionally fabricated hybrid restorations for implants – for single tooth restorations in the anterior and posterior region.



*Typical mean value

Description

IPS e.max® Press Abutment Solutions are pressed, implant-supported hybrid restorations for single teeth. These hybrid restorations are individually fabricated of lithium disilicate glass-ceramics (LS₂) and cemented onto a titanium bonding base.

Two different approaches are available for this purpose:

- IPS e.max Press hybrid abutment and separate IPS e.max Press crown
- IPS e.max Press hybrid abutment crown

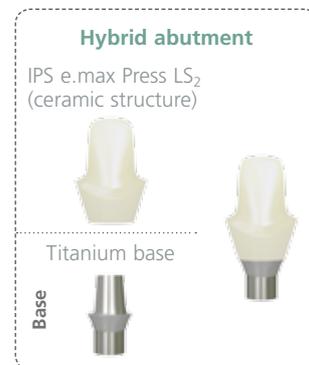
Both solutions show outstanding function, efficiency and esthetics. The durable bond to the titanium bonding base is achieved by means of the self-curing Multilink® Hybrid Abutment luting composite.

Hybrid abutment

Hybrid abutments are individually pressed LS₂ abutments which are luted to a titanium bonding base. The shape, emergence profile and esthetic properties of such abutments can be ideally adjusted to the clinical situation.

Given the lifelike appearance of LS₂ glass-ceramics, the esthetic possibilities are virtually limitless, particularly in the anterior region. Due to the individual characterization, a lifelike appearance is achieved near the root and the transition area to the crown. With the preparation margin of the crown located on the gingival level, the geometry of the hybrid abutment allows for an easy integration of the restoration. Excess cementation material is therefore easily removed.

The pressed LS₂ ceramic structure is extraorally bonded to a titanium bonding base (e.g. Viteo® Base) using Multilink Hybrid Abutment, then screwed into place in the oral cavity and finally provided with a permanent IPS e.max Press crown. Given the convenient fabrication of the hybrid abutment, the process is time-saving and flexible.



Hybrid abutment crown

Hybrid abutment crowns are characterized by combining abutment and monolithic crown in one piece.

This is an efficient two-in-one solution made of lithium disilicate (LS₂), which is directly bonded to a titanium bonding base.

LS₂ glass-ceramics provide for strength, durability and efficiency, particularly in the posterior area. Moreover, the material offers well-known esthetic properties, allowing restorations to be easily characterized to achieve a customized result.

The monolithically pressed hybrid abutment crown is reliably and extraorally luted to the titanium bonding base (e.g. Viteo Base) by means of Multilink Hybrid Abutment. Then, the restoration is screwed onto the implant – in one piece. Subsequently, the screw access channel is sealed with a composite material (e.g. Tetric EvoCeram®). If required, the screw can be accessed at any time, which affords the dental team clinical flexibility.

IPS e.max Press hybrid abutment crowns are an economically attractive alternative to conventional implant-supported restorations, particularly for the posterior area, where strength, durability and convenient clinical handling matter.



Ideally coordinated – Multilink® Hybrid Abutment

The self-curing luting composite Multilink Hybrid Abutment in conjunction with Monobond® Plus is used for the permanent cementation of ceramic structures made of lithium disilicate glass-ceramic (LS₂), zirconium oxide (ZrO₂) or PMMA onto bonding bases (e.g. Viteo Base) made of titanium/titanium alloy.

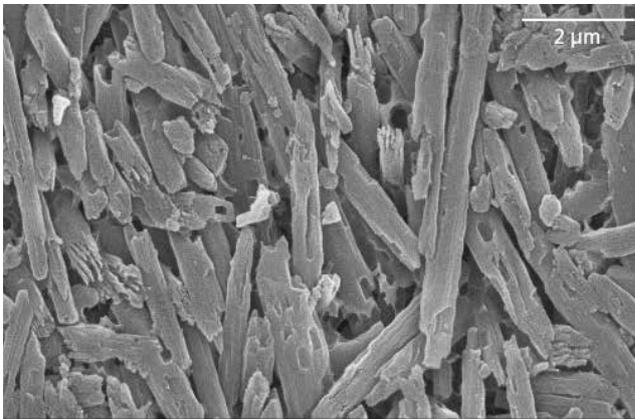
This allows:

- reliable adhesion due to high bonding values
- high esthetics due to coordinated degrees of opacity
- easy handling due to the convenient Automix syringe

Material

IPS e.max® Press

IPS e.max Press are lithium disilicate glass-ceramic ingots for the press technology. The industrial production process creates absolutely homogeneous ingots in different translucency levels. These ingots feature a strength of 470 MPa (typical mean value). They are pressed in Ivoclar Vivadent press furnaces to restorations with outstanding accuracy of fit. The pressed, tooth-coloured, highly esthetic restorations are stained and glazed using IPS Ivocolor and veneered using IPS e.max Ceram and subsequently stained and glazed using IPS Ivocolor.



IPS e.max Press lithium disilicate

Feature	Specification	Typical mean value
CTE (25 – 100°C) [10 ⁻⁶ /K]	10.5 ± 0.5	–
Flexural strength (biaxial) [MPa]	≥ 360	470
Chemical solubility [μg/cm ²]	< 100	–
Type/Class	Type II / Class 3	–

According to ISO 6872:2015

Titanium bonding base

For IPS e.max Press Abutment Solutions, customary bonding bases made of titanium or titanium alloys are used, e.g. Viteo® Base. Please observe the instructions for use and processing of the manufacturer of the titanium bonding bases used.



Uses

Indications

- Hybrid abutments for anterior and posterior single-tooth restorations
- Hybrid abutment crowns for anterior and posterior single-tooth restorations

Contraindications

- Failure to observe the requirements stipulated by the implant manufacturer regarding the use of the selected implant type (diameter and length of the implant must be approved for the respective position in the jaw by the implant manufacturer).
- Failure to observe the permissible maximum and minimum ceramic wall thicknesses.
- Bruxism
- Use of a luting composite other than Multilink Hybrid Abutment to bond IPS e.max Press to the titanium bonding base.
- Intraoral cementation of the ceramic structures to the titanium bonding base
- Temporary cementation of the crown on the hybrid abutment.
- All uses not stated as indications are contraindicated.

Important processing restrictions

Failure to observe the following restrictions may compromise the results achieved with IPS e.max Press:

- If hybrid abutment crowns are fabricated, the opening of the screw channel must not be located in the area of contact points and areas with masticatory function. If this is not possible, a hybrid abutment with a separate crown is to be preferred.
- No extension units; only single-tooth restorations.
- Layering with a veneering ceramic other than IPS e.max Ceram.
- Pressing of IPS e.max Press in the IPS Investment System 300 g.
- Failure to observe the manufacturer's instructions regarding the processing of the titanium bonding base.

Warning

- Do not inhale ceramic dust during finishing. Use exhaust air discharge and mouth protection.
- IPS® Ceramic Etching Gel contains hydrofluoric acid. Contact with skin, eyes and clothing must be prevented at all costs, since the material is extremely toxic and corrosive. The etching gel is intended for extraoral use only and must not be applied intraorally (inside the mouth).
- Monobond Etch&Prime® is corrosive. Avoid contact with the skin and mucous membrane. Monobond Etch&Prime is intended for extraoral use only and must not be applied intraorally (inside the mouth).
- Observe the Safety Data Sheet (SDS).

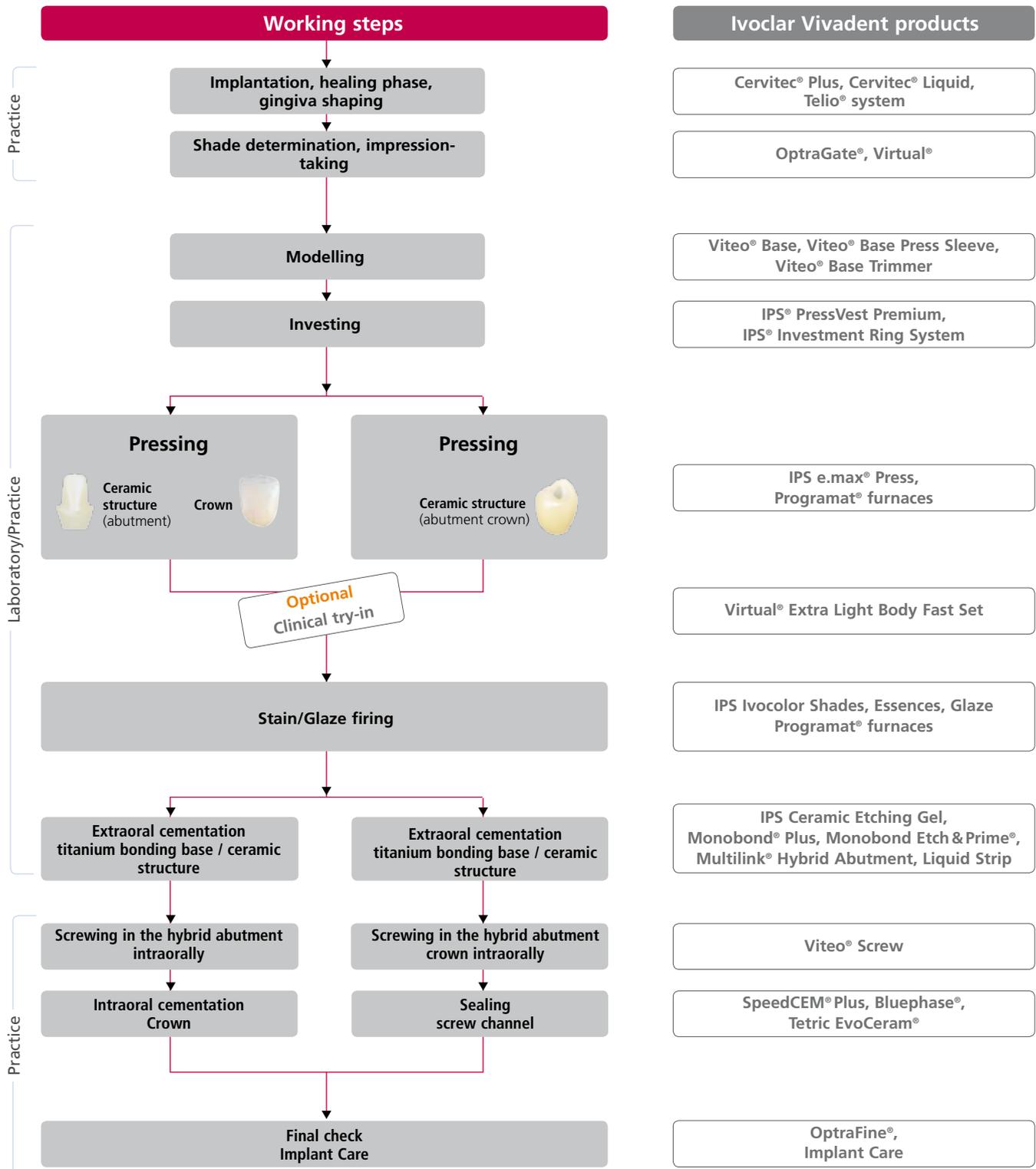
Scientific data

Since the beginning of the 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 100 million fabricated restorations are testament to the success 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 growing number of clinical studies throughout the world show the long-term success of the IPS e.max System in the oral cavities of the patients. The most important study results are compiled in the "IPS e.max Scientific Report Vol. 2". Further scientific data (i.e. strength, wear, biocompatibility) are listed in the Scientific Documentations for the individual IPS e.max products. They can be obtained from Ivoclar Vivadent.

For further information about all-ceramics and IPS e.max, please refer to the Ivoclar Vivadent Report No. 16 and 17. More detailed information on the luting composite Variolink® Esthetic can be found in the "Ivoclar Vivadent Report No. 22" and the Scientific Documentation, while details on Multilink®Automix are contained in the "Scientific Report vol. 2".



Fabrication of IPS e.max® Press hybrid abutment and hybrid abutment crown



The range of available products may vary from country to country

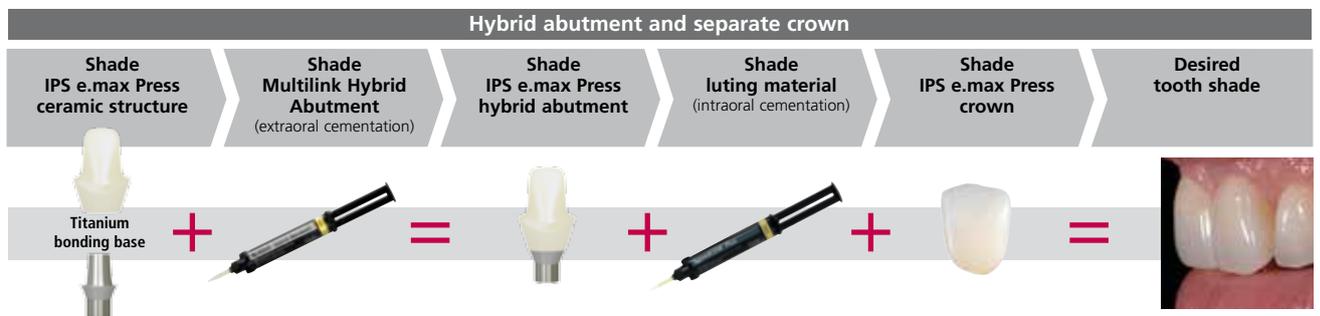
Shade – tooth shade and abutment shade

Optimum integration in the oral cavity of the patient is the prerequisite for a true-to-nature all-ceramic restoration. To achieve this, the following guidelines and notes must be observed.

With IPS e.max Press Abutment Solutions, you can imitate not only the clinical crown of a natural tooth, but also a part of the root. This allows you to achieve highly esthetic implant-supported restorations which retain their lifelike appearance also in the case of gingiva recession.

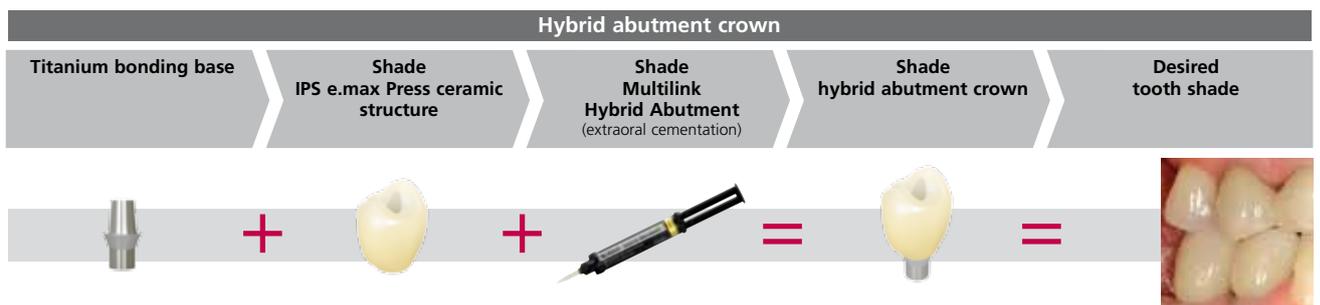
For IPS e.max Press **hybrid abutment and the separate crown**, the desired tooth shade results from

- the shade of the IPS e.max Press hybrid abutment (IPS e.max Press MO ceramic structure, Multilink Hybrid Abutment)
- the shade of the luting material for intraoral cementation of the crown on the IPS e.max Press hybrid abutment (e.g. SpeedCEM® Plus)
- the shade of the IPS e.max Press crown.



For the IPS e.max Press hybrid abutment crown, the desired tooth shade results from

- the shade of the IPS e.max Press ceramic structure
- the shade of the Multilink Hybrid Abutment.



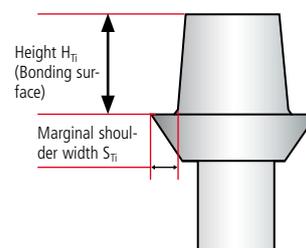
Please refer to the table on page 64 for the **selection of the desired tooth shade**.

Selecting the titanium bonding base

The following paragraphs outline the selection criteria for a suitable titanium bonding base. As a general rule, the instructions of the respective manufacturer regarding the use of the titanium bonding base have to be observed.

- Only bases consisting of Ti or Ti alloys must be used.
- Select a titanium bonding base with a size that matches the clinical situation and the chosen implant system. The geometry requirements must be observed.
- The rotation lock must be designed in such a way that stress concentrations on the pressed object are avoided.
- Titanium bonding bases with undercuts, e.g. retention grooves, are suitable to some extent.
- Check the available space for the pressed object on the model taking the geometry of the titanium bonding base into account (i.e. silicone key).
- Observe the instructions of the manufacturer when modifying the titanium bonding base.

Titanium bonding base	Minimum dimensions	
	Height H_{Ti} (bonding surface)	Shoulder width S_{Ti}
	H_{Ti} min. 4.0 mm	S_{Ti} min. 0.6 mm



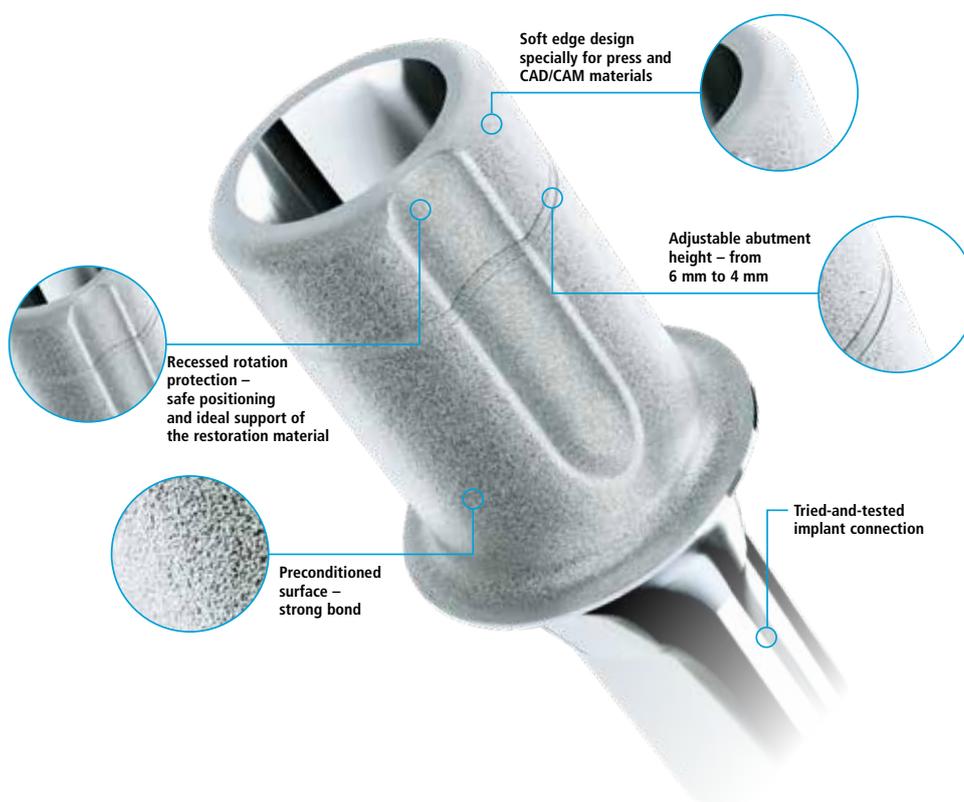
RECOMMENDATION

Viteo® Base

Product description

Viteo® Base is a titanium bonding base suitable for implant-supported single-tooth restorations. The special soft edge design of the bonding surface and the recessed rotation protection ideally support the CAD and Press ceramic material and promote the long-term clinical success. The preconditioned bonding surface allows for a reliable and fast bonding procedure. The shaft height can be shortened, depending on the prosthetic situation.

Viteo Base is coordinated with the most common implant systems.

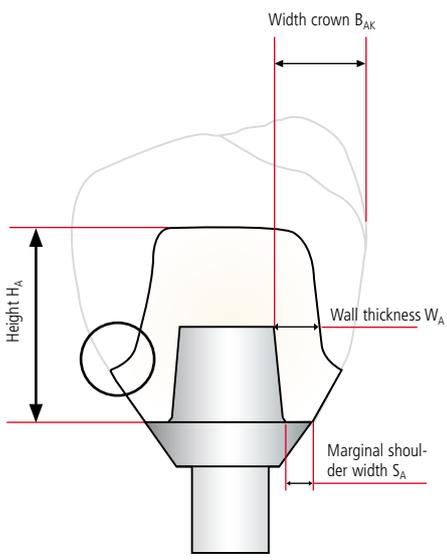


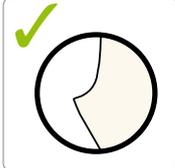
Minimum layer thicknesses of the ceramic components

Observing the geometry requirements of the pressed objects made of IPS e.max Press material is the key to success for a durable restoration. The more attention given to the design, the better the final results and the clinical success will turn out to be.

The following basic guidelines have to be observed:

Hybrid abutment

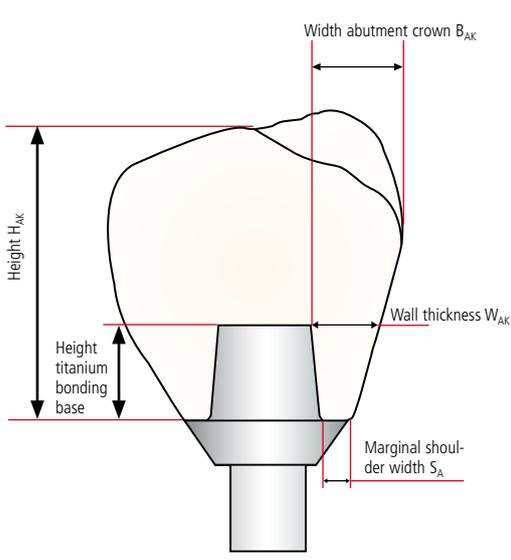






- The marginal shoulder width S_A must be at least 0.6 mm.
- Create an emergence profile with a right angle at the transition to the crown (see picture).
- The wall thickness W_A must be at least 0.5 mm.
- The height H_A must not exceed twice the height of the titanium bonding base H_T .
- The hybrid abutment should be designed in a similar way as a prepared natural tooth:
 - Circular epi-/supragingival shoulder with rounded inner edges or a chamfer
 - In order for the crown to be cemented to the hybrid abutment using a conventional/self-adhesive cementation protocol, retentive surfaces and a sufficient "preparation height" must be observed.
- The width B_{AK} of the crown is limited to 6.0 mm from the axial height of contour to the screw channel of the hybrid abutment.

Hybrid abutment crown

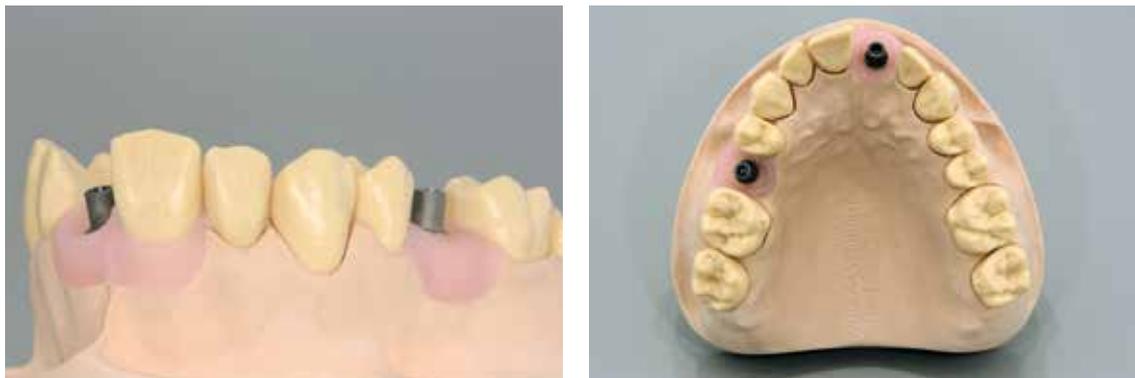


- The marginal shoulder width S_A must be at least 0.6 mm.
- The wall thickness W_{AK} must be larger than 1.5 mm for the entire circumference.
- The opening of the screw channel must not be located in the contact point areas or areas with a masticatory function. If this is not possible, a hybrid abutment with a separate crown is to be preferred.
- The width of the hybrid abutment crown B_{AK} is limited to 6.0 mm from the axial height of contour to the screw channel.
- The height H_{AK} must not exceed twice the height of the titanium bonding base by more than 2 mm.

Model preparation

For the fabrication of an IPS e.max Press Abutment Solutions restoration, a model with gingiva mask is fabricated.

- Select the suitable model analog according to the implant system used.
- Fabricate a model with gingiva mask.



Prepared model with gingiva mask

Wax-up on the Viteo® Base

Prior to the wax-up, proceed as follows:

- Check the implant position and inclination with regard to the position of the screw channel.
- Screw the Viteo Base onto the model analog with the corresponding screw.
- Select a suitable Viteo Base Press Sleeve (SD/MD) and place it on the Viteo Base.
- If the abutment height has been shortened, shorten the Viteo Base Press Sleeve accordingly.
- Insert the Viteo Screw Channel Pin to “seal” and “extend” the screw channel.
- Do not apply die spacer.
- Isolate the Viteo Base at the transition to the Viteo Base Press Sleeve. The use of too much separator may result in uneven areas on the inner aspect of the pressed object.

Please observe the following notes with regard to modelling:

- Observe the stipulated layer thicknesses.
- Create an accurate model of the restoration, particularly at the transition area to the Viteo Base. Do not over-contour the margins, since this would require time-consuming and risky fitting procedures after pressing.
- Use an organic wax for modelling to ensure that it burns out without leaving residue in the investment ring.

Procedure for hybrid abutments

- Design the emergence profile by flooding the area between the gingiva mask and the Viteo Base Press Sleeve with wax.
- Contour the hybrid abutment to a reduced tooth shape. The hybrid abutment should be designed in such a way that the required layer thicknesses are met in the crown that is fabricated. Check by means of the silicone key and in relation to the opposing dentition.
- Determine the crown margins in relation to the gingiva level.
- Design a chamfer on which the crown is subsequently seated.
- Remove the object together with the Viteo Base from the model and check the emergence profile. If necessary, make adjustments.
- Check the transition to the Viteo Base and remove excess wax.
- Check the required minimum thicknesses (page 12) prior to attaching the sprue.



Position the Viteo® Base onto the suitable laboratory analog and secure it with the corresponding screw with max 5 Ncm.



Select a suitable Viteo Base Press Sleeve (SD/MD) and place it on the Viteo Base.



If the abutment height has been shortened, shorten the Viteo Base Press Sleeve accordingly.



Check the fit on the screw channel and at the marginal shoulder.



Isolate the Viteo Base at the transition to the Viteo Base Press Sleeve.



To extend the screw channel, isolate the Viteo Screw Channel Pin and insert it into the screw channel.



Use wax or modelling resin that fires without leaving residue to shape the restoration.



Carefully remove the Viteo Screw Channel pin by rotating it.



Check the dimensions by means of the silicone key.



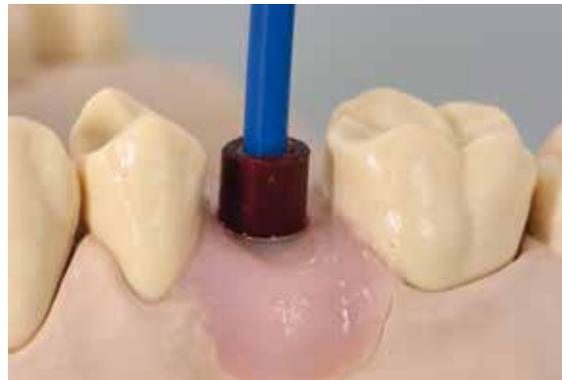
Check the margins and transitions of the wax model.

Procedure for hybrid abutment crowns:

- If required, insert the isolated Viteo Screw Channel Pin into the screw channel.
- Design the emergence profile by flooding the area between the gingiva mask and the Viteo Base Press Sleeve with wax.
- Design the abutment crown to full contour according to functional and esthetic criteria. Check in relation to the opposing dentition.
- Make sure to take a slightly reduced occlusal relief into consideration during the wax-up, since the application of the Stains and Glaze results in a slight increase in vertical dimensions.
- Remove the object together with the Viteo Base from the model and check the emergence profile. If necessary, make adjustments.
- Check the transition to the Viteo Base and remove possible excess wax.
- Check the required thicknesses (page 12) prior to attaching the sprues.



Isolate the Viteo Base at the transitions to the Viteo Press Sleeve and check the fit on the screw channel and at the marginal shoulder.



Insert the isolated Viteo Screw Channel Pin into the screw channel.



Use wax or modelling resin that fires without leaving residue to shape the restoration.



Carefully remove the Viteo Screw Channel Pin by rotating it.



Wax-up on a titanium bonding base

Fabrication of a resin coping

To prepare the wax-up, a resin coping is prepared for both hybrid abutments and hybrid abutment crowns. Please observe the following procedure:

- Check the implant position and inclination with regard to the position of the screw channel.
- Screw the titanium bonding base onto the model analog with the corresponding screw.



Make sure that an additional model analog is available, as this will facilitate some steps.

- Clean the titanium bonding base with a steam cleaner.
- Insert a pin with the same diameter as the screw channel to "seal" and "extend" the screw channel.
- Do not apply die spacer.
- Isolate the titanium bonding base and the pin with a thin application of separator. The use of too much separator may result in uneven areas on the inner aspect of the pressed object.
- In order to achieve a sound fit and to facilitate the subsequent wax-up, a coping is first fabricated on the titanium bonding base with modelling resin. Design the coping in such a way that it can subsequently be completely covered with modelling wax. Please observe the instructions of the manufacturer regarding the processing of modelling resin.
- Remove the titanium bonding base from the model.
- Eliminate possible over-contoured areas of the resin coping at the transition area to the titanium bonding base by means of rubber polishers. The titanium bonding base must not be damaged.
- Remove the resin coping together with the pin from the titanium bonding base.
- Loosen and remove the pin by rotating the resin coping.
- Screw the titanium bonding base onto the model analog again.
- Place the resin coping back on the titanium bonding base and check the fit and dimensions (e.g. silicone key). If necessary, adjust the coping by means of rotary instruments.



Screw the titanium bonding base onto the model analog with the corresponding screw.



Insert a pin with the same diameter as the screw channel to "seal" and "extend" the screw channel.



Isolate the titanium bonding base and the pin with a thin application of separator.



Apply the modelling resin to the titanium bonding base in increments.



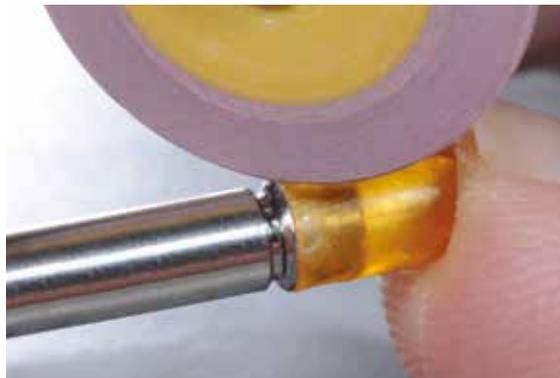
Design the resin coping on the entire titanium bonding base.



Remove the resin coping together with the pin from the titanium bonding base.



Loosen and remove the pin by rotating the resin coping.



Eliminate possible over-contoured areas of the resin coping at the transition area to the titanium bonding base by means of rubber polishers.



Place the resin coping back on the titanium bonding base and check the fit and dimensions (e.g. silicone key). If necessary, adjust the coping by means of rotary instruments. Design the coping in such a way that it can subsequently be covered with modelling wax.



Contouring

Please observe the following notes with regard to modelling:

- Observe the stipulated layer thicknesses.
- Create an accurate model of the restoration, particularly at the transition area to the titanium bonding base. Do not over-contour the margins, since this would require time-consuming and risky fitting procedures after pressing.
- Use an organic wax for modelling to ensure that it burns out without leaving residue in the investment ring.

Procedure for hybrid abutments

- Before creating the wax object, re-insert the isolated pin into the screw channel.
- Design the emergence profile by flooding the area between the gingiva mask and the resin coping with wax.
- Contour the hybrid abutment to a reduced tooth shape. The hybrid abutment should be designed in such a way that the required layer thicknesses are met in the crown that is fabricated. Check by means of the silicone key and in relation to the opposing dentition.
- Determine the crown margins in relation to the gingiva level.
- Design a chamfer on which the crown is subsequently seated.
- Remove the object together with the titanium bonding base from the model and check the emergence profile. If necessary, make adjustments.
- Check the transition to the titanium bonding base and remove excess wax.
- Check the required minimum thicknesses (page 12) prior to attaching the sprues.



Design the emergence profile by flooding the area between the gingiva mask and the resin coping with wax.



Design the hybrid abutment with a reduced tooth shape and determine the crown margin in relation to the gingiva level.



Check the dimensions by means of the silicone key and in relation to the opposing dentition.



Remove the object together with the titanium bonding base from the model and check the emergence profile. If necessary, make adjustments. Check the transition to the titanium bonding base and thoroughly remove excess wax.

Procedure for hybrid abutment crowns:

- If required, re-insert the isolated pin into the screw channel before creating the wax object.
- Design the emergence profile by flooding the area between the gingiva mask and the resin coping with wax.
- Design the abutment crown to full contour according to functional and esthetic criteria. Check in relation to the opposing dentition.
- Make sure to take a slightly reduced occlusal relief into consideration during the wax-up, since the application of the Stains and Glaze results in a slight increase in vertical dimensions.
- Remove the object together with the titanium bonding base from the model and check the emergence profile. If necessary, make adjustments.
- Check the transition to the titanium bonding base and remove excess wax.
- Check the required thicknesses (page 12) prior to attaching the sprues.



Design the emergence profile by flooding the area between the gingiva mask and the resin coping with wax. If necessary, re-insert the pin prior to modelling.

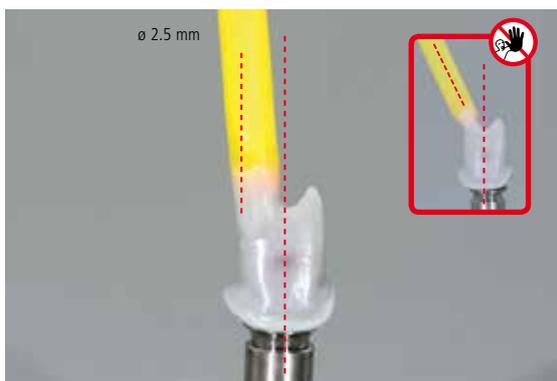


Design the abutment crown to full contour according to functional and esthetic criteria. Check the object in relation to the opposing dentition.

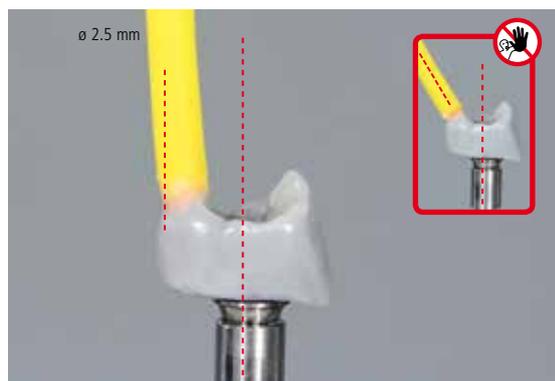
Sprueing

Please observe the following notes when attaching the sprues to the abutment or the abutment crown:

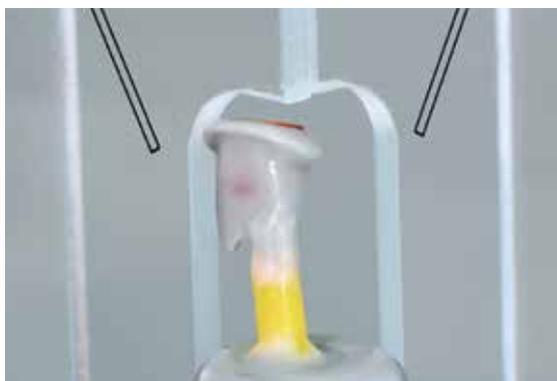
- Depending on the number and size of the objects to be invested, either the 100 g or 200 g IPS Investment Ring System is selected. Before sprueing, weigh the ring base and record the weight (seal the opening of the ring base with wax). Please note that the mixing ratio of the investment material is different for the various restoration types (e.g. inlays, crowns, abutments).
- Use a 2.5 mm wax wire for sprueing.
- For abutments, the sprue is attached to an axial surface.
- For abutment crowns, the sprue is attached to a cusp.
- Align the wax wire as parallel as possible to the screw channel in order to prevent the investment material from fracturing in the screw channel.
- The maximum length (object + sprue) of 16 mm must not be exceeded.
- Place the object on the investment ring base in such a way that the screw channel is parallel to the outer wall of the investment ring. As a result, the investment material can subsequently be filled evenly and in a controlled manner. The objects could be placed in a tilted position on the investment ring base, but this may lead to difficulties during investing (e.g. bubbles in the screw channel).
- Observe a distance of at least 10 mm between the object and silicone ring.
- If only one object is invested and pressed in an EP500 furnace, a second short (blind) sprue must be placed. This ensures that the switch-off function of the furnace works properly at the end of the pressing procedure.



Attach the sprue to a circular area of the abutment model and as parallel as possible to the screw channel. Use a 2.5 mm wax wire.



Attach the sprue to an oral cusp of the abutment crown and as parallel as possible to the screw channel. Use a 2.5 mm wax wire.



Place the object on the investment ring base in such a way that the screw channel is parallel to the outer wall of the investment ring. As a result, the investment material can subsequently be filled evenly and in a controlled manner. Furthermore, this reduces the risk of the investment material fracturing in the screw channel while the ceramic material is pressed.



Detailed information on sprueing of polychromatic IPS e.max Press Multi ingots can be found in the IPS e.max Press Monolithic Solutions Instructions for Use.



Investing

Investing is carried out with IPS PressVEST Premium (conventional or speed investment). The corresponding IPS Silicone Ring with the matching ring gauge is used for investment.

Determine the weight of the object before investing.

- Position the wax objects on the ring base and attach them with wax and weigh.
- The difference between the empty and the loaded ring base is the definitive wax weight.

	Small ingots	Large ingots (L)
Wax weight	up to max. 0.75 g	up to max. 1.7 g
Investment Ring System	100 g and 200 g	only 200 g

Please refer to the Instructions for Use of the corresponding investment material for the detailed processing parameters.

The following basic procedure is recommended:

- Do not use a debubblizer on the wax objects.
- The processing temperature of the investment material is 18 – max. 23 °C. Higher or lower processing temperatures substantially affect the setting behaviour.
- Mix the investment material. **Note:** The investment material contains quartz powder. Therefore, avoid the inhalation of dust.
- Use a suitable instrument for the fine investment of the cavity (e.g. a small brush). Make sure that the delicate wax margins are not damaged.
- Carefully place the IPS Silicone Ring on the ring base without damaging the wax objects. The silicone ring must sit flush on the ring base. **Note:** Use the silicone ring clean and dry, do not spray with separating agent, solvent or debubblizer.
- Carefully fill the investment ring with investment material up to the marking and position the ring gauge with a hinged movement.
- Allow the investment ring to set without manipulating it.
- To prevent crystallization of the IPS PressVEST Premium investment material, the invested ring must be processed within 12 hours.
- If IPS PressVEST Premium investment material is used in the speed method, make sure that the investment ring is placed in the preheating furnace after a setting time of at least 30 and maximum 45 minutes (as of first contact of powder/ liquid).

Investment material: Liquid concentration and quantity

Indication	IPS PressVEST Premium	
	100 g powder Liquid : dist. Water	200 g powder Liquid : dist. Water
IPS e.max Press		
Hybrid abutment, hybrid abutment crown	22 ml : 4 ml	44 ml : 8 ml
Mixing time (under vacuum at approx. 350 rpm)	90 seconds	

Liquid concentrations: The data contained in the table are approximative values. Depending on the geometry of the titanium bonding base and the materials used for the wax-up, these values may be individually changed. However, the concentrated liquid content must not be lower than 50% in relation to distilled water.

Important: The total quantity of liquid (liquid + dist. water) must not be altered.



Correctly sprued abutment (left) and abutment crown (right). The screw channel is in a vertical position and parallel with the wall of the investment ring.



Pour the investment material slowly into the investment ring, so that the material can continuously fill the screw channel.



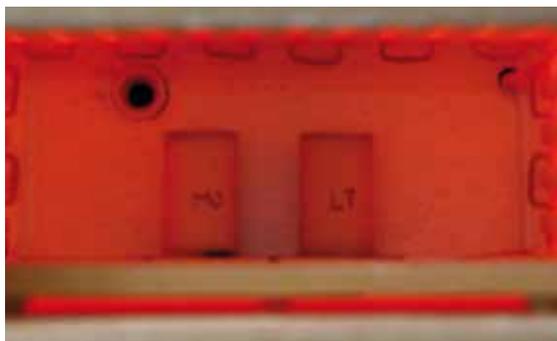
Continue to carefully fill the investment ring up to the marking and position the ring gauge with a hinged movement.

Preheating

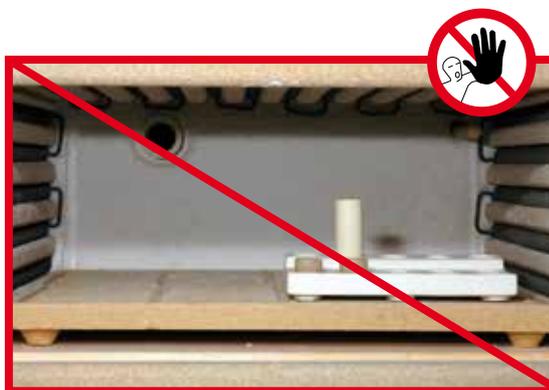
After the stipulated setting time of the investment material (IPS PressVEST Premium), the investment ring is prepared for preheating as follows:

- Remove the ring gauge and ring base with the turning movement.
- Carefully push the investment ring out of the IPS Silicone Ring.
- Remove rough spots on the bottom surface of the investment ring with a plaster knife. Check the 90° angle. Investment material residue must not enter the sprues. Blow into the sprues if necessary.
- If several investment rings are preheated together, mark them with the respective ingot shade.

	IPS PressVEST Premium Conventional preheating	IPS PressVEST Premium Speed method
Setting time	min. 30 Min., max. 12 hrs.	min. 30 min, max. 45 min
Temperature of the preheating furnace when placing the investment ring	Room temperature	850 °C / 1562 °F; switch on the preheating furnace in time.
Position of the investment ring in the preheating furnace	Towards the rear wall, tipped with the opening facing down	Towards the rear wall, tipped with the opening facing down
Final temperature for preheating the investment ring	850 °C / 1562 °F	850 °C / 1562 °F
Holding time of the investment ring at final temperature	100-g investment ring: min. 45 Min. 200-g investment ring: min. 60 Min.	100-g investment ring: min. 45 Min. 200-g investment ring: min. 60 Min.
IPS e.max Press ingots	no preheating	
IPS Alox Plunger		
Important	If several Speed investments are to be conducted (e.g. 2 x 200-g investment rings), they should be invested consecutively and placed into the preheating furnace at an interval of approx. 20 minutes. When placing the investment rings in the preheating furnace, make sure that the furnace temperature does not drop substantially. The stipulated holding time counts from the point when the preheating temperature has been reached again.	



Towards the rear wall, tipped with the opening facing down



Do not preheat the IPS e.max Press ingot and Alox Plunger.

In order to ensure smooth working procedures in the laboratory on a daily basis, impeccable functioning of the infrastructure, particularly the preheating furnaces, is essential. This includes their maintenance, cleaning with a vacuum cleaner in a cool state as well as regular checks of the temperature controls and heating elements, etc., by the manufacturer.

Pressing

Carry out the following preparatory steps for pressing before the preheating cycle for the investment ring has been completed:

- Provide a **cold** IPS Alox Plunger and a **cold** IPS e.max Press ingot in the desired shade (please refer to the material selection table on page 64).
- Dip the **cold** IPS Alox Plunger into the opening of the IPS Alox Plunger Separator and keep it ready for use.
- Turn on the press furnace (e.g. Programat EP 5010) in time so that the self-test and preheating phase are completed.
- Select the press program for IPS e.max Press and the desired investment ring size.

Remove the investment ring from the preheating furnace immediately after completion of the preheating cycle. This step may take max. 30 seconds to prevent the investment ring from cooling down too much.

- Place the **cold** IPS e.max Press ingot into the **hot** investment ring.
- Insert the ingots in the investment ring with the non-imprinted side facing down. The imprinted side faces up to check the ingot shade.
- Insert the powder-covered side of the **cold** IPS Alox plunger into the **hot** investment ring.
- Place the completed investment ring in the centre of the **hot** press furnace.
- The selected press program is started by pressing START.

After the end of the press cycle (optical and/or acoustic signal) proceed as follows:

Remove the investment ring from the press furnace using the investment ring tongs immediately after pressing.

Place the investment ring on a cooling grid to cool in a place protected from draft.

Do not speed up cooling, e.g. by blasting with compressed air.

	100 g Investment Ring	200 g Investment Ring
Single-Tooth Restorations	1 small ingot	1 small ingot or 1 large ingot
IPS e.max Press ingots	cold plunger	
IPS Alox Plunger		
IPS Alox Plunger Separator	✓	✓

Select one large or one small ingot according to the determined wax weight!



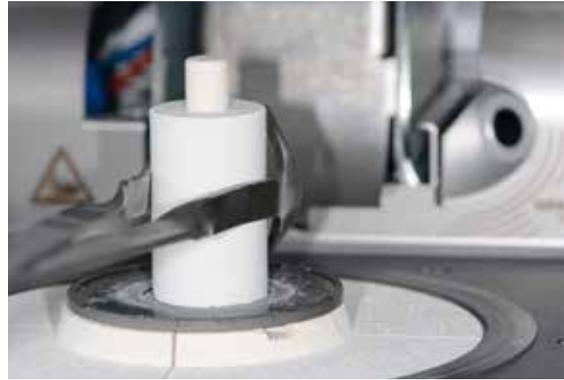
Provide a **cold** isolated IPS Alox Plunger and a **cold** IPS e.max Press ingot in the desired shade.



Place the **cold** IPS e.max Press ingot into the **hot** investment ring, with the shade imprint facing upward.



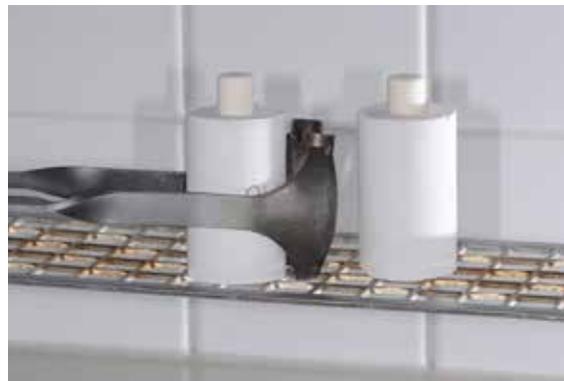
Then, place the side of the IPS Aloxx Plunger which has been coated with Separator into the **hot** investment ring.



Place the **hot** and loaded investment ring in the centre of the **hot** press furnace using the IPS Investment Ring Tongs.



Press **START** to start the selected program.



Once the press program is completed, place the hot investment ring on the cooling grid using the investment ring tongs and allow it to cool to room temperature.

Select the respective press program for the desired ingot and the respective investment ring size.
Press parameters see page 66.



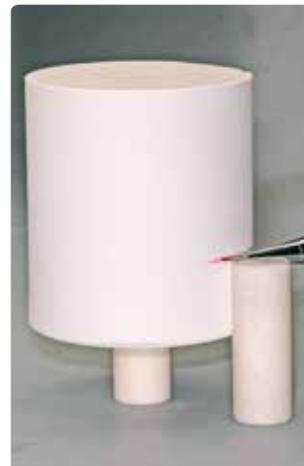
Divesting

After cooling to room temperature (approximately 60 minutes), the investment ring may show cracks.

These cracks developed during cooling (immediately around the Alox plunger). This is the result of the different CTEs of the various materials (Alox Plunger, investment material and press ingot) and does not compromise the press results.

Divest the restoration as follows:

- Mark the length of the Alox Plunger on the cooled investment ring.
- Separate the investment ring using a separating disc. This predetermined breaking point enables reliable separation of the Alox Plunger and the ceramic material.
- Break the investment ring at the predetermined breaking point using a plaster knife.
- Always use polishing beads to divest the pressed objects (rough and fine divestment). Do not use Al_2O_3 .
- Rough divestment is carried out with polishing beads at 4 bar (60 psi) pressure.
- Fine divestment is carried out with polishing beads at 2 bar (29 psi) pressure.
- Observe the blasting direction and distance to prevent damage to the object margins during divestment.
- Remove possible ceramic residue at the Alox plunger with Type 100 Al_2O_3 .



Mark the length of the Alox Plunger.



Separate the investment ring using a separating disc and break it at the predetermined breaking point.



Pull out the plunger with pliers from the separated segment using a rotating movement. This also removes any possible ceramic residue from the Alox plunger.





Rough divesting with polishing beads at 4 bar (58 psi) pressure until the object becomes visible.



Fine divestment of the abutment is carried out with polishing beads at 2 bar (29 psi) pressure.



Fine divestment of the abutment crown is carried out with polishing beads at 2 bar (29 psi) pressure.



Completely divested IPS e.max Press objects.

Removing the reaction layer

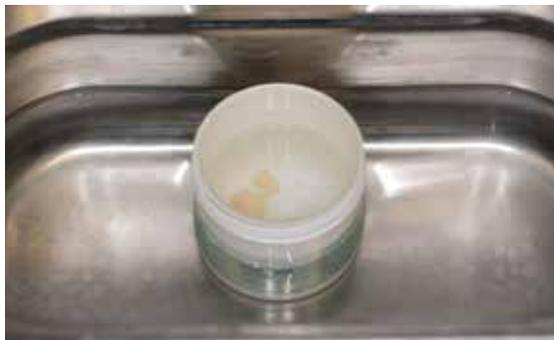
When using IPS PressVEST Premium, the reaction layer can be easily removed using polishing beads.

Remove the remaining reaction layer with IPS e.max Press Invex Liquid. In order to achieve this, proceed as follows:

- Pour the Invex Liquid into a plastic cup.
- Immerse the pressed object in the Invex Liquid and clean in an ultrasonic cleaner for at least 10 min and at most 30 min. Make sure that the objects are completely covered with Invex Liquid.
- Use the sieve insert to remove the restoration from the Invex Liquid and clean the object under running water and blow dry.
- Carefully remove the white reaction layer with type 100 Al_2O_3 at max. 1–2 bar (15–30 psi) pressure.
- Make sure that the reaction layer is completely removed, both on the cavity side and on the outer side of the object (repeat the procedure, if necessary).
- If the reaction layer is not completely removed, bubbles may develop, which subsequently may lead to bonding problems and cracks in the layering ceramic.
- Replace the IPS e.max Press Invex Liquid after 20 applications or after sedimentation of the liquid.



To remove the reaction layer, immerse the pressed objects in IPS e.max Press Invex ...



... and place in an ultrasonic cleaner for at least 10 and at most 30 minutes.



Using Al_2O_3 and a pressure of at most 1–2 bar (15–29 psi) pressure, carefully remove the reaction layer from the outer side ...



... and the screw channel.



Note:

Contains: 0.5% hydrofluoric acid

It is detrimental to health when swallowed. May cause severe skin irritation. May cause severe eye irritation. Wear protective gloves/protective clothes/ eye protection/face protection. Contact a POISON CONTROL CENTRE or a doctor in case you feel unwell. Targeted measures: After skin contact: Rub in ca-gluconate solution or ca-gluconate gel immediately. Wash contaminated clothes before wearing them again. IN CASE OF SKIN CONTACT: Rinse off with copious amounts of water. IN CASE OF EYE CONTACT: Rinse off carefully with water for some minutes. Remove contact lenses, if possible. Rinse again.

Disposal

- Neutralized the Invex Liquid before disposal!
- Use the IPS Ceramic Neutralization Powder to neutralized the Invex Liquid.
- For 50 ml Invex Liquid, approximately 3-4g of IPS Ceramic Neutralization Powder are required
- Note: strong foam development during neutralization.
- Carefully add the neutralization powder to the Invex Liquid in small portions until foam is no longer formed; then allow a reaction time of 5 minutes.
- If larger quantities are disposed, check the liquid with litmus paper (must show an alkaline reaction).
- After the reaction time, pour the neutralized solution into the sink, flushing it with running water.



Finishing

Suitable grinding instruments are imperative for adjusting and finishing high-strength glass-ceramic materials (please observe the Ivoclar Vivadent Flow Chart "Recommended grinding tools for IPS e.max glass-ceramics"). If unsuitable grinding instruments are used, chipping of the edges and local overheating may occur.

Observe the following procedure for finishing IPS e.max Press restorations:

- Even though adjustment by grinding of pressed IPS e.max Press restorations is possible, it should be kept to a minimum.
- Overheating of the ceramic must be avoided. Low speed and light pressure is recommended.
- Make sure that the minimum thicknesses are maintained even after the minor adjustments.

Fitting to the titanium bonding base

The fit of the abutment or abutment crown is checked on the titanium bonding base before the sprue is separated.

- Before the object is fitted, the inner aspect of the object (screw channel) is checked for bubbles in the ceramic. If required, the bubbles are removed with suitable instruments.
- Carefully position the abutment or abutment crown on the titanium bonding base. **Note:** Apply only light pressure to secure the pressed object on the titanium bonding base in order to prevent chipping of the ceramic. Observe the position of the rotation lock.
- Possible rough spots interfering with the fit of the pressed object on the titanium bonding base cause greyish-black markings on the screw channel. Carefully remove such markings with suitable grinding instruments. The diameter of the grinding instrument must be smaller than that of the screw channel. As an alternative to marking the rough spots, an occlusion spray can also be used.
- Carefully remove possible rough spots until an optimum fit between the titanium bonding base and the pressed object is achieved. Repeat the procedure, if required.



Check the screw channel for bubbles ...



Carefully position the abutment or abutment crown on the titanium bonding base.



Possible rough spots interfering with the fit on the titanium bonding base cause stains on the screw channel of the pressed object ...



... which can be carefully removed by means suitable grinding tools.



After possible rough spots have been removed, an optimum fit between the hybrid abutment ...



... or the abutment crown and the titanium bonding base is achieved.

Finishing

Once an optimum fit between the abutment or the abutment crown and the titanium bonding base has been achieved, please proceed as follows for the finishing steps:

- Separate the sprue using a separating disc. Prevent overheating.
- Smooth out the attachment point of the sprue. Make sure that the minimum thicknesses are maintained.
- Check the emergence profile and the fit on the model.
- In the case of abutment crowns, additionally check the occlusion and articulation. Adjust by grinding, if necessary, and create surface textures.
- To clean the abutment crown, briefly blast the outer side with Al_2O_3 at 1 bar (15 psi) pressure and clean with the steam cleaner. Some blasting devices may require different pressure settings to accomplish this procedure.



Separate the sprues using a separating disc. Avoid overheating.



Smooth out the attachment point of the sprue.



Check the emergence profile and the fit on the model.



Stain firing

The following paragraphs will explain the steps of optional staining with IPS Ivocolor Shades and Essences. On abutments, only the emergence profile is characterized for the individual patient. This characterization may also take place at a later stage, i.e. when the crown is characterized.



If hybrid abutments are fabricated, only the area of the emergence profile is characterized with IPS Ivocolor Shades, Essences and Glaze.



If hybrid abutment crowns are fabricated, the entire outer surface may be individually characterized using IPS Ivocolor Shades, Essences and Glaze.

Required materials:

- **IPS Ivocolor Essences** intensively shaded powdered stains
- **IPS Ivocolor Shades** are ready-to-use stains in jars.
- **IPS Ivocolor Mixing Liquid** (allround, longlife) to mix the powder materials (Essences, Glaze) and dilute the materials in paste form (Shades, Glaze).
- **IPS Ivocolor Essence Fluid** to mix the Essences in powder form in order to gain a paste-like consistency.



IPS Ivocolor Essence Fluid is suitable to mix the Essences in powder form.



Detailed information on the processing of IPS Ivocolor Shade, Essences and Glaze can be found in the IPS Ivocolor Instructions for Use.



The following steps must be observed:

- Clean the finished ceramic structure with the steam jet to remove any contaminations and grease residue. Any contamination after cleaning must be prevented.
- For better wetting of the stains, a small quantity of IPS Ivocolor Mixing Liquid may be slightly rubbed into the area that needs to be characterized.
- Mix the pastes or powders with the IPS Ivocolor Mixing Liquids allround or longlife to the desired consistency.
- More intensive shades are achieved by several staining procedures and repeated firing, not by applying thicker layers.
- To imitate the incisal area and translucency of the hybrid abutment crown in the incisal and occlusal third, IPS Ivocolor Shade Incisal may be used. The cusps and fissures can be individualized using Essences.
- If hybrid abutments are fabricated, only the area of the emergence profile is characterized with IPS Ivocolor Shades and Essences.



The application of stains must neither reach the bonding surface to the titanium bonding base nor the screw channel, as this may compromise the accuracy of fit. Check the interface before firing and carefully remove any contamination.

On the hybrid abutment, do not apply any materials to the bonding surface to the crown, as this may compromise the fit of the crown.



Conduct **Stain firing** of IPS Ivocolor on a honey-comb tray suitable for the furnace. **Firing parameters** see page 67.



Apply IPS Ivocolor Shade Incisal to imitate the incisal area.



Enhance the chroma of the buccal surface.



Individual characterization of the emergence profile with IPS Ivocolor Essences.



Conduct Stain firing on a honey-comb tray suitable for the ceramic furnace.

- Remove restoration from the furnace after completion of the firing cycle (wait for the acoustic signal of the furnace).
- Allow the objects to cool to room temperature in a place protected from draft.
- Do not touch the hot objects with metal tongs.
- Additional Stain firings can be conducted with the same firing parameters.

Glaze firing

Glaze firing is conducted with powder or paste glaze. On abutments, only the emergence profile is glazed. Glaze firing may also take place at a later stage, i.e. when the crown is glazed. On abutment crowns, glaze is applied to the entire outer surface.

Required materials:

- **IPS Ivocolor Glaze Paste/FLUO, Glaze Powder/FLUO** are glazing materials in paste and powder forms.
- **IPS Ivocolor Mixing Liquid** (allround, longlife) to mix the powder materials (Essences, Glaze) and dilute the materials in past form (Shades, Glaze).



The following procedure is recommended:

- For easier handling, the ceramic structure can be positioned on the titanium bonding base for glazing. For that purpose, secure titanium bonding base on a model analog.
- Mix the glazing material (IPS Ivocolor Glaze Paste or Powder) with the IPS Ivocolor Mixing Liquid allround or longlife to the desired consistency.
- Apply an even layer of glazing material covering all areas that are to be glazed.
- The degree of gloss of the glazed surface is controlled via the consistency of the glazing material and the applied quantity, not by means of the firing temperature. For a higher degree of gloss, apply the glazing material in a thicker consistency.
- If required, the fluorescence may be increased by applying a fluorescing glazing material (Paste FLUO or Powder FLUO).



The glazing material must neither reach the bonding surface to the titanium base nor the screw channel, as this may compromise the accuracy of fit. Check the interface before firing and carefully remove any contamination.

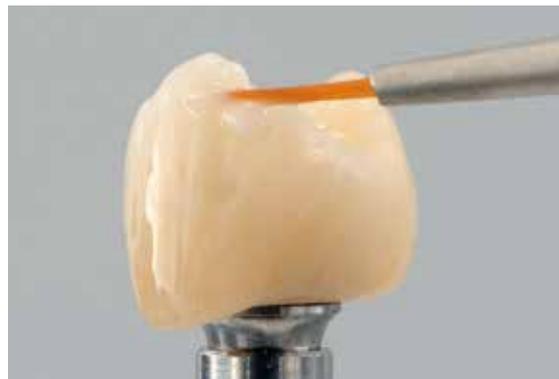
On the abutment, do not apply any glaze to the bonding surface to the crown, as this might compromise the fit of the crown.



Conduct the Glaze firing for IPS Ivocolor on a honey-comb firing tray using the stipulated firing parameters. Firing parameters see page 67.



Apply an even layer of glaze material to the emergence profile of the hybrid abutment. Make sure that no glazing material enters the screw channel.



The glazing material is applied evenly on the outer surface of the hybrid abutment crown. Make sure that no glazing material enters the screw channel.



Make sure that no glazing material is present on the interface of the hybrid abutment and hybrid abutment crown prior to the firing cycle. The glazing material is carefully removed, if necessary.



Conduct the Glaze firing on a honey-comb firing tray with the corresponding parameters.



Completely glazed and characterized hybrid abutment and hybrid abutment crown

- Remove restoration from the furnace after completion of the firing cycle (wait for the acoustic signal of the furnace).
- Allow the objects to cool to room temperature in a place protected from draft.
- Do not touch the hot objects with metal tongs.
- Additional Glaze firings can be conducted with the same firing parameters.

Optional

Shape adjustments with IPS e.max Ceram Add-On

Use IPS e.max Ceram Add-On Dentin and/or Incisal to make adjustments after Glaze firing. Please observe the following procedure for processing:

- Mix IPS e.max Ceram Add-On Dentin or Incisal with IPS Build-Up Liquid soft or allround and apply on the corresponding areas.
- Fire with the stipulated parameters for the "Add-On after Glaze firing". Observe long-term cooling!
- If necessary, polish the adjusted areas to a high gloss after firing.



Firing parameters see page 67.

Optional

Polishing the emergence profile of the abutment

If no Stain and no Glaze firing are desired, the ceramic structure may be manually polished. Note that polishing causes slight abrasion.

Observe the following procedure for polishing the ceramic structure:

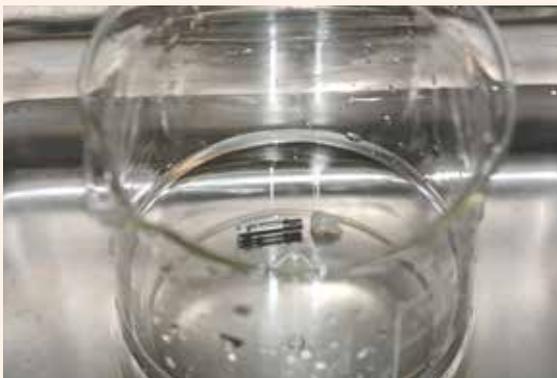
- Clean the ceramic structure with ultrasound in a water bath or a steam cleaner to remove any contaminations and grease residue.
- Screw titanium bonding base onto a model analog for easier handling.
- Secure the ceramic structure on the titanium bonding base. **Note:** The titanium bonding base must not be damaged.
- **Overheating of the glass-ceramic must be avoided during polishing.** Observe the recommendations of the manufacturer of the grinding tools.
- Pre-polishing with a diamond rubber polisher (e.g. OptraFine® F).
- Fine polishing with a high-gloss rubber polisher (e.g. OptraFine P).
- High-gloss polishing with brushes and polishing paste (e.g. OptraFine HP).
- Clean the ceramic surface with ultrasound in a water bath or with the steam jet.



Pre-polish the emergence profile with a diamond-coated rubber polisher.



High-gloss polishing with brushes and polishing paste.



Then clean the abutment with ultrasound...



... or with steam.

Crown on the IPS e.max® Press hybrid abutment

The crown on the IPS e.max Press hybrid abutment can be completed using either the staining technique or the cut-back technique. For staining and glazing, the respective IPS Ivocolor materials are used. Adjustments to the reduced areas (cut-back or layering technique) can be done using IPS e.max Ceram layering materials.

Processing technique	Staining Technique	Cut-Back Technique	Layering Technique
Veneering and add-on	–	IPS e.max Ceram	IPS e.max Ceram
Staining and glazing	IPS Ivocolor	IPS Ivocolor	IPS Ivocolor

Basically, the procedure for completing a crown is the same as that for a crown on a prepared tooth. For detailed information about the procedure, please refer to the IPS e.max Press Monolithic Solutions Instructions for Use.



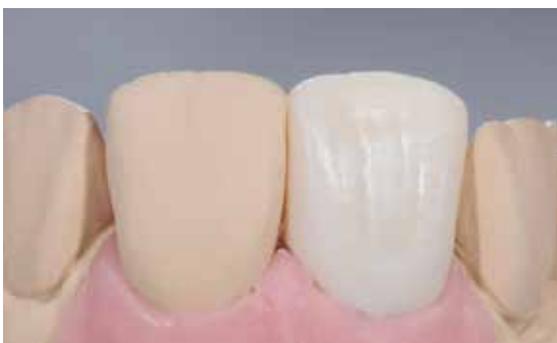
Example: IPS e.max® Press crown – Cut-back technique – IPS e.max® Ceram



Screw the titanium bonding base onto the model analog with the corresponding screw. If required, the hybrid abutment can be secured on the titanium bonding base by means of Virtual Extra Light Body Fast Set. Seal the screw channel (e.g. with silicone).



Before contouring the crown, apply a spacer up to approx. 1 mm from the cervical crown margin.



Isolate the hybrid abutment and then contour the crown with wax. Finally, the restoration is pressed with IPS e.max Press material.



Pressed IPS e.max Press crown with cut-back after divesting and finishing.



Complete the anatomical shape of the reduced areas using IPS e.max Ceram layering materials, such as Incisal and Opal.



Finish the restoration with diamonds and give it a true-to-nature shape and surface structure.



Finally, conduct the Stain and Glaze firing with IPS Ivocolor Shades, Essences and Glaze.



Hybrid abutment and matching crown after Stain and Glaze firing.

Provisional securing of the ceramic structure on the titanium bonding base

Before the hybrid abutment or hybrid abutment crown is permanently bonded to the titanium bonding base, a clinical try-in may be performed. To facilitate intraoral handling, the components are temporarily attached to one other with silicone material, e.g. Virtual Extra Light Body Fast Set.

Observe the following procedure to temporarily secure the components in place:

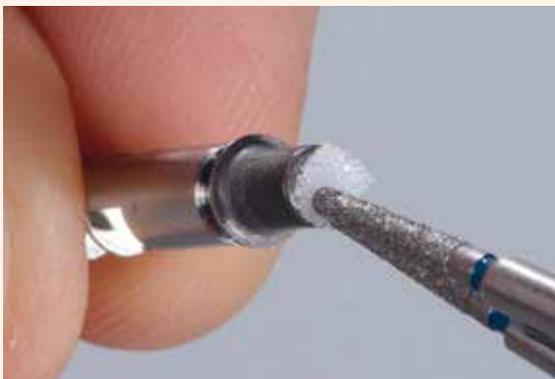
- The untreated titanium bonding base and the ceramic structure are cleaned with steam and subsequently dried with blown air.
- Place the ceramic structure on the titanium bonding base (which is screwed on the model analog) and mark the relative position of the components with a waterproof pen. This facilitates the achievement of the correct position when the parts are subsequently temporarily assembled.
- Seal the screw channel with a foam pellet.
- Insert the Virtual cartridge in the dispenser and remove the protective cap.
- Screw on the mixing tip and attach the Oral Tip to the mixing tip.
- Virtual Extra Light Body Fast Set is applied to the titanium bonding base and directly into the ceramic structure.
- The titanium bonding base is introduced into the ceramic structure. Observe the relative position of the objects (rotation lock/marking).
- Hold the components firmly in the correct position for 2:30 minutes until Virtual Extra Light Body Fast Set has set.
- Carefully remove protruding excess material with a suitable instrument, e.g. a scalpel.



Cleaned, untreated ceramic structures



The ceramic structure is placed on the titanium bonding base and the relative position is marked.



The screw channel is sealed with a foam pellet.



Insert the Virtual cartridge into the dispenser, screw on the mixing tip and attach the Oral Tip.



Virtual Extra Light Body Fast Set is applied to the titanium bonding base and...



... directly on the ceramic structure.



The titanium bonding base is introduced into the ceramic structure. In doing so, the alignment of the two components is checked (rotation lock/marking). The components are firmly held in place for approx. 2:30 minutes until the Virtual Extra Light Body Fast Set has set.



Carefully remove protruding excess material with a suitable instrument, e.g. a scalpel.



Remove excess Virtual Extra Light Body Fast Set material from the screw channel with an instrument.



Prepared hybrid abutment or hybrid abutment crown.

Clinical try-in

Hybrid abutment with dedicated crown



Any intraoral inspection of the occlusion/articulation and necessary grinding adjustments may only be carried out if the components have been attached to one another with Virtual Extra Light Body Fast Set. Virtual has a cushioning effect during the try-in procedure, in particular, if any grinding adjustments have to be made. Therefore, it prevents chipping in the transition area between the hybrid abutment and the crown.

Observe the following procedure for the clinical try-in:

- Have the clean prepared hybrid abutment (temporarily secured) and the matching clean crown ready at hand.
- Remove the temporary restoration.
- Manually screw in the hybrid abutment with the matching screw.
- Check the geometry of the hybrid abutment (e.g. fit, gingival anaemia) with regard to the gingival margin.
- If required, seal the screw channel of the hybrid abutment with a foam pellet.



Isolate the inner aspect of the crown with glycerine gel, e.g. try-in paste, Liquid Strip

- Place the crown intraorally onto the hybrid abutment to check and adjust the proximal contacts, if necessary. **Note: No occlusal functional checks must be performed at this stage.**
- For the functional inspection, the crown has to be secured on the hybrid abutment with Virtual Extra Light Body Fast Set. Try-in paste must not be used for this purpose, as this material is not sufficiently resistant to compressive force.
- Insert the Virtual cartridge into the dispenser and remove the protective cap.
- Screw on the mixing tip and attach the Oral Tip to the mixing tip.
- Apply Virtual Extra Light Body Fast Set to the inner aspect of the crown.
- Use your finger to press the crown to the hybrid abutment until the final position has been achieved. Hold the crown in the final position until the Virtual material has set.
- Excess Virtual material is removed.
- Check the occlusion/articulation and make required adjustments with suitable grinding instruments (see separate IPS e.max recommended grinding instruments for ceramics – use in the dental practice).
- Carefully remove the crown from the hybrid abutment and the hybrid abutment from the implant (including the Ti base).
- Rinse the implant site, e.g. with Cervitec Liquid (antibacterial mouth wash with chlorhexidine), to clean and disinfect it.
- Insert the temporary restoration.



Manually screw in the hybrid abutment with the matching screw. Check the geometry of the hybrid abutment (e.g. fit, gingival anaemia) with regard to the gingival margin.



If required, seal the screw channel of the hybrid abutment with a foam pellet.



 The inner aspect of the crown can be isolated with glycerine gel.



Place the crown intraorally onto the hybrid abutment to check and adjust the proximal contacts, if necessary. **Note: No occlusal functional checks must be performed at this stage.**



Virtual Extra Light Body Fast Set is applied to the inner aspect of the crown.



Use your finger to press the crown to the hybrid abutment until the final position has been achieved. The crown is held in the final position until the Virtual material has set.



Excess Virtual material is removed.



Check the occlusion/articulation and use suitable grinding instruments to make possibly required adjustments.



Carefully remove the crown from the hybrid abutment and remove the Virtual Extra Light Body Fast Set material.



Unscrew the hybrid abutment.

Hybrid abutment crown

Please observe the following procedure for the clinical try-in:

- Have the cleaned hybrid abutment crown (temporarily secured with Virtual Extra Light Body Fast Set) at hand.
- Remove the temporary restoration.
- Place the hybrid abutment crown intraorally onto the implant to check and possibly adjust the proximal contacts. **Note: No occlusal functional checks must be performed at this stage.**
- Manually screw in the hybrid abutment crown with the matching screw.
- Check the geometry of the hybrid abutment crown (e.g. fit, gingival anaemia) in relation to the gingiva.
- Check the occlusion/articulation and make required adjustments with suitable grinding instruments (see separate IPS e.max recommended grinding instruments for ceramics – use in the dental practice).
- Carefully remove the hybrid abutment crown.
- Rinse the implant site, e.g. with Cervitec Liquid (antibacterial mouth wash with chlorhexidine), to clean and disinfect it.
- Insert the temporary restoration.



Place the hybrid abutment crown intraorally onto the implant to check and possibly adjust the proximal contacts. **Note: No occlusal functional checks must be performed at this stage.**



Manually screw in the hybrid abutment crown with the matching screw.



Check the geometry of the hybrid abutment crown (e.g. fit, gingival anaemia) in relation to the gingiva.



Check the occlusion/articulation and use suitable grinding instruments to make possibly required adjustments.



The hybrid abutment crown (including titanium bonding base) is carefully removed.

Permanent cementation of titanium bonding base / ceramic structure

The contact surfaces must be meticulously prepared in order to ensure an optimum adhesive bond between the titanium bonding base and the ceramic structure. The following paragraphs outline the required procedures. It is the same for hybrid abutments and hybrid abutment crowns.

Required materials:

- IPS Ceramic Etching Gel or Monobond Etch & Prime®
- Monobond® Plus
- Multilink® Hybrid Abutment
- Glycerine gel, (e.g. Liquid Strip)



	IPS e.max Press ceramic structure (LS ₂)		Titanium bonding base
Blasting	-		Observe manufacturer's indications.
Conditioning	Option 1	Option 2	
Etching	The bonding area of the titanium bonding base with IPS® Ceramic Etching Gel for 20 s	Agitate Monobond Etch & Prime® on the bonding surface of the titanium bonding base and allow it to react for 40 seconds.	-
Silanizing	The bonding area with Monobond® Plus for 60 s		The bonding area with Monobond® Plus for 60 s
Adhesive cementation	Multilink® Hybrid Abutment		
Covering the cementation joint	Glycerine gel, e.g. Liquid Strip		
Curing	7 minutes auto-polymerization		
Polishing the cementation joint	Customary polishers for ceramic/resin materials		

Pre-treatment of the Viteo Base

The following procedure should be observed in the preparation of the Viteo Base for the cementation with the ceramic structure:

- Clean the Viteo Base in an ultrasonic bath or with a steam cleaner and then dry it with blown air. The surface must have a uniform mat shade.
- Screw the Viteo Base onto a model analog.
- Place the ceramic structure on the Viteo Base and mark the relative position of the components with a waterproof pen. This facilitates locating the correct position when the parts are assembled at a later stage.
- **Important:** After cleaning with a steam cleaner, any contamination of the bonding surface must be prevented, since contaminations negatively influence the bond.
- Apply Monobond Plus on the cleaned bonding surface and allow to react for 60 seconds. After the reaction time, dry the remaining residue with water- and oil-free air. **Important:** Monobond Etch & Prime is suitable for the conditioning of IPS e.max Press ceramic structures only and must not be used on the Viteo Base.
- Seal the screw channel with a foam pellet or wax. Make sure that the bonding surface is not contaminated.



Clean in an ultrasonic bath or with a steam cleaner and then dry with blown air.



Apply Monobond Plus on the cleaned bonding surface and allow to react for 60 seconds. After the reaction time, dry the remaining residue with water- and oil-free air.



Seal the screw channel with a foam pellet or wax. Make sure that the bonding surface is not contaminated.

Preparing the titanium bonding base

The following procedure should be observed in the preparation of the titanium bonding base for the cementation with the ceramic structure:

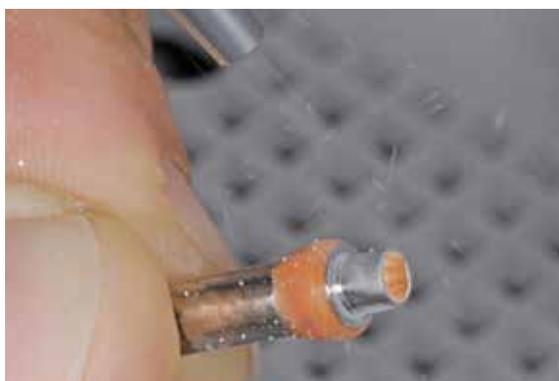
- The titanium bonding base should be prepared according to the instructions of the manufacturer.
- The titanium bonding base is cleaned in an ultrasonic bath or with a steam cleaner and then dried with blown air.
- The titanium bonding base is screwed to the model analog.
- The ceramic structure is placed on the titanium bonding base and the relative position is marked with a waterproof pen. This facilitates locating the correct position when the parts are assembled at a later stage.
- The emergence profile of the titanium bonding base must not be blasted or modified in any way!
- **If the manufacturer recommends that the bonding surface of the titanium bonding base be blasted, the following procedure should be observed:**
 - E.g. silicone (Virtual Extra Light Body Fast Set) is applied in order to protect the emergence profile and the screw channel.
 - Carefully blast the bonding area according to the instructions of the manufacturer.
 - Remove silicone.
 - Clean the titanium bonding base with ultrasound in a water bath or with the steam jet.
 - After cleaning, the bonding surface must not be contaminated under any circumstances, as this would impair the bond.
- Apply Monobond Plus on the cleaned bonding surface and allow to react for 60 seconds. After the reaction time, dry the remaining residue with water- and oil-free air. **Important:** Monobond Etch & Prime is suitable for the conditioning of IPS e.max Press ceramic structures only and must not be used on the Viteo Base.
- Seal the screw channel with a foam pellet or wax. Make sure that the bonding surface is not contaminated.



The titanium bonding base is screwed on the model analog. Mark the relative position to the pressed object.



Apply wax to protect the emergence profile. In addition, also seal the screw channel with wax.



Carefully blast the bonding area with Al_2O_3 (50–100 μm) at low pressure until an even, smooth surface has been achieved.



Clean with an instrument and steam cleaner. Make sure that any wax residue is carefully removed.



Apply Monobond Plus on the cleaned bonding surface and allow to react for 60 seconds. After the reaction time, dry the remaining residue with water- and oil-free air.



Seal the screw channel with a foam pellet or wax. Make sure that the bonding surface is not contaminated.

Preparation of the ceramic structure

There are two options to prepare the ceramic structure for cementation with the titanium bonding base:

Option 1 – Conditioning the bonding surface with **IPS Ceramic Etching Gel** and **Monobond Plus**

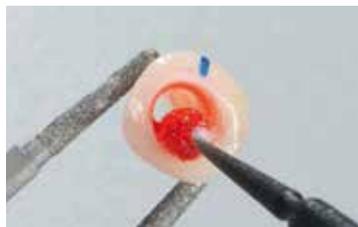
Option 2 – Conditioning the bonding surface with **Monobond Etch & Prime**

Please observe the following procedure for **Option 1**:

- The ceramic structure must not be blasted when it is prepared for cementation.
- Clean the ceramic structure in an ultrasonic bath or with a steam cleaner and blow dry with water- and oil-free air.
- After cleaning, any contamination of the bonding surface must be prevented, since contaminations negatively influence the bond.
- To protect the outer surfaces or the glazed areas, wax may be applied.
- Etch the bonding surface with 5% hydrofluoric acid gel (IPS Ceramic Etching Gel) for 20 seconds.
- Subsequently, thoroughly rinse the bonding surface under running water and dry with water- and oil-free air.
- Apply Monobond Plus on the cleaned bonding surface and allow to react for 60 seconds. After the reaction time, dry the remaining residue with water- and oil-free air.



Do **not** blast the ceramic structure:



Etch with IPS Ceramic Etching Gel for 20 seconds. Subsequently, the restoration is rinsed with water and blown dry.



Monobond Plus is allowed to react for 60 s, and excess is blown dry.

Please observe following procedure for **Option 2**:

- The ceramic structure must not be blasted when it is prepared for cementation.
- Clean the ceramic structure in an ultrasonic bath or with a steam cleaner and blow dry with water- and oil-free air.
- After cleaning, any contamination of the bonding surface must be prevented, since contaminations negatively influence the bond.
- To protect the outer surfaces or the glazed areas, wax may be applied.
- Apply Monobond Etch & Prime on the bonding surface using a microbrush and agitate 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.



Do **not** blast the ceramic structure:



Agitate Monobond Etch & Prime for 20 seconds and allow it to react for 40 seconds. Subsequently, the restoration is rinsed with water and blown dry.

Cementation with Multilink® Hybrid Abutment

Observe the following procedure for cementation:

- The cleaned and conditioned components (ceramic structure, titanium bonding base) are laid out ready for cementation.
- **The subsequent cementation procedure must be carried out quickly and without interruption. The working time of Multilink Hybrid Abutment is approx. 2 min. at 23 °C/73 °F (± 1 °C/2 °F).**
- As a general rule, a new mixing tip is attached to the Multilink Hybrid Abutment syringe prior to each use.
- A thin layer of Multilink Hybrid Abutment is directly applied from the mixing syringe to the bonding surface of the titanium bonding base and **the bonding surface of the ceramic structure.**
- The mixing tip is left on the Multilink Hybrid Abutment syringe until the next use. The remaining cement polymerizes in the tip and functions as a seal.
- The ceramic structure is placed on the titanium bonding base in such a way that the position markings are aligned.
- The parts are lightly and evenly pressed together and the correct relative position of the components is checked (transition between the titanium bonding base and ceramic structure).
- Subsequently, tightly press the components together for 5 seconds.
- Carefully remove excess in the screw cavity, e.g. with Microbrush or brush, using a rotary movement. Optionally, the screw channel can be sealed using a foam pellet prior to cementation. The foam pellet can be removed after cementation.



Excess must not be removed before curing has started, i.e. 2–3 minutes after mixing. For the purpose, a suitable dental lab instrument (e.g. Le Cron) is used. In the process, the components are held with light pressure.

- Apply a glycerine gel (e.g. Liquid Strip) to the cementation joint to prevent the formation of an inhibition layer. The gel must be left on the cementation joint until polymerization is complete.
- Next, the luting composite is completely auto-polymerized within 7 min.
- **Important: The parts should not be moved until Multilink Hybrid Abutment has completely cured. They can be held immobile with e.g. diamond-coated tweezers.**
- After the completion of auto-polymerization, the glycerine gel is rinsed off with water.
- **The cementation joint is carefully polished with rubber polishers at low speed (< 5,000 rpm), to avoid overheating.**
- **Important:** In order to achieve a smooth surface between the Viteo Base and the ceramic structure, polish the circular surface carefully using rubber polishers and decreasing light pressure. Prevent overheating.
- If there is any cement residue in the screw channel, remove it using suitable rotary instruments.
- Clean the restoration with ultrasound in a water bath or with the steam jet.



Keep the cleaned and conditioned components that are to be luted at hand.



A new mixing tip is attached to the Multilink Hybrid Abutment syringe prior to each use.



A thin layer of Multilink Hybrid Abutment is directly applied from the mixing tip on the bonding surface of the titanium bonding base.



A thin layer of Multilink Hybrid Abutment is directly applied from the mixing tip on the bonding surface of the ceramic structure.



The ceramic structure is placed on the titanium bonding base in such a way that the position markings are aligned. The components are joined using even and light pressure and the relative position of the components is checked (transition titanium bonding base/ceramic structure).



Subsequently, tightly press the components together for 5 seconds.



Carefully remove excess in the screw cavity, e.g. with Microbrush or brush, using a rotary movement.



Important: Circular cement excess must not be removed before the curing has started, e.g. 2–3 minutes after mixing. The components are held in place with light pressure in the process.



Apply a glycerine gel (e.g. Liquid Strip) to the cementation joint to prevent the formation of an inhibition layer.



The luting composite auto-polymerizes within 7 min. **Important:** The components must not be moved until auto-polymerization is completed. The components must be immobilized during this time.



After the completion of auto-polymerization, the glycerine gel is rinsed off with water.



The cementation joint is carefully polished with rubber polishers at low speed (< 5,000 rpm), to avoid overheating.

Viteo® Base



Important: In order to achieve a smooth surface between the Viteo Base and the ceramic structure, polish the circular surface carefully using rubber polishers and decreasing light pressure. Prevent overheating.



Any remaining cement residue in the screw channel is removed with suitable rotary instruments. The titanium bonding base must not be damaged.



Completed IPS e.max Press hybrid abutment and IPS e.max Press hybrid abutment crown after cementation

Practical Procedure

Seating and Aftercare

Sterilization

The hybrid abutments or hybrid abutment crowns must be sterilized prior to insertion. Furthermore, the locally applicable legal regulations and the hygiene standards applicable for a dental practice must be observed.

Steam sterilization can be performed with 3 x fractionated pre-vacuum using the following parameters: Sterilization time 3 min; steam temperature 132 °C/270 °F. The hybrid abutment and/or the hybrid abutment crown must be used immediately. No storage after sterilization!



The responsibility for the sterility of the hybrid abutment or hybrid abutment crown lies with the user. It must be ensured that only suitable devices, materials and validated, product-specific methods are used to perform sterilization. The equipment and devices must be properly maintained and serviced at regular intervals. The user (dental technician) of the IPS e.max CAD Abutment Solution must inform the dentist of the need to sterilize the abutment before inserting it in the patient's mouth!

Intraoral preparation

Please observe the following procedure to prepare for the permanent cementation of the implant-supported restoration:

- Remove the temporary restoration
- Clean the implant site
- Check the peri-implant tissue (emergence profile)

Seating the hybrid abutment and separate crown

Preparing/conditioning the hybrid abutment and separate crown

Conditioning of the ceramic surface, i.e. the bonding surface, in preparation for cementation is critical for generating a sound bond between the cementation material and the all-ceramic material.

There are two options available to prepare the ceramic structure:

Option 1 – Conditioning the bonding surface with **IPS Ceramic Etching Gel** and **Monobond Plus**

Option 2 – Conditioning the bonding surface with **Monobond Etch & Prime**

Please observe following procedure for **Option 1**:

- Do **not** blast the IPS e.max Press hybrid abutment or the IPS e.max Press crown with Al_2O_3 or glass polishing beads prior to seating.
- Ideally, the clinical try-in is conducted before etching to prevent contamination of the bonding surface.
- Thoroughly clean the hybrid abutment and the crown with water and blow dry.
- Etch the bonding surfaces with 5% hydrofluoric acid gel (IPS Ceramic Etching Gel) for 20 seconds. Make sure that no etching gel comes into contact with the emergence profile or the outer side of the crown. **Important: Do not use the IPS Ceramic Etching Gel intraorally.**
- Thoroughly rinse off the etching gel with water and dry with water- and oil-free air.
- If an adhesive or self-adhesive cementation protocol is used, apply Monobond Plus to the clean bonding surface and allow it to react for 60 s. After this reaction time, disperse any residue with water- and oil-free air.





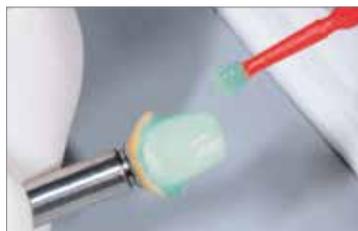
Do **not** blast IPS e.max Press ceramic structures.

The bonding surfaces are etched with IPS Ceramic Etching Gel for 20 s and subsequently cleaned.

Monobond Plus is applied to the bonding surfaces, and allowed to react for 60 s. Excess is dispersed with air.

Please observe following procedure for **Option 2**:

- Do not blast the IPS e.max Press hybrid abutment or the IPS e.max Press crown with Al_2O_3 or glass polishing beads prior to seating.
- Conduct clinical try-in before conditioning.
- Thoroughly clean the hybrid abutment and the crown with water and blow dry.
- Apply Monobond Etch & Prime on the bonding surface using a microbrush and agitate it into the surface for 20 seconds. Allow to react for another 40 seconds. **Important: Do not apply Monobond Etch & Prime intraorally.**
- 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.



Do **not** blast IPS e.max Press ceramic structures.

Agitate Monobond Etch & Prime on the bonding surface for 20 seconds and allow it to react for 40 seconds. Subsequently, the restoration is rinsed with water and blown dry.

Seating the hybrid abutment and separate crown



Temporary insertion of the IPS e.max Press crown on the IPS e.max Press hybrid abutment is contraindicated!

The followings workings steps and the Instructions for Use of the luting material in use must be observed when seating the hybrid abutment and/or the crown.

SpeedCEM® is recommended for the seating of IPS e.max Press crowns on IPS e.max Press hybrid abutments.



- Do not use phenolic mouth washes, as such products negatively influence the bond between the ceramic and the composite.
- Insert the hybrid abutment intraorally into the implant.
- Manually screw in the matching implant screw.
- Tighten the implant screw with a torque wrench (observe the instructions of the manufacturer).
- Insert a cotton or foam pellet into the screw channel.
- Seal the screw channel with a temporary composite (e.g. Telio® CS Inlay). This serves to ensure access to the screw at a later stage.
- Check the bonding area for contamination/moisture and clean or dry with an air syringe, if necessary.
- Apply the luting material, **e.g. SpeedCEM**, into the conditioned crown.
- Place the crown onto the hybrid abutment and secure in place in the final position.
- Conduct the pre-polymerization using the quarter technique.
- Remove excess luting material.
- Cover the cementation joint with glycerine gel (e.g. Liquid Strip).
- Polymerize with an LED curing light (e.g. Bluephase® Style)
- Rinse off the glycerine gel with water.
- Check the occlusion and articulation and make adjustments, if necessary. If adjustments are made to the restoration by grinding, these areas must subsequently be polished to a high gloss, e.g. using OptraFine.
- Polish restoration margins and the cementation joint with silicone polishers (e.g. Astropol®, OptraFine).
- Apply Cervitec® Plus (protective varnish) in the area of the gingival margin.



Insert the hybrid abutment intraorally into the implant.



Manually screw in the matching implant screw.



Tighten the implant screw with a torque wrench (observe the instructions of the manufacturer).



Seal the screw channel, for instance with a cotton or foam pellet and a temporary composite material.



Apply the luting material, e.g. SpeedCEM Plus, into the conditioned crown.



Place the crown onto the hybrid abutment and secure in place.



Conduct the pre-polymerization using the quarter technique.



Remove excess luting material.



Cover the restoration margin with glycerine gel (e.g. Liquid Strip).



Polymerize with an LED curing light (e.g. Bluephase).



Rinse off the glycerine gel with water.



Check the occlusion and articulation and make adjustments, if necessary.



The restoration margins and the cementation joint are polished (e.g. OptraPol, OptraFine).



Completed IPS e.max Press hybrid abutment with crown.

Seating the hybrid abutment crown

Preparing/conditioning the hybrid abutment crown

There are two options available to prepare for the intraoral sealing of the screw channel:

Option 1 – Conditioning the bonding surfaces with **IPS Ceramic Etching Gel** and **Monobond Plus**

Option 2 – Conditioning the bonding surfaces with **Monobond Etch & Prime**

Please observe following procedure for **Option 1**:

- As a general rule, do **not** blast IPS e.max Press hybrid abutment crowns with Al_2O_3 or glass polishing beads.
- Thoroughly clean the the hybrid abutment crown with water and blow dry.
- Etch the screw channel from the occlusal side with 5% hydrofluoric acid gel (IPS Ceramic Etching Gel) for 20 seconds. Make sure that no etching gel comes into contact with the occlusal surface. **Important: Do not use the IPS Ceramic Etching Gel intraorally.**
- Thoroughly rinse off the etching gel with water and dry with water- and oil-free air.
- Apply Monobond Plus to the etched and cleaned surface in the screw channel, allow to react for 60 seconds and then disperse excess with water- and oil-free air.



Do **not** blast IPS e.max Press ceramic structures.



The screw channel is etched with IPS Ceramic Etching Gel for 20 s and subsequently cleaned.



Monobond Plus is applied, allowed to react for 60 s and excess is dispersed.

Please observe following procedure for **Option 2**:

- As a general rule, do not blast IPS e.max Press hybrid abutment crowns with Al_2O_3 or glass polishing beads.
- Thoroughly clean the the hybrid abutment crown with water and blow dry with water- and oil-free air.
- Apply Monobond Etch & Prime on the bonding surface from the occlusal using a microbrush and agitate it into the surface for 20 seconds. Allow to react for another 40 seconds.

Make sure that no gel comes into contact with the occlusal surface. **Important: Do not apply Monobond Etch & Prime intraorally.**

- 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.



Do **not** blast IPS e.max Press ceramic structures.

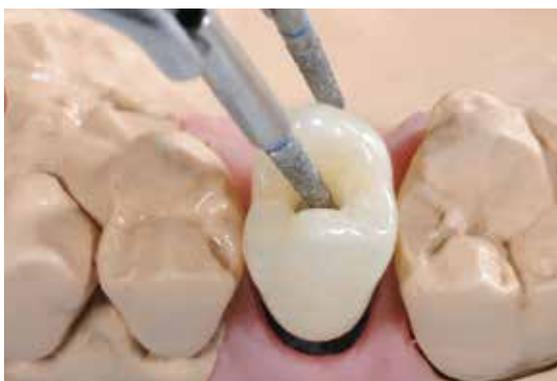


Agitate Monobond Etch & Prime in the screw channel for 20 seconds and allow it to react for 40 seconds. Subsequently, the restoration is rinsed with water and blown dry.

Seating the hybrid abutment crown

For the permanent seating of the hybrid abutment crown, please observe the following working steps.

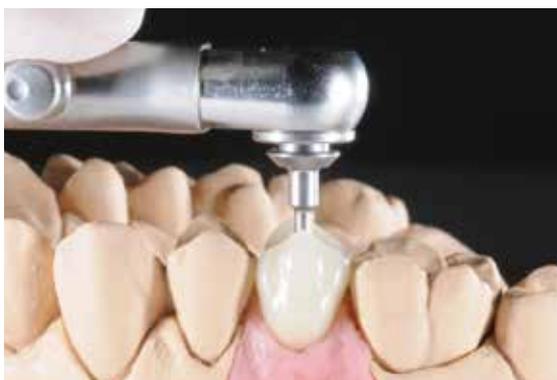
- Do not use phenolic mouth washes, as such products negatively influence the bond between the ceramic and the composite.
- Insert the hybrid abutment crown intraorally into the implant.
- Manually screw in the matching implant screw.
- Tighten the implant screw with a torque wrench (observe the instructions of the manufacturer).
- Check the screw channel for contamination/moisture.
- Insert a cotton or foam pellet into the screw channel.
- Apply the bonding agent, followed by polymerization.
- Seal the screw channel with a composite material (e.g. Tetric EvoCeram) in the appropriate shade.
- Polymerize with an LED curing light (e.g. Bluephase).
- Check the occlusion/articulation after polymerization and correct possible rough spots with suitable fine-grain diamonds.
- Polish to a high gloss with silicone polishers (e.g. OptraPol/OptraFine).



Insert the hybrid abutment crown intraorally into the implant.



Manually screw in the matching implant screw.



Tighten the implant screw with a torque wrench (observe the instructions of the manufacturer).



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



Polymerize with an LED curing light (e.g. Bluephase).



After polymerization, check the occlusion/articulation and correct possible rough spots with suitable finishers (e.g. Astropol F) or fine diamonds.



Polish to a high gloss using silicone polishers (e.g. Astropol P, Astropol HP or Astrobrush).



Completed IPS e.max Press hybrid abutment crown

Care Notes – Implant Care

Implant Care comprises a coordinated product program for the professional care of patients during the different phases of an implant treatment, and the aftercare throughout the rest of their lives. Products for professional cleaning and bacteria control contribute to ensure the long-term quality of the implant-retained restorations. Structural elements, peri-implant tissue, natural teeth, dentures, gingiva, and mucous membrane obtain optimum treatment and care with regard to their function and esthetic appearance.



IPS e.max[®] Press Abutment Solutions

General Information

Frequently Asked Questions

In addition to the desired tooth shade, why should the root shade also be defined/determined upon shade determination?

IPS e.max Press Abutment Solutions allow you to fabricate restorations with a lifelike appearance both in the visible area and the area below the gingiva (root). By defining the root shade, a highly esthetic outcome can be achieved especially in the case of receding gingiva.

Is it possible to fabricate an abutment or an abutment crown with IPS e.max Press (LS₂) without using a titanium bonding base?

No! For this indication, IPS e.max Press needs the support provided by the titanium bonding base. In addition, the titanium bonding base allows an optimum (industrially fabricated) fit to the implant to be achieved.

Is it possible to use any commercially available titanium bonding base in conjunction with IPS e.max Press Abutment Solutions?

When selecting a suitable titanium bonding base, the requirements in terms of minimum dimensions (height, shoulder width, no undercuts) must be taken into account. In addition, the titanium bonding base must be equipped with a rotation lock which does not entail a reduction of the ceramic layer thickness.

Is it permissible to modify the selected titanium bonding base?

The instructions of the manufacturer with regard to modifying the titanium bonding base must be observed. Prior to permanent cementation, the bonding surface of the titanium bonding base must be blasted with Al₂O₃.

Is a hybrid abutment crown indicated in the anterior region?

This indication depends on the position and inclination of the implant. If the opening of the screw channel is located on the oral surface, a hybrid abutment crown may be fabricated in the anterior region.

Is it possible to use an IPS e.max Press hybrid abutment as an abutment for a bridge restoration?

No. Only single-tooth restorations may be fabricated.

What do I need to take into consideration when designing a hybrid abutment or hybrid abutment crown in order to fabricate a durable restoration?

The stipulated minimum and maximum layer thicknesses for IPS e.max Press need to be observed. In addition, the ratio between the height of the titanium bonding base and the height of the entire restoration must be observed.

What do I need to take into consideration when attaching sprues and investing the wax-up?

The screw channel of the sprued wax-up must be parallel to the outer wall of the investment ring. As a result, the investment material can be filled evenly and in a controlled manner. In addition, the risk that the flowing ceramic material could break off the investment material in the screw channel is reduced. The objects could be placed in a tilted position on the investment ring base, but this may lead to difficulties during investing (e.g. bubbles in the screw channel).

When is the sprue of the pressed object separated?

We recommend that the pressed objects should be fitted to the titanium bonding base first, as this facilitates the handling. Subsequently, the pressed objects are separated from the sprue.

How should the emergence profile of the hybrid abutment be finished?

Preferably, a Characterization and Glaze firing is conducted on the emergence profile prior to the cementation procedure. In this way, you may adjust the esthetic appearance of the abutment to the clinical situation ("root shade"). If no characterization is required, the emergence profile may be polished to a high gloss with polishers as well as brushes and polishing paste.

An optional clinical try-in may be performed. How are the objects prepared for this?

The titanium bonding base and the pressed abutment or abutment crown are temporarily joined in the laboratory by means of a silicone material, e.g. Virtual Extra Light Body Fast Set. This facilitates the intraoral handling.

What must be observed for the clinical try-in of a crown on a hybrid abutment?

To check the occlusion/articulation and to make possible adjustments, the crown must be temporarily secured on the hybrid abutment with a silicone material, e.g. Virtual Extra Light Body Fast Set. The silicone material acts as a buffer and prevents chipping in the marginal area of the crown. Try-in pastes or Vaseline must not be used for functional checks.

What material is used to permanently cement the abutment or the abutment crown made of IPS e.max Press with the titanium bonding base?

Only Multilink Hybrid Abutment is to be used for permanent cementation. Other luting materials have not been tested for this purpose.

How is the titanium bonding base prepared for the permanent cementation with Multilink Hybrid Abutment?

Carefully blast the bonding area with Al_2O_3 at low pressure until an even mat surface has been achieved. After cleaning, the area is conditioned with Monobond Plus.

How is the screw channel of a hybrid abutment crown sealed intraorally?

After the hybrid abutment crown has been screwed into place and the screw has been tightened with a torque wrench, the screw channel is sealed with a composite restorative material.

Shade combination table

Individual characterizations and shade adjustments of IPS e.max Press restorations are achieved with IPS Ivocolor Shades and Essences.

IPS Ivocolor Shades, Essences

For the application on IPS e.max Press restorations

A-D shades	BL1	BL2	BL3	BL4	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4			
IPS Ivocolor Shade		 SD 0			 SD 1		 SD 2		 SD 3	 SD 4	 SD 5				 SD 6			 SD 6	 SD 7	 SD 6			
IPS Ivocolor Shade Incisal					 SI 1				 SI 2		 SI 3												
IPS Ivocolor Essence	 E 01 white	 E 02 cream	 E 03 lemon	 E 04 sunset	 E 05 copper	 E 06 hazel	 E 07 olive	 E 08 khaki	 E 09 terracotta	 E 10 mahogany	 E 11 cappuccino	 E 12 espresso	 E 13 terra	 E 14 profundo	 E 15 ocean	 E 16 sapphire	 E 17 anthracite	 E 18 black	 E 19 rose	 E 20 coral	 E 21 basic red	 E 22 basic yellow	 E 23 basic blue

Press and firing parameters

Programat EP 3000 / EP 5000



Select the press program in accordance with the selected ingot to be pressed and the investment ring size used.



Programat EP 3000 / EP 5000



Select the Fully automatic Press Function (FPF) or the press program according to the chosen ingot for and the investment ring for pressing.



The new Fully automatic Press Function for IPS e.max Press makes the pressing procedure even easier and more economic: simply place the investment ring into the press furnace and press the start key. The press furnace takes care of the rest. The program is automatically selected, the press chamber heated to the right temperature and the viscous ceramic is pressed into the investment ring at the right time. The function also takes care of the postpressing time and the cooling time – at the touch of a button.

Firing parameters for IPS e.max Press Abutment Solutions

Use a honey-combed tray and the corresponding pins for firing.

- Do not use ceramic pins.
- The stipulated parameters are coordinated with Ivoclar Vivadent furnaces (tolerance range ± 10 °C/18 °F).
- If a non-Ivoclar Vivadent furnace is used, temperature corrections may be necessary.
- Remove IPS e.max Press objects from the furnace after completion of the firing cycle (wait for the acoustic signal of the furnace).
- Allow the objects to cool to room temperature in a place protected from draft.
- Do not touch the hot objects with metal tongs.
- Do not blast or quench the objects.



Note regarding the firing parameters for IPS e.max Press Abutment Solutions:

Given the geometry of hybrid abutments and hybrid abutment crowns, the layer thicknesses of the pressed object may vary considerably. When the objects cool after the firing cycle, the different cooling speeds in the areas with different thicknesses may result in internal tensions. In the worst case, these tensile stresses may result in fractures in the pressed ceramic objects. By using slow cooling (long-term cooling L), these tensions can be minimized.

- The use of long-term cooling for the final firing cycle is recommended for restorations with layer thicknesses of more than 2 mm in particular.

Firing parameters for the staining technique

with IPS Ivocolor Shade, Essence, Glaze



	Stand-by temperature B [°C/°F]	Closing time* S [min]	Heating rate t [°C/°F/min]	Firing temperature T [°C/°F]	Holding time H [min]	Vacuum 1 V₁ [°C/°F]	Vacuum 2 V₂ [°C/°F]	Long-term cooling ** L [°C/°F]	Cooling rate t₁ [°C/°F/min]
Stains/ Glaze firing	403/757	IRT/ 6:00	60/108	710/1310	01:00	450/842	709/1308	0	0

* IRT Standard mode

** Note: If the layer thickness exceeds 2 mm, long-term cooling L up to 500°C is required

Firing parameters for adjustments (staining technique)

with IPS e.max Ceram Add-On



	Stand-by temperature B [°C/°F]	Closing time* S [min]	Heating rate t [°C/°F/min]	Firing temperature T [°C/°F]	Holding time H [min]	Vacuum 1 V₁ [°C/°F]	Vacuum 2 V₂ [°C/°F]	Long-term cooling ** L [°C/°F]	Cooling rate t₁ [°C/°F/min]
Add-On after Glaze firing	403/757	IRT/ 6:00	50/90	700/1292	01:00	450/842	699/1290	0	0

* IRT Standard mode

** Note: If the layer thickness exceeds 2 mm, long-term cooling L up to 500°C is required



If the layer thickness exceeds 2 mm, long-term cooling L up to 500°C is required

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