

IPS[®] e.max[®] CAD



IPS e.max[®] CAD bridge

CE 0123

For dental use only.
Rx ONLY



Manufacturer:
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ivoclar[®]
vivadent[®]
technical

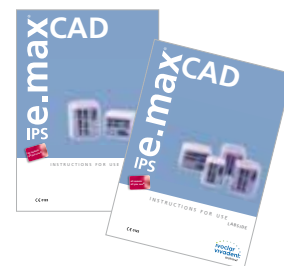
IPS e.max® CAD

Product information



These Instructions for Use contain additional information on **the fabrication of 3-unit bridges using IPS e.max CAD LT**. For the basic working steps on the processing of IPS e.max CAD LT please refer to the "IPS e.max CAD chairside" and "IPS e.max CAD labside" Instructions for Use.

In the fabrication of bridges, you may choose between the staining technique and the cut-back technique. Please observe the directions related to each individual technique.



Indications

Up to three-unit bridges up to the second premolar as the abutment tooth

Contraindications

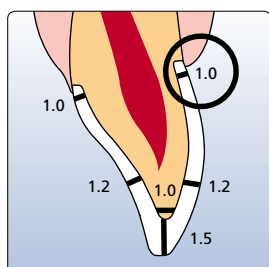
- Inlay bridges
- Parafunction (e.g. bruxism)
- Cantilever bridges
- Maryland bridges
- Pontic width >11 mm in the anterior region
- Pontic width >9 mm in the premolar region
- Any other use not listed as an indication for IPS e.max CAD

Important processing restrictions

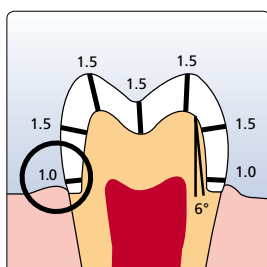
Please observe the information in the "IPS e.max CAD chairside" and "IPS e.max CAD labside" Instructions for Use.

Preparation guidelines

Abutment in the anterior region



Abutment in the premolar region



Maximum pontic width in the anterior and premolar region



Minimum thickness

| | | Bridges | | |
|--|----------------------|--|-----------------------|-----|
| | | Anterior region mm | Premolar region mm | |
| | Staining technique | circular | 1.2 | 1.5 |
| | | incisal/occlusal | 1.5 | 1.5 |
| | Cut-back technique* | circular | 1.2 | 1.5 |
| | | incisal/occlusal | 0.8 | 1.0 |
| | Connector dimensions | 16 mm ² Basically, the following applies: Height ≥ Width | | |

*For maximum layer thickness of the IPS e.max Ceram veneer see IPS e.max CAD labside Instructions for Use.



Staining technique using IPS e.max CAD Crystall./Shades, Stains, Glaze



When using the staining technique, apply individual characterizations and glaze prior to combination firing (crystallization and glaze firing). As a result of the combined firing, this technique is very efficient and leads to a highly esthetic result quickly and easily.



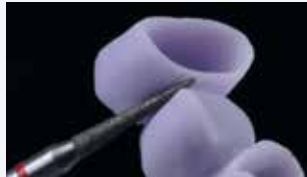
Bridge after CAD/CAM processing



Smooth out the attachment point and take **proximal contacts** into account. Do not inhale ceramic dust during finishing – use exhaust air discharge and wear face mask.



Do not use diamond discs for finishing, since this may result in predetermined breaking points.



Finish **interdenal areas** with fine-grit diamonds (grit size 40–50 µm). Make sure to observe the connector dimensions.



Check occlusion, articulation and proximal contacts.



Surface-grind the outer surface, particularly the functional areas of the restoration, with a fine diamond **to smooth out the surface structure** created by the CAD/CAM process.



Use the largest possible **IPS e.max CAD Crystallization Pin** for crystallization.



Fill the inside of the crowns of the previously cleaned bridge with **IPS Object Fix Putty** or **Flow** and press the appropriate **IPS e.max CAD Crystallization Pin** deeply into the IPS Object Fix material.



Place the bridge on the **IPS e.max CAD Crystallization Tray** immediately.



Smooth out displaced **IPS Object Fix Putty** or **Flow** with a plastic spatula from the margin towards the support pin so that the pin is secured in the paste and the crown wall is precisely supported.



Clean off any possible **residue** adhering to the outer surface of the restoration with a **brush moistened with water** and then dry.



Apply **IPS e.max CAD Crystall./Glaze paste** evenly to the blue restoration. Apply the mixed **IPS e.max CAD Crystall./Shades and Stains** into the unfired IPS e.max CAD Crystall./Glaze paste.



Place the IPS e.max CAD Crystallization Tray with the glazed and stained restoration in the furnace and conduct the **combination firing**.



If adjustments are required (shade, glaze, contact points), conduct a separate **corrective firing cycle** on the IPS e.max CAD Crystallization Tray.



Completed **IPS e.max CAD LT bridge**. To remove any residue, immerse the restoration in an ultrasonic cleaning bath or use a steam cleaner.

Firing parameters

| Furnaces | Stand-by temperature B [°C/°F] | Closing time S [min] | Heating rate t₁ [°C/°F/min] | Firing temperature T₁ [°C/°F] | Holding time H₁ [min] | Heating rate t₂ [°C/°F/min] | Firing temperature T₂ [min] | Holding time H₂ [min] | Vacuum 1 1₁ [°C/°F] 1₂ [°C/°F] | Vacuum 2 2₁ [°C/°F] 2₂ [°C/°F] | Long-term cooling L [°C/°F] | Cooling rate t₁ [°C/°F/min] |
|--|--|--------------------------------|--|--|--|--|--|--|--|--|---------------------------------------|--|
| Combination firing (crystallization/glaze firing) | | | | | | | | | | | | |
| Programat CS (Program 1) Programat P300 P500 P700 | 403/757 | 6:00 | 90/162 | 820/1508 | 0:10 | 30/54 | 840/1544 | 7:00 | 550/820 1022/1508 | 820/840 1508/1540 | 700/1292 | 0 |
| Corrective firing | | | | | | | | | | | | |
| Programat CS (Program 1) Programat P300 P500 P700 | 403/757 | 6:00 | 90/162 | 820/1508 | 0:10 | 30/54 | 840/1544 | 3:00 | 550/820 1022/1508 | 820/840 1508/1540 | 700/1292 | 0 |

Note

Cooling after firing:

- Remove IPS e.max CAD 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.

Cementation



The Cementation Navigation System, a new multimedia application from Ivoclar Vivadent, offers dentists practical orientation and guidance in the selection of the best luting material for each case.
www.cementation-navigation.com

| | Adhesive cementation | Self-adhesive cementation | Conventional cementation |
|----------------|--------------------------------------|---------------------------|--------------------------|
| IPS e.max® CAD | ✓ | ✓ | ✓ |
| | Variolink® II, Multilink® Automix | SpeedCEM® | Vivaglass® CEM |



Please observe the respective Instructions for Use.

Conditioning of the restoration

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).



Do not blast the restorations with Al₂O₃ or glass polishing beads.



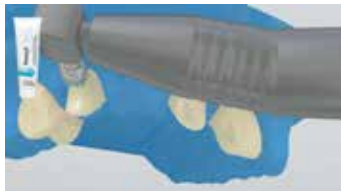
Etch with 5% hydrofluoric acid (e.g. IPS® Ceramic Etching Gel) for 20 seconds and rinse the acid off with water.



Allow Monobond Plus to react for 60 s and then blow dry with the air syringe. Silanization is not required for conventional cementation procedures.

Cementation with e.g. Multilink Automix

Adhesive cementation



Ensure reliable isolation of the operating field, preferably by placing a rubber dam (e.g. OpraDam®). Clean preparation, rinse with water spray. Subsequently, blow dry with oil- and moisture-free air. Avoid overdrying.



Apply the mixed Multilink Primer A/B with a micro-brush to the entire bonding surface, starting with the enamel, and scrub for 30 s. Take up fresh primer with the micro-brush for each abutment. Disperse excess amounts of Multilink Primer with a strong stream of air until the mobile liquid film has disappeared.



Apply Multilink Automix directly into the conditioned restoration.



Seat the restoration in place and fix/hold while maintaining stable pressure.



Light-activate cement excess with a curing light (e.g. Bluephase®) at a distance of max. 10 mm per quarter surface (mesio-oral, disto-oral, mesio-buccal, disto-buccal). Observe the indicated light intensity.



The excess material has a gel-like consistency and can be easily removed with a scaler.



Like all composite resins, Multilink Automix is subject to oxygen inhibition. To avoid this, cover the restoration margins with glycerine gel/air block (e.g. Liquid Strip) immediately after the removal of excess.



Subsequently, light-cure all cement lines again for 20 s (e.g. Bluephase, HIGH mode, approx. 1,200 mW/cm²). Rinse off glycerine gel and remove the rubber dam.

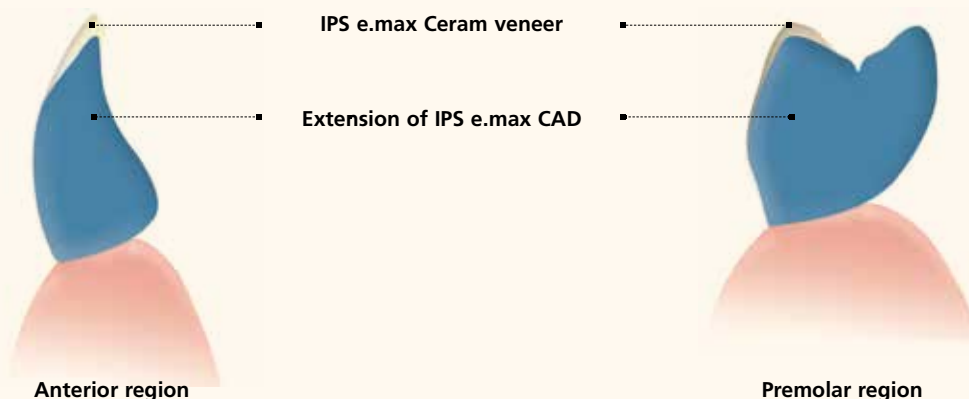


Use finishing and polishing strips in the proximal regions. Check occlusion and functional movements and make adjustments if necessary. Polish restoration margins with polishers (Astropol®) or discs.

Cut-back technique using IPS e.max Ceram



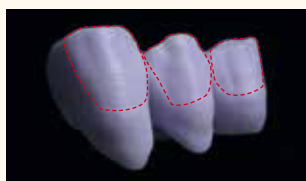
Design guidelines



When using the cut-back technique, IPS e.max Ceram Impulse and Incisal materials are applied in the incisal and/or occlusal area of the milled, reduced IPS e.max CAD pattern. Make sure to observe the minimum dimensions during the cut-back process and refrain from designing extreme morphologies with undercuts for mamelons.



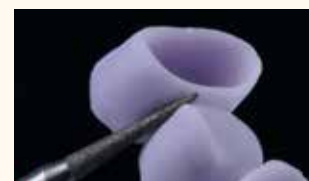
Smooth out the attachment point and take **proximal contacts** into account. Do not inhale ceramic dust during finishing – use exhaust air discharge and wear face mask.



Bridge after cut-back



Do not use diamond discs for finishing as this may result in predetermined breaking points.



Finish the **interdental areas** with fine-grit diamonds (grit size 40–50 µm), making sure to observe the connector dimensions



Check occlusion, articulation and proximal contacts.



Surface-grind the outer surface, particularly the functional areas of the restoration with a fine diamond to **smooth out the surface structure** created by the CAD/CAM process.



Fill the inside of the crowns of the previously cleaned bridge **with IPS Object Fix Putty or Flow** and press the selected **IPS e.max CAD Crystallization Pin** deeply into the Object Fix material. Place the restoration on the IPS e.max CAD Crystallization Tray immediately.



Place the firing tray in the furnace and conduct the **crystallization firing cycle** with the respective parameters.

Firing parameters

Crystallization/Glaze

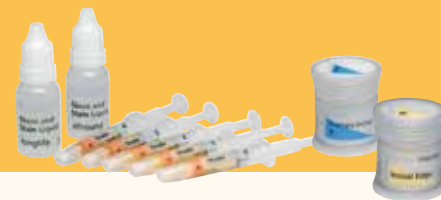
| Furnace | Stand-by temperature B [°C/°F] | Closing time S [min] | Heating rate t ₁ [°C/°F/min] | Firing temperature T ₁ [°C/°F] | Holding time H ₁ [min] | Heating rate t ₂ [°C/°F/min] | Firing temperature T ₂ [°C/°F] | Holding time H ₂ [min] | Vacuum 1 1 ₁ [°C/°F] 1 ₂ [°C/°F] | Vacuum 2 2 ₁ [°C/°F] 2 ₂ [°C/°F] | Long-term cooling L [°C/°F] | Cooling rate t _f [°C/°F/min] |
|-----------------------------------|-----------------------------------|-------------------------|--|--|--------------------------------------|--|--|--------------------------------------|--|--|--------------------------------|--|
| Programat P300 P500 P700 | 403/757 | 6:00 | 90/162 | 820/1508 | 0:10 | 30/54 | 840/1544 | 7:00 | 550/820 1022/1508 | 820/840 1508/1540 | 700/1292 | 0 |

Note

Cooling after firing

- Remove IPS e.max CAD 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.

Cut-back technique using IPS e.max Ceram



Wash firing (foundation)



Remove adhering IPS Object Fix residue by immersing the restoration in an **ultrasonic cleaning bath** or using a **steam cleaner**. Do not blast the restoration with Al₂O₃ or glass polishing beads.



Finish the full-contour portion of the IPS e.max CAD bridge using diamond grinders and create a natural shape and surface texture. (For details on the fabrication of dies using IPS Natural Die Material see "IPS e.max CAD labside").



Apply **IPS e.max Ceram Glaze** to the entire bridge and apply individual characterizations using **IPS e.max Ceram Shades and Essences**.



The wash (foundation) must be fired before the actual layering procedure is started. Place the honey-combed firing tray in the furnace and conduct the **wash (foundation) firing cycle** with the respective parameters.

Incisal firing



Complete the anatomical shape using **IPS e.max Ceram Incisal und Transpa materials**. Do not veneer or separate the connectors.



Place the firing tray in the furnace and conduct the **incisal firing cycle** with the respective parameters.



Bridge after **incisal firing**



Finish the veneered areas using **diamond grinders** and create a natural shape and surface texture.

Stain and glaze firing



Apply **IPS e.max Ceram Glaze** to the entire bridge. If desired, apply individual characterizations using **IPS e.max Ceram Shades and Essences**.



Place the firing tray in the furnace and start the **stain/glaze firing cycle** with the respective parameters.



Completed IPS e.max CAD LT bridge
Remove any residue by immersing the restoration in an ultrasonic cleaning bath or using a steam cleaner.

Firing parameters

| Furnaces | IPS e.max Ceram on IPS e.max CAD Cut-back technique | Stand-by temperature | Closing time | Heating rate | Firing temperature | Holding time | Vacuum 1 | Vacuum 2 | Long-term cooling | Cooling rate |
|-----------------------------------|---|----------------------|--------------|----------------------------|------------------------|----------------------|------------------------|------------------------|-------------------|----------------------------|
| | | B [°C/°F] | S [min] | t ₁ [°C/°F/min] | T ₁ [°C/°F] | H ₁ [min] | 1 ₁ [°C/°F] | 2 ₁ [°C/°F] | L [°C/°F] | t ₁ [°C/°F/min] |
| Programat P300 P500 P700 | Wash firing (foundation) | 403/757 | 4:00 | 50/90 | 750/1382 | 1:00 | 450/842 | 749/1380 | 0 | 0 |
| | Incisal firing | 403/757 | 4:00 | 50/90 | 750/1382 | 1:00 | 450/842 | 749/1380 | 0 | 0 |
| | Stain/glaze firing | 403/757 | 6:00 | 60/108 | 725/1337 | 1:00 | 450/842 | 724/1335 | 0 | 0 |
| | Add-On with glaze firing | 403/757 | 6:00 | 60/108 | 725/1337 | 1:00 | 450/842 | 724/1335 | 0 | 0 |
| | Add-On after glaze firing | 403/757 | 6:00 | 50/90 | 700/1292 | 1:00 | 450/842 | 699/1290 | 0 | 0 |

Note

Cooling after firing

- Remove IPS e.max CAD 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.