Onlay & overlay from A to Z:
Preparation



IMPORTANT STEP IN YOUR WORKFLOW

Preparation is one of the crucial steps in the posterior indirect restorations workflow.

A preparation determines the success of the next steps – impression taking, material selection and luting.

Therefore, only a correctly designed and executed preparation can lead to an aesthetic and durable final restoration.

Step-by-step guide



1. Remove any carious tissue.



2. Evaluate remaining tooth structure: thickness of remaining walls should be at least 2 mm.



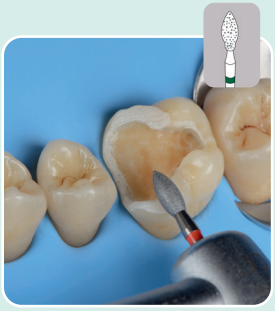
3. Remove contacts in the proximal box walls and ensure sufficient clearance to the neighbour tooth.



4. Design a proximal box with flat floor.



5. Clear the axial walls, check the width of the isthmus.



6. If needed, extend the preparation for cusp coverage.



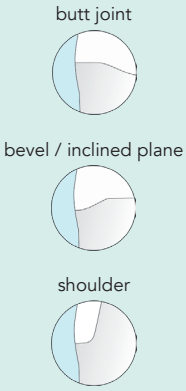
7. Apply a bonding agent e.g. G-Premio BOND or G2-BOND Universal, dry and light-cure.



8. Fill the undercuts with flowable composite and light-cure. Whenever needed do deep margin elevation e.g. with G-ænial Universal Injectable.

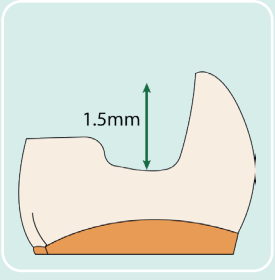


9. Finish the margins of the preparation (butt joint, bevel, shoulder).

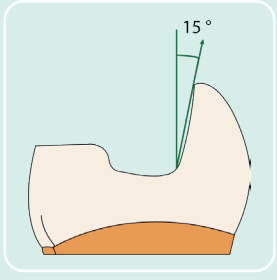


Onlay & overlay from A to Z:
Preparation

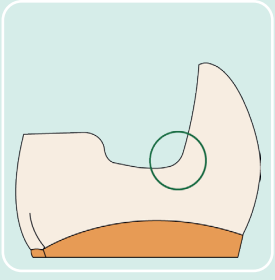
Shape and dimensions



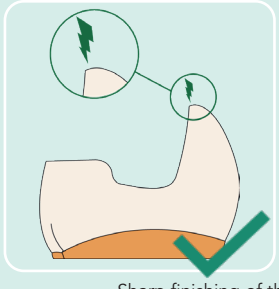
Medium depth of the preparation: >1.5 mm

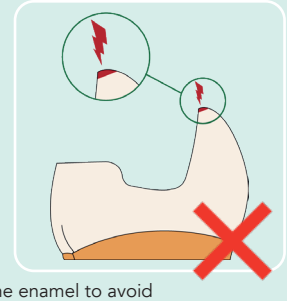


Axial walls divergence angle: 15 degrees

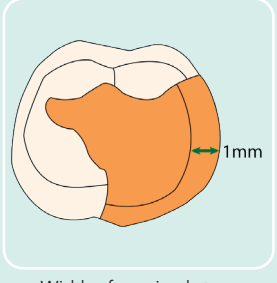


Rounded internal angles

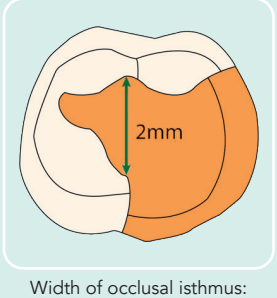




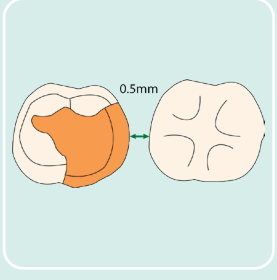
Sharp finishing of the enamel to avoid chipping of the restoration



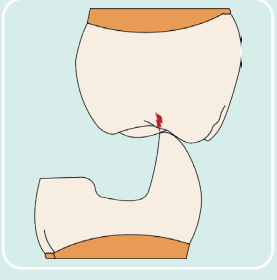
Width of proximal step: at least 1 mm



Width of occlusal isthmus: at least 2 mm



Approximal distance to adjacent tooth: at least 0.5 mm



Restoration margins should not coincide with occlusal contacts

TIPS & TRICKS

- Respect minimum preparation thickness recommended for the selected restorative material.
- Use magnification to ensure well-defined and continuous margins.
- Use fiber reinforced flowable composite (everX Flow) to fill the undercuts and/or replace dentin while preventing crack propagation.
- Perform immediate dentin sealing to protect the dentin from contamination, avoid postoperative sensitivity and increase bond strength (G-Premio BOND or G2-BOND Universal).
- In endodontically treated teeth without marginal ridge (MOD cavity) cusp coverage is mandatory to avoid fractures.

MISTAKES TO AVOID

- Sharp angles
- Too narrow isthmus
- Keeping the undercuts
- Too thin axial walls
- Keeping the contact points

Onlay & overlay from A to Z:
Material selection



CHALLENGING DECISION? – NO MORE!

Choosing the material for your indirect posterior partial restoration can be a real challenge. Many factors, such as quality of remaining tooth structure, material of antagonists, age of the patient and presence of bruxism, must be taken into consideration.

GC offers two innovative materials that cover all demands of onlay and overlay restorations: Initial™ LiSi Block and CERASMART™270.

Material Properties

			
	Category	Lithium disilicate	Hybrid ceramic
	Materials	Initial LiSi Block	CERASMART270
Physical properties	Biaxial Flexural Strength (MPa)	408	270
	Elasticity / Buffering Masticatory forces	–	+++
	Preventing antagonist wear	+	+++
Aesthetics	Aesthetics	+++	++
	Characterisation options	Initial IQ Lustre Pastes ONE	OPTIGLAZE color
Handling	Fast processing	++	+++
	Intra-oral Repair	+	+++
	Polishability	+++	+++

Onlay & overlay from A to Z:
Material selection

Material Properties

Initial LiSi Block
Lithium disilicate
The universal and fast solution

Natural beauty restored in one appointment.

Initial LiSi Block is a fully crystallized lithium disilicate block that delivers optimal physical properties without firing.

Key advantages

- **Fully crystallized lithium disilicate**, which saves time, as no firing is required.
- Durable aesthetics & accurate margins for a **seamless fit**
- **Natural opalescence** for genuine beauty
- Provides **long-lasting restorations** in the posterior area thanks to high physical properties & HDM technology
- Easy and fast polishing for **a very high gloss that lasts** over time
- Possibility **to paint** with **Initial IQ Lustre Pastes ONE**

CERASMART270
Force absorbing hybrid ceramic
The flexible solution for wear

Natural fit and flexibility

CERASMART270 is a very strong hybrid ceramic CAD/CAM block that combines flexibility and precision to provide a long-lasting aesthetic restoration with a natural fit.

Key advantages

- High breaking energy to **buffer masticatory pressure**
- Extremely suitable for patients with generalized wear or hyperfunctions because of its **impressive wear resistance**
- Immaculate **blending ability** for effortless aesthetic results
- Easy and fast polishing for **a very high gloss that lasts** over time
- Possibility to **paint** with **OPTIGLAZE color**



TIPS & TRICKS

Use Initial LiSi Block for:
- Restoring teeth with compromised structure (cracks, big defects, several cusps missing)
- Ceramic antagonists
- Adult patients

Use CERASMART270 for:
- Restoring teeth with non-compromised structure (smaller defects)
- Patients with bruxism
- Younger patients



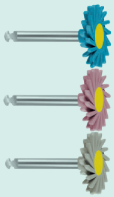
Onlay & Overlay from A to Z:
Finishing & painting of Initial™ LiSi Block

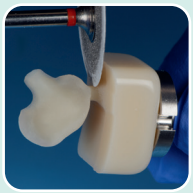


POLISH OR PAINT? THE CHOICE IS YOURS!

Initial LiSi Block can be either painted or simply polished for a quick, easy and aesthetic result.

Polishing of Initial LiSi Block restoration





1. Remove sprue with a diamond disc.



2. Polish with coarse polishing disc.



3. Polish with medium polishing disc.



4. Finish with fine polishing disc.

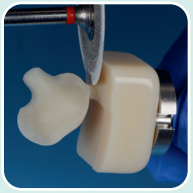


5. Polish with goat hair wheel and DIAPOLISHER paste (optional).

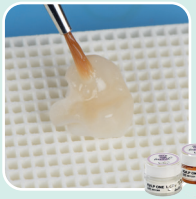


6. Final result.

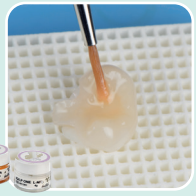
Painting of Initial LiSi Block restoration



1. Remove sprue with a diamond disc.



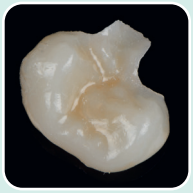
2. Set the base by glazing with L-NFL shade of Initial IQ Lustre Pastes ONE.



3. Paint with L-A shade of Initial IQ Lustre Pastes ONE for dentin effects.



4. Fire.*



5. Final result.

* Firing instructions for Initial IQ Lustre Pastes ONE

	Initial LiSi Block
FIRING INSTRUCTIONS	FIRING INSTRUCTIONS for Initial IQ Lustre Pastes ONE
Preheating Temperature	450°C
Drying Time	2 min
Closing time	2 min
Raise of Temperature	45°C/min
Vacuum	YES
Final Temperature	730-750°C
Holding Time	3 min

TIPS & TRICKS

- When polishing Initial LiSi Block keep the handpiece at low rotation – between 10000 and 12000 RPM.
- Use goat hair wheel and DIAPOLISHER paste for the final polishing.
- Dilute Lustre Pastes ONE with Diluting Liquid on a mixing plate for optimal viscosity.
- If the paste has dried out in the jar, reactivate it with Refresh Liquid.
- Use shade L-3 for translucency effects on the cusps and L-2 to add white spots.
- Make sure your brush is dry before painting.
- Calibrate your furnace and perform a trial firing to achieve the desired gloss level of your restoration.

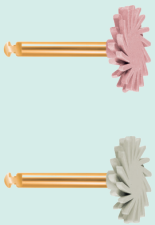
Onlay & Overlay from A to Z:
Finishing & painting of CERASMART™270

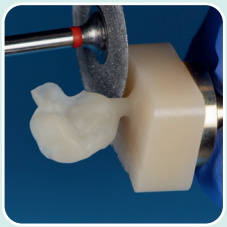


POLISH OR PAINT? THE CHOICE IS YOURS!

CERASMART270 can be either painted or simply polished for a quick, easy and aesthetic result.

Polishing of CERASMART270 restoration





1. Remove sprue with a diamond disc.



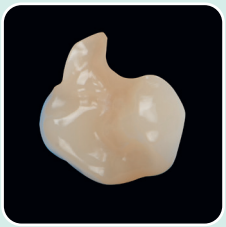
2. Polish with medium polishing disc.



3. Polish with fine polishing disc.

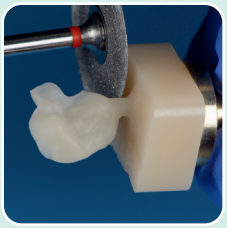


4. Polish with goat hair wheel and GRADIA DIAPOLISHER paste (optional).



5. Final result.

Painting of CERASMART270 restoration



1. Remove sprue with a diamond disc.



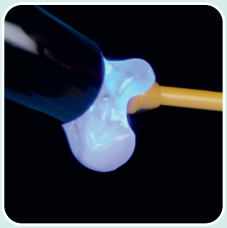
2. Roughen the surface with sandblasting. Pretreat the restoration with G-Multi PRIMER and air-dry.



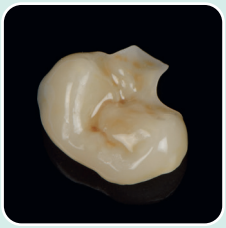
3. Paint the fissures and cervical areas with OPTIGLAZE color.



4. Add gloss with OPTIGLAZE color Clear HV.



5. Light-cure.*



6. Final result.

TIPS & TRICKS

- When polishing CERSAMART270 keep the handpiece at low rotation – between 3000 and 8000 RPM.
- Use goat hair wheel and GRADIA DIAPOLISHER paste for the final polishing.
- Adjust the viscosity of OPTIGLAZE color with Clear HV.
- Create fissure effects with Red Brown.
- Add cervical effects with A Plus Cervical.
- OPTIGLAZE color can be used to characterize the temporary restoration as well.
- OPTIGLAZE color needs to be cured after every application/shade.

*OPTIGLAZE color can be cured with a light-curing chairside device provided the wavelength is lower than 430nm.

Onlay & Overlay from A to Z:
Luting with G-CEM ONE™



STRESS FREE LUTING

When luting inlays, onlays, overlays and table-tops, exposed margins and low retention of the restoration demand a wear resistant and color stable product that provides high bond strength to the tooth structure.
Use G-CEM ONE to obtain high quality margins of the final restorations and high-immediate and long-term bond strength.



Step-by-step guide



1. Clean, rinse and thoroughly dry the prepared tooth. (Sandblasting of the tooth surface is highly recommended.)

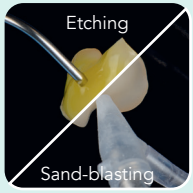


2. Etch the enamel with 35-40% phosphoric acid for 10-15 sec., carefully rinse off and dry.

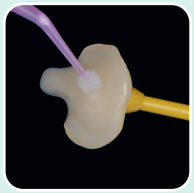


3A. Apply G-CEM ONE ADHESIVE ENHANCING PRIMER, wait 10 sec., and dry for 5 sec.. Light-cure is NOT needed.

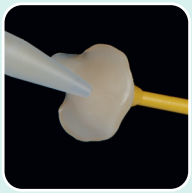
3B. Apply G-Premio BOND, wait 10 sec., dry for 5 sec. and light-cure.*



4. Prepare the restoration according to the manufacturer's instructions. **



5. Pretreat the restoration with G-Multi PRIMER and air-dry.



6. Extrude the G-CEM ONE directly onto the restoration.



7. Seat immediately and maintain moderate pressure. Working time is 2' 45" at 23 °C.



8A. Tack cure until the cement reaches a rubbery consistency (1 sec.)

8B. Keep moderate pressure until the cement reaches a rubbery consistency.



9. Remove excess cement while maintaining moderate pressure.



10A. While maintaining moderate pressure, light-cure all surfaces/ margins.***

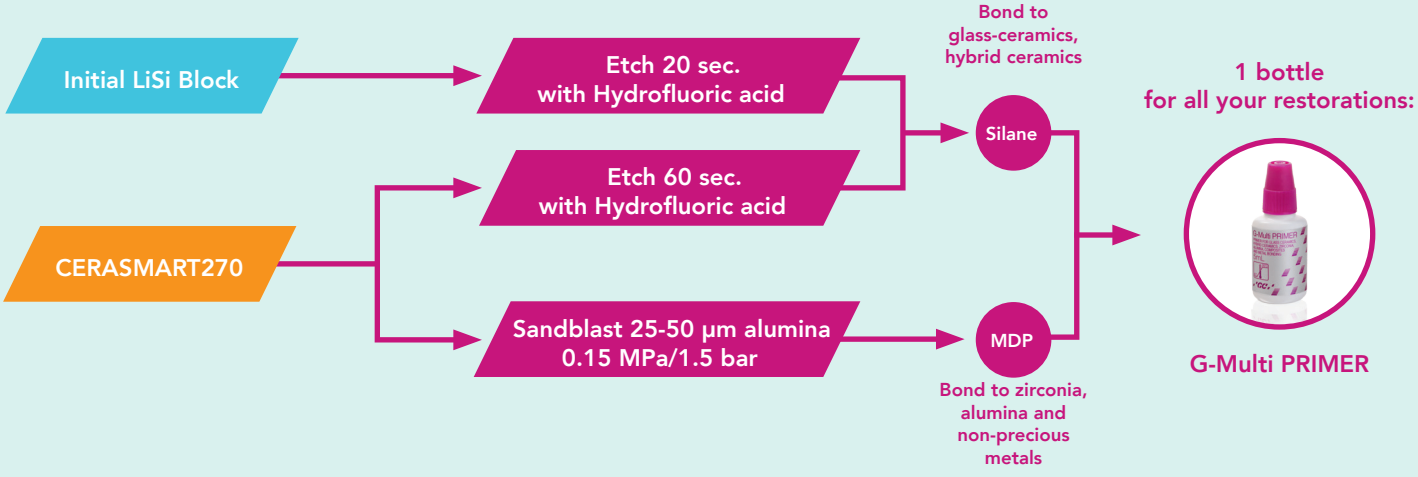
10B. Let the material set for 4 minutes in case restoration does not let the light to pass through.



11. Do the final polishing with polishing rubbers or discs.

Onlay & Overlay from A to Z:
Luting with G-CEM ONE™

**Pretreatment recommendations for Initial™ LiSi Block and CERASMART™270 restorations



TIPS & TRICKS

- Sandblasting of the tooth surface before luting is highly recommended.
- Shake the bottle of G-Premio BOND before using.
- Using G-CEM ONE AEP reduces working time to 1'15"!
- Tack cure G-CEM ONE for 1 second only to ease the excess removal!
- When drying G-CEM ONE AEP and G-Premio BOND use maximum air pressure to avoid pooling of the liquid in the gingival sulcus.
- Make sure to maintain moderate pressure on the restoration throughout the setting time, especially during excess removal.

Find the step-by-steps for all your cementations on GC Luting Guide:

Download on the App Store

GET IT ON Google Play

*, ***Light Curing time for G- Premio BOND and G-CEM ONE

POWER OUTPUT	G-PREMIO BOND	G-CEM ONE
High power LED (> 1200 mW/cm²)	5 seconds	10 seconds
Halogen / LED (700-1200 mW/cm²)	10 seconds	20 seconds

Onlay & overlay from A to Z:
Immediate dentin sealing with G-Premio BOND or G2-BOND Universal



WHY IMMEDIATE DENTIN SEALING?

Resin infiltration into the dentin surface is more effective on freshly cut dentin because it is uncontaminated and clean.

IDS protects dentin against contamination with bacteria or remnants of temporary cements.

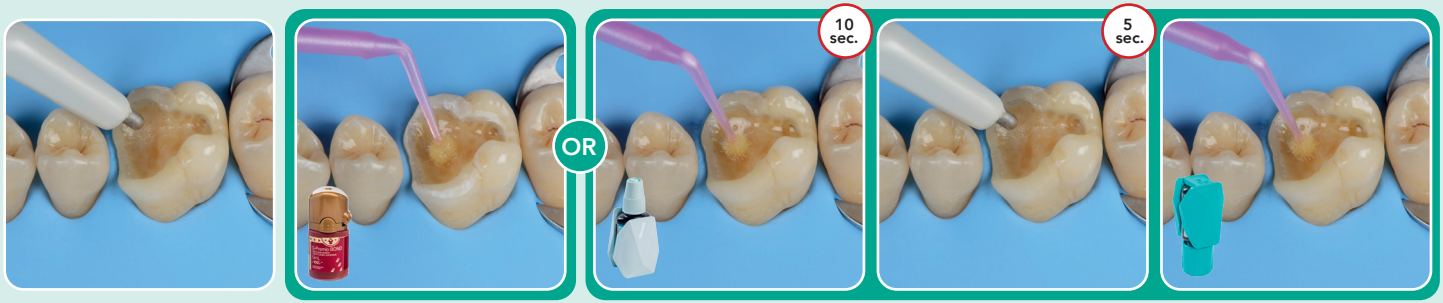
It prevents post-operative sensitivity by sealing dentin tubules.

It increases bond strength of the final indirect restoration to the tooth.

It often eliminates the need for anesthesia during the cementation procedure (when restoration is delivered in the next appointment).

2A. G-Premio BOND

2B. G2-BOND Universal



1. Clean the tooth surfaces, rinse thoroughly and dry.

Apply G-Premio BOND.

Apply 1-PRIMER of G2-BOND Universal.

Dry.

Apply 2-BOND of G2-BOND Universal.



3. Air blow to make a uniform bonding layer.

4. Light-cure.

5. Fill in the undercuts with everX Flow. Perform deep margin elevation if needed.*

6. Remove unpolymerized layer. Expose enamel covered with adhesive with a fine grit diamond bur.

TIPS & TRICKS

- Placing a rubber dam and isolating neighbouring teeth with teflon tape are always recommended.
- Use maximum air pressure to dry 1-PRIMER to remove the solvent & residues of water.
- 1-PRIMER should be kept out of light as it contains photoinitiators.
- When doing immediate dentin sealing with G-Premio BOND, it is recommended to add a thin layer of G-aenial Universal Injectable or a flowable composite on top.

Onlay & overlay from A to Z:
Deep margin elevation with G-ænial™ Universal Injectable



WHY DEEP MARGIN ELEVATION?

Deep margin elevation will make impression easier by moving the proximal margin of the restoration supra-gingivally, which is especially important for intra-oral scanning.
It helps avoiding periodontal surgical procedures.
It makes isolation of the prepared tooth and luting of the final restoration easier.



1. Clean the tooth surfaces, rinse thoroughly and dry.



2. Apply a matrix adapted to the technique. Gingival margin of the preparation should be well sealed.



3. Etch the enamel.



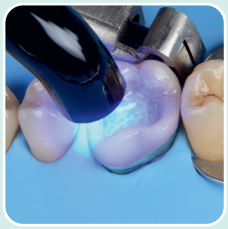
4. Apply a bonding agent (G-Premio BOND or G2-BOND Universal).



5. Dry and light-cure.



6. Apply G-ænial Universal Injectable to the gingival margin of the proximal box.



7. Light-cure.



8. Remove the matrix and check for any overhangs.
Expose the enamel covered with adhesive on the rest of the tooth with a fine grit diamond bur.

TIPS & TRICKS

- Isolation with rubber dam is highly recommended.
- For a better emergence profile, use teflon tape in the space between the matrix and the adjacent tooth instead of a wedge. Do not use the same matrix as you use for creating a contact point in direct restorations.
- Selective etching of the enamel is recommended.
- Use XBW shade of G-aenial Universal Injectable for easy differentiation between the tooth, composite material and the restoration.
- The height of the new margin should be slightly above the gingival margin (1 mm).