Enhancing Smiles

From Direct to Indirect – Shaping smiles with art and knowledge

Smile for the World
Since 1921
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GC

Enhancing Smiles

From Direct to Indirect – Shaping smiles with art and knowledge

A well-maintained and attractive smile can positively impact self-confidence as well as social and professional relationships. In more complex cases involving structural damage or major aesthetic concerns, collaboration with a dental laboratory is often recommended to provide solutions such as injection moulding, veneers, or full crowns.

Explore below the three key techniques: IMT, veneers, and crowns along with their main advantages.

Scan for more information

Injection Moulding

- Least invasive, preserving natural tissue
- Cost-effective
- Easy to repair

Veneers

- Minimally invasive
- Highly durable
- Supreme aesthetics

Crowns

- Protecting the remaining tissue
- Highly durable
- Supreme aesthetics

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From Direct to Indirect – Shaping smiles with art and knowledge

The therapeutic gradient–from the least to the most invasive treatments–is taken into account to ensure the most conservative and suitable approach is selected. This strategy prioritises the preservation of the natural tooth structure while still aiming for the best possible clinical outcomes.[1]

Criteria	Injection Moulding	Indirect Veneers	Indirect Crowns
Invasiveness of the Treatment	None to low	Moderate	Moderate to extensive
Tooth Integrity	Minor to moderate loss of structure	Minor to moderate loss of structure with good enamel support	Weakened structure, severe wear or damage
Functional Occlusion	Moderate functional load, mild malocclusion	Stable occlusion, low functional load	From stable occlusion to high functional load, occlusal issues, parafunctional habits
Presence of Spacing	Minor gaps, requires predictable contouring	From minor to significant diastema	From minor to significant diastema, severe spacing issues
Dentist's Preference	Technique guided – but proper wax-up is crucial	Aesthetic and minimally invasive indirect preparation work required	Indirect preparation work required
Lab Time	🕒	🕒🕒🕒	🕒🕒
Aesthetic	★★★★	★★★★★	★★★★★
Provisional	Not required	Required, unless chairside restoration	Required, unless chairside restoration
Restoration longevity	Mid-term, requires touch-ups	Long-lasting	Long-lasting
Repairability	Easy	Difficult	Difficult
Treatment Time	🕒	🕒🕒🕒	🕒🕒

[1]Tirlet G, Attal JP. Le gradient thérapeutique: un concept médical pour les traitements esthétiques. Inf Dent. 2009;(41/42):2561–8. 9.

Enhancing Smiles
Injection Moulding

The Injection Moulding Technique (IMT) is a novel process ideal for treating clinical situations with challenging aesthetic demands, recreating complex morphologies, reestablishing the vertical occlusal dimension and treating wear cases in both anterior and posterior regions with optimal aesthetics. Explore below the key benefits of IMT and follow the step-by-step procedure to ensure a captivating smile.

Minimally invasive, preserving natural tissue

Cost-effective

Easy to repair

Evaluation of the clinical situation

Criteria

Invasiveness of the treatment:	• Minimally invasive, preserving natural tissue
Clinical situation:	• Minor to moderate loss of structure • Moderate functional load, mild malocclusion • Minor gaps, requires predictable contouring
Skills & Preferences:	• For those who prefer to focus less on morphology and texture creation than in freehand direct techniques • Skilled technicians for the wax-up are required
End-results & durability:	• Very good aesthetic outcome • Moderate restoration longevity: it requires touch-ups • Easy to repair
Patient's possibilities:	• Min. 2 appointments • More affordable solution

Enhancing Smiles
Injection Moulding

Material Selection

Material selection for IMT is critical to clinical success: transparent silicone and injectable resin composite are essential. The silicone enables precise injection control, prevents oxygen inhibition, and allows simultaneous multi-tooth treatment. The composite ensures faithful reproduction of the wax-up, offering high strength, wear resistance, and gloss.

GC's solution for
Injectable Resin Composite:
G-ænial Universal Injectable

- ✔ Exceptional strength and wear resistance
- ✔ Great adaptation to every corner of the preparation
- ✔ Easy polish and lasting high gloss

GC's solution for
Universal Bonding:
G-Premio BOND

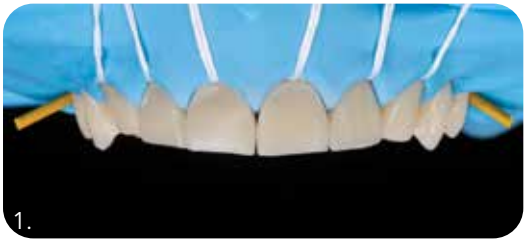
- ✔ High & durable bond to tooth structure and indirect substrates
- ✔ Extremely low film thickness (3 µm) and strong bonding layer with high filler content
- ✔ Clear procedure and very low technique sensitivity

GC's solution for
Transparent Silicone:
EXACLEAR

- ✔ Crystal-clear view
- ✔ Excellent light conduction and polymerisation of composite
- ✔ Optimal consistency

Tooth Preparation - STEP by STEP

From tooth 13 to 23



Isolate from tooth 15 to 25 with rubber dam.

Include the two teeth distally from the last tooth to be restored.

Sandblasting from teeth 13 to 23 with Al_2O_3 30 µm with low pressure.

In case sandblasting is not possible, roughen the surface with a coarse diamond bur.

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Injection Moulding

Non-Clinical - STEP by STEP

CREATION OF WAX-UPS

Take an impression of the patient's teeth (digital or conventional).

Create a TOTAL wax-up of all teeth (digital or conventional).

Create a PARTIAL wax-up with alternate teeth (digital or conventional).

Fabricate both TOTAL and PARTIAL models. If working on gypsum, the TOTAL wax-up should be cast before creating the PARTIAL wax-up.

Optionally prepare a putty silicone index for the layering technique (only from the TOTAL model).

Separate the two models: apply separator for 3D-printed models, or hydrate gypsum models with water for 5 min.

CREATION OF TRANSPARENT SILICONE INDEXES

Dispense the **EXACLEAR** in a non-perforated tray (metal or transparent).

Take the impression of both (TOTAL and PARTIAL) models.

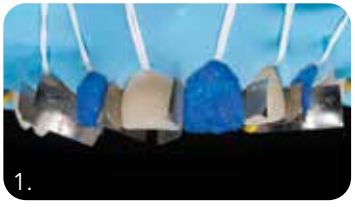
The setting time of **EXACLEAR** outside of the mouth is 7 min.

This will result in two transparent silicone indices (TOTAL and PARTIAL).

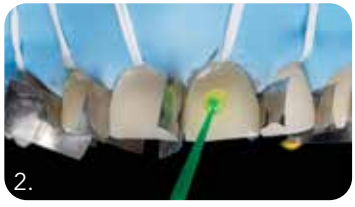
The minimum thickness of the index should be 3-4 mm to avoid distortions.

Clinical - STEP by STEP

CREATION OF THE SERIES OF VENEERS USING THE ALTERNATE INJECTION TECHNIQUE



Selectively etch (only enamel) teeth 12, 21 and 23 for 30 sec. Rinse and remove excess water (slightly dry).



Apply **G-Premio BOND** on teeth 12, 21 and 23 for 10 sec. Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.

For a more natural look of the restoration, dentinal mamelons can be designed by using opaque **G-ænial Universal Injectable** (**GUI**) with the help of the putty silicone index.

PARTIAL silicone index: create an access hole for the composite tip in the silicone index at the incisal border of teeth 12, 21 and 23.

Do this preferably from the inside to the outside of the index.

Inject **GUI** using the PARTIAL silicone index. Inject it for the 1st tooth until it completely fills up the mould of the tooth. Hold firmly and polymerise for 5 sec. Repeat the process for the 2nd & 3rd teeth.

Carefully remove excess composite with a scalpel for each injected tooth. Light-cure each side for 20 sec.

Repeat the same steps (1 to 6) for the second set of teeth (13,11 and 22).

FINISHING STEPS

Remove the rubber dam and the remaining excess composite with a scalpel, then finish with **New Metal Strips** and **EPITEX**.

Adjust the occlusion. Polish with the fine grey **EVE Diacomp TWIST** rubber polisher.

Enhancing Smiles
Veneer

A veneer restoration is a minimally invasive prosthodontic procedure designed to enhance dental aesthetics and restore minor structural defects by bonding thin ceramic or composite laminates to the facial surfaces of anterior teeth, ensuring optimal integration of function, morphology, and natural appearance.
Explore below the key benefits of veneers and follow the step-by-step procedure to ensure a captivating smile.

- Minimally invasive
- Highly durable
- Supreme aesthetics

Evaluation of the clinical situation

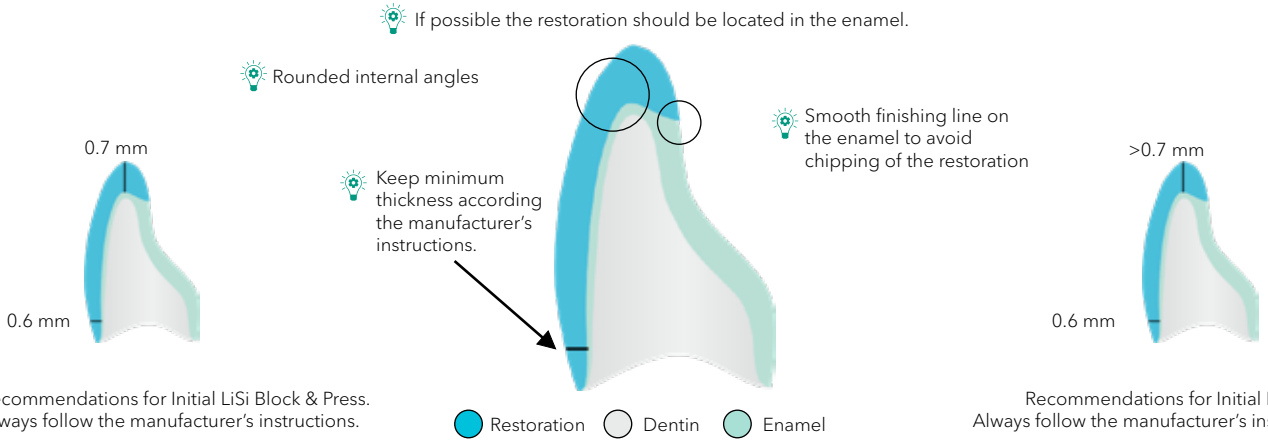
Criteria

Invasiveness of the treatment:	• It involves a moderate level of intervention
Clinical situation:	• Minor to moderate loss of structure with good enamel support • Low functional load, stable occlusion • From minor to significant diastema, severe spacing issues
Skills & Preferences:	• Dentist needs to estimate where and how much tissue needs to be removed based on the type of veneer and desired shade • High-quality veneers depend on the technician's expertise
End-results & durability:	• Excellent aesthetic requirements • Long-lasting restoration • Difficult to repair
Patient's possibilities:	• Multiple appointments required

Material Selection

Material selection for veneer preparations ranges from lithium disilicate–offering a balance of strength and translucency, with natural opalescence and durability suited for minimal preparations–to feldspathic ceramic, which provides unmatched optical properties and delicate layering potential, making it ideal for highly aesthetic, ultra-thin restorations that closely mimic natural enamel.

GC's solution for ***Lithium Disilicate:*** **Initial LiSi Block & Press**		GC's solution for ***Feldspathic ceramic:*** **Initial LRF Block**
408 & 508	Biaxial Flexural Strength (MPa)	210-250
+++	Aesthetics	+++
+++	Anterior indications	+++
IQ ONE SQIN	Characterisation options	Initial Glaze LRF Spectrum Stains
+	Intra-oral Repair	+
+++	Polishability	+++
++	Fast Processing	+++



Recommendations for Initial LiSi Block & Press.
Always follow the manufacturer's instructions.

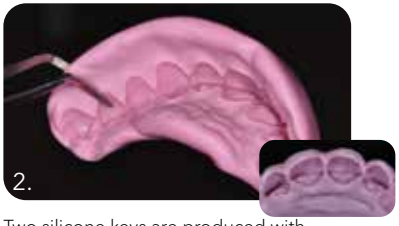
Recommendations for Initial LRF Block.
Always follow the manufacturer's instructions.

Tooth preparation - STEP by STEP

WAX-UP

A wax-up on a study model is important to evaluate the clinical case and define the most suitable treatment approach.

SILICONE KEYS



Two silicone keys are produced with putty silicone: 1st silicone key for mock-up and provisional, 2nd silicone key to check the thickness of preparations.

MOCK-UP

Fill the silicone key with a bisacryl-based temporary material (**TEMPSMART DC**) and place it in position. Remove excesses and 2' - 2.5' after dispensing material, remove the key.

ROTARY PREPARATION

Groove preparation is done on the mock-up with a ref. 014 green ball bur.

CALIBRATED ROTARY PREPARATION

Connect the grooves with a coarse cylindrical diamond bur (ref. 012 green) with the long axis of the bur perpendicularly to the previously created.

Finish this surface with a fine cylindrical diamond bur (ref. 012 red).

MARGINAL FINISHING

Realisation of an incisal butt margin incisally on 21 with a 007 flame micro bur.

Realisation of a cervical and proximal micro-margin with the cylindrical micro-bur 007 with rounded tip.

Proximal polishing with 30-µm diamond strip (**New Metal Strip**).
Final visual control.

VISUAL CONTROL

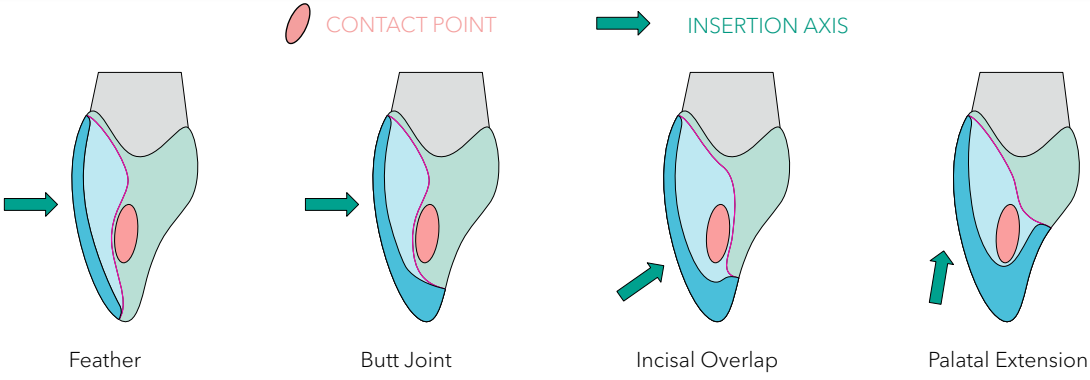
Respecting the natural details vertically and transversally.

SILICONE KEY CHECK CONTROL

Vertical section of silicone key 2 to evaluate the thickness of the preparation.

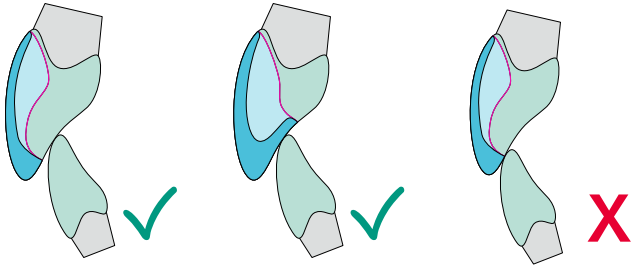
Conventionally, a reduction of 0.3 mm is expected on the cervical third of the buccal side, and 0.6 – 0.8 mm at its medium and incisal thirds. Whenever indicated, the incisal reduction (butt joint) should be 1.5 to 2 mm.

Shape and Dimension



- Restoration
- Proximal extension of the veneer
- Enamel
- Margin finish line

OCCLUSION



Enhancing Smiles
Veneer

Restoration Pre-treatment - STEP by STEP

For restorations **involving lithium disilicate and feldspathic ceramics**, the following step-by-step procedure should be followed.

GC's solution: **Initial Lisi Block & Press, Initial LRF Block**

Clean, rinse and dry the preparation.

Check the fit. Remove the restoration and clean it.

Etch with hydrofluoric acid (~ 5-9%) for 60 sec. in case of feldspathic & leucite reinforced ceramics and for 20 sec. in case of lithium disilicate. Rinse and dry the restoration.

Apply silane such as **G-Multi PRIMER** on the restoration.
Dry with air syringe.

Rinse and dry the prepared tooth.

Tooth Pre-treatment - STEP by STEP

OPTIONAL

Clean the surface with pumice and water. Alternatively, sandblast with Al_2O_3 30 µm with low pressure.

Etch the enamel with 35-40% phosphoric acid for 10-15s. Rinse & dry.

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

Luting - STEP by STEP

Universal Self-Adhesive Resin Cement

GC's solution:
G-CEM ONE

Apply **G-CEM ONE** directly into the restoration.

Immediately seat onto prepared tooth. Maintain moderate pressure.

When cement feels rubbery, remove the excess while maintaining moderate pressure. Excess can be tack-cured for 1 sec.

While maintaining moderate pressure, light cure all surfaces/ margins for 20 sec or let the material set for 4 min.

Finish and polish the margins.

Light Curing Adhesive Resin Cement

GC's solution:
G-CEM Veneer

OPTIONAL
BEFORE RESTORATION PRE-TREATMENT

Clean the thoroughly, check fit and occlusion, and use **G-CEM Try-in Paste**. Then rinse.

Extrude **G-CEM Veneer** directly into the restoration.

Immediately seat onto prepared tooth. Maintain moderate pressure.

Remove excess with a brush, while maintaining moderate pressure. Excess can be tack-cured for 1-2 sec. for easier excess removal.

Light cure each surface/margin for 20 sec.

Finish and polish the margins.

GRADIA PLUS AIR BARRIER can be used to prevent oxygen inhibition.

Enhancing Smiles
Crown

A crown restoration is a prosthodontic procedure aimed at the functional and aesthetic rehabilitation of damaged teeth, involving the preparation of the dental structure and the placement of a full-coverage restoration to reestablish occlusal integrity, structural strength, and long-term durability.
Explore below the crown restoration key benefits and follow the step-by-step procedure to ensure a captivating smile.

- Protecting the remaining tissue
- Highly durable
- Supreme aesthetics

Evaluation of the clinical situation

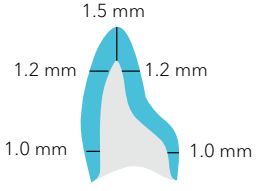
Criteria

Invasiveness of the treatment:	• It involves a moderate to extensive level of intervention
Clinical situation:	• Weakened structure, severe wear or damage • From stable occlusion to high functional load, occlusal issues, parafunctional habits • From minor to significant diastema, severe spacing issues
Skills & Preferences:	• Dentist needs to ensure proper reduction and retention while preserving as much healthy tissue as possible • High-quality crowns depend on technician expertise
End-results & durability:	• Excellent aesthetic requirements • Long-lasting restoration • Difficult to repair
Patient's possibilities:	• Multiple appointments required

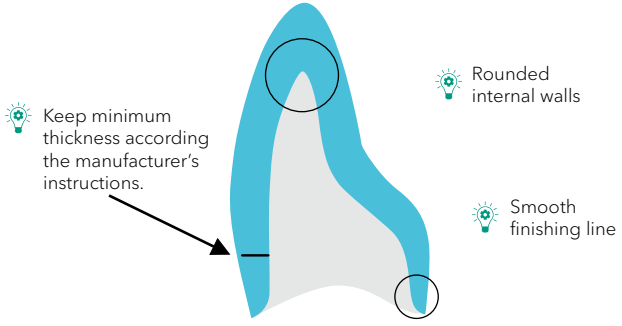
Material Selection

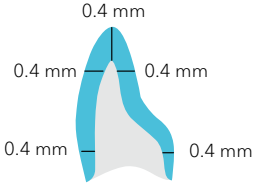
Material selection for crown preparations ranges from lithium disilicate–offering optimal strength without the need for firing in block format, durable aesthetics, precise margins, and natural opalescence–for lifelike results, to zirconia, which provides a strong, reliable framework ideal for demanding cases and perfectly suited for masking discolouration.

GC's solution for ***Lithium Disilicate:*** **Initial LiSi Block & Press**		GC's solution for ***Zirconia:*** **Initial Zirconia Disk**
408 & 508	Biaxial Flexural Strength (MPa)	600-1200
+++	Aesthetics	++
+++	Anterior indications	+
IQ ONE SQIN	Characterisation options	Initial Zr-FS Initial IQ ONE SQIN
+	Intra-oral Repair	+
+++	Polishability	+
++	Fast Processing	+
Supra to juxta-gingival	Margin level	Sub-gingival possible



Recommendations for Initial LiSi Block & Initial LiSi Press. Always follow the manufacturer's instructions.





Recommendations for GC Initial Zirconia Disk UHT/HT/ST/Multilayer Elite. Always follow the manufacturer's instructions.

Enhancing Smiles
Crown

Tooth preparation - STEP by STEP

Before starting the preparation, a silicone key or an intra-oral scan can be made to check the reduction.

Depth of the preparation can be controlled by making grooves with a round diamond bur, then connecting the grooves using a cylindrical bur.

Preservation of the adjacent teeth and creation of a proper taper for the insertion path is advised.

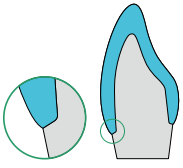
Palatal reduction should follow the palatal concavity and cingulum.

Smoothing of the incisal edge and creation of a rounded finishing should be ensured.

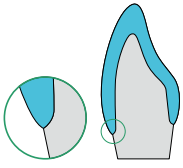
Depth of the preparation can be checked at any point with a silicone key or an intra-oral scanner.

Shape and dimension

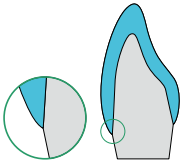
Round shoulder*



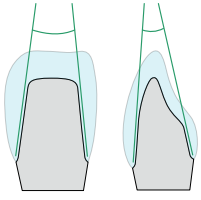
Deep chamfer*



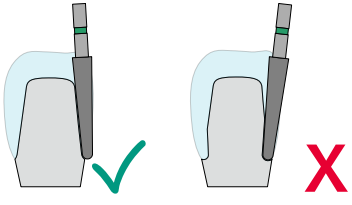
VertiPrep**



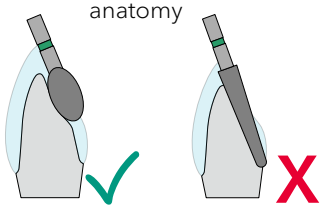
6°-10° Axial wall taper



Avoid undercuts



Respecting Palatal anatomy



*Indicated for Lithium Disilicate & Zirconia restorations

**Indicated for Zirconia restorations

Enhancing Smiles
Crown

Restoration Pre-treatment - STEP by STEP

For restorations **involving lithium disilicate**, the following step-by-step procedure should be followed.

GC's solution:
Initial LiSi Block & Press

Clean, rinse and dry the preparation.

Check the fit. Remove the restoration and clean it.

Etch with hydrofluoric acid for 20 sec. Rinse and dry the restoration.

Apply Silane such as **G-Multi Primer** on the restoration.
Dry with air syringe.

Rinse and dry the prepared tooth.

For restorations **involving zirconia**, the following step-by-step procedure should be followed.

GC's solution:
Initial Zirconia Disk Multi Layer Elite

Clean, rinse and dry the preparation.

Check the fit. Remove the restoration and clean it.

Remove the restoration and sandblast with Al_2O_3 50µm 1.5 bar.

Rinse and dry the restoration.

For optimal adhesion, apply MDP primer such as **G-Multi Primer** on the restoration.
(Not mandatory for **FujiCEM Evolve** or **G-CEM ONE**)

Rinse and dry the prepared tooth.

Enhancing Smiles
Crown

Universal Self-Adhesive Resin Cement

GC's solution:
G-CEM ONE

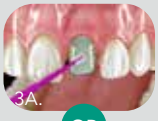
Tooth Pre-treatment

OPTIONAL

1. Clean the surface with pumice and water. Alternatively, sandblast with Al_2O_3 30 µm with low pressure.

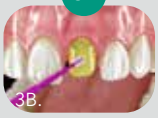
Selective or Total etch technique are recommended. Rinse & dry.

OPTIONAL



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

OR



G-Premio BOND, wait 10 sec., dry for 5 sec. and light-cure for 10 sec.

Luting - STEP by STEP

Apply **G-CEM ONE** directly into the restoration.

Immediately seat onto prepared tooth. Maintain moderate pressure.

When cement feels rubbery, remove the excess, while maintaining moderate pressure. Excess can be tack-cured for 1 sec.

While maintaining moderate pressure, light cure all surfaces/ margins for 20 sec or let the material set for 4 min.

Polish the margins with rubber polishers. Proceed with occlusion check and polishing of the adjusted areas.

Resin Modified Glass Ionomer Cement

GC's solution:
FujiCEM Evolve

Luting - STEP by STEP

Bleed the syringe before use to ensure even extrusion of the pastes.

Apply **FujiCEM Evolve** directly into the restoration using a mixing tip.

Mix the pastes for 10 sec. Apply the mixed **FujiCEM Evolve** directly into the restoration.

Immediately seat onto the preparation. Maintain moderate pressure.

OPTIONAL

Excess can be tack-cured for 3 sec

When cement feels rubbery, remove the excess while maintaining moderate pressure.

Proceed with occlusion check and finishing within 4'30 after seating the restoration.

Enhancing Smiles
From Direct to Indirect – Shaping smiles with art and knowledge

G-ænial Universal Injectable
High-strength restorative composite

- ✔ Exceptional strength and wear resistance
- ✔ Great adaptation to every corner of the preparation
- ✔ Easy to polish to lasting high gloss

G-Premio BOND
One-component light-cured universal adhesive

- ✔ High & durable bond to tooth structure and indirect substrates
- ✔ Extremely thin film thickness (3 µm) and strong bonding layer with high filler content
- ✔ Clear procedure and very low technique-sensitivity

Initial LiSi Block & Press
Refined lithium disilicate solutions

- ✔ Superior aesthetics
- ✔ Refined lithium disilicate with HDM technology for unsurpassed physical properties
- ✔ Smooth margins and superior polishability due to the homogeneous structure

G-CEM ONE
Universal self-adhesive resin cement

- ✔ High performance for any type of restoration
- ✔ Technique-tolerant
- ✔ High colour stability in 4 shades for invisible margins
- ✔ Can be used with the Adhesive Enhancing Primer or G-Premio BOND for maximum bond strength

Initial Zirconia Disk
Zirconium oxide CAD/CAM disks

- ✔ High strength
- ✔ Versatile and suitable for a broad range of clinical indications
- ✔ Outstanding aesthetics combined with Initial IQ ONE SQIN

FujiCEM Evolve
Paste-paste resin-modified glass ionomer luting cement

- ✔ One-step application, less technique-sensitive than resin cements
- ✔ Moisture-tolerant
- ✔ Optimal adhesion to zirconia
- ✔ Low film thickness and precise adaptation

TEMPSMART DC
Dual cure temporary crown & bridge material

- ✔ Superior aesthetics with 6 shades
- ✔ The ultra-fine fillers give it superior gloss which lasts over time
- ✔ Featuring a comfortable working time, the final light-curing will allow to reduce the setting time while reaching optimal hardness.

G-CEM Veneer
Light-cure resin cement

- ✔ Optimal non-runny viscosity for perfect placement
- ✔ Easy excess removal
- ✔ Controlled working time
- ✔ Natural aesthetics
- ✔ Perfectly matching try-in pastes for predictable aesthetic outcome

Initial LRF Block
Leucite reinforced glass ceramic CAD/CAM block

- ✔ High density - less risk of chipping
- ✔ Extremely smooth surface after milling
- ✔ No firing necessary to get outstanding physical properties

EXACLEAR
Clear vinyl polysiloxane

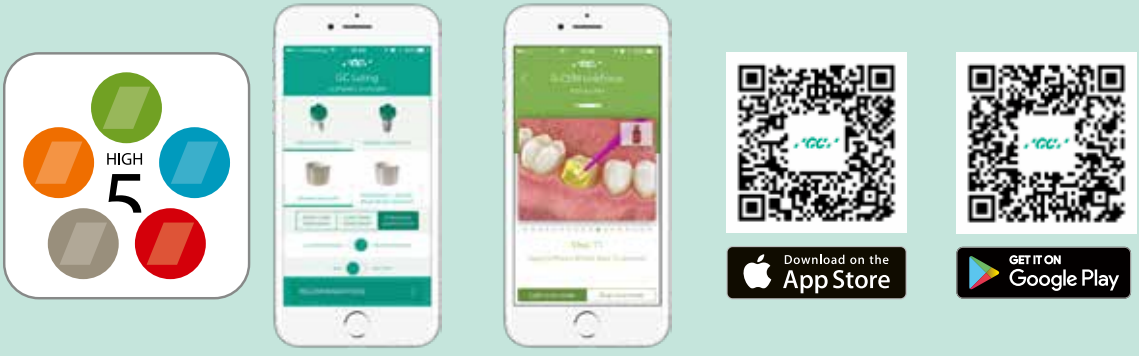
- ✔ Crystal-clear view
- ✔ Excellent light conduction and polymerisation of composite
- ✔ Optimal consistency

Enhancing Smiles
From Direct to Indirect – Shaping smiles with art and knowledge

Discover more about
Enhancing Smiles:

Discover more about our
GC courses:

Discover the **GC Luting Guide**
From Fuji I, all the way to G-CEM ONE.



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