

# Injection Molding Technique

## Clinical Guide

Shape, contour, perfect  
– all in one step!



Since 1921  
100 years of Quality in Dental



# What is the Injection Molding Technique?

Injection molding is a manufacturing process that involves injecting plastic into a mold to create a part. When adapted in restorative dentistry, this technique provides a simplified, precise, and predictable method for developing natural esthetic composite restorations while reducing chair time.

This technique is a unique and novel indirect/direct process of predictably translating a conventional or digital diagnostic wax-up or the anatomical form of the natural dentition of a preexisting diagnostic model into composite restorations. In many clinical situations, this technique can be used without anesthesia.

The technique is primarily indicated for cases requiring high esthetic outcomes and restoration of complex tooth morphologies such as management of worn dentition, direct veneers, smile makeovers, and post-orthodontic treatments.



Before treatment



Prepared teeth



G-ænial™ Universal Injectable injected into EXACLEAR™ mold



After treatment

# G-ænial™ Universal Injectable: A Versatile Composite for Every Restoration



Controlled fluidity



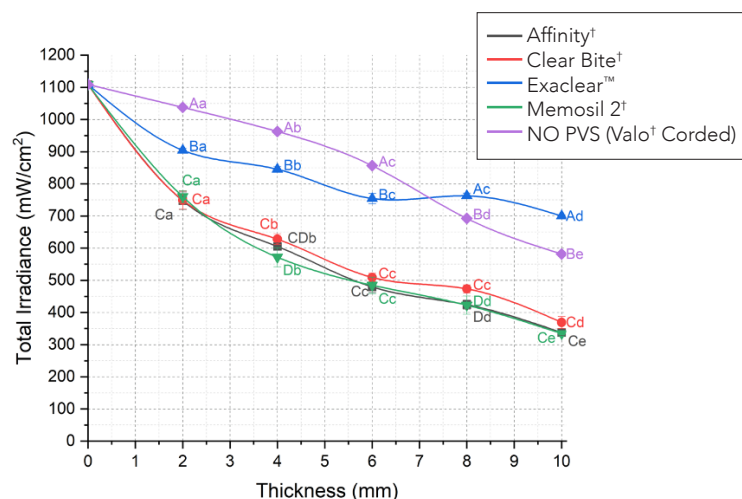
Long bendable needles



Easy extrusion

- **Thixotropy:** Unique thixotropic viscosity ensures controlled flow and precise adaptation with the absence of air bubbles.
- **Strength and Durability:** Long-lasting results with excellent marginal integrity.
- **Esthetic Versatility:** Wide range of shades with three levels of translucency for perfect color matching.
- **Ease of Application:** New tips with a long bendable needle for unparalleled access to difficult posterior cavities.

## EXACLEAR™'s transparent silicone putty allows for highly accurate matrix impressions in anterior restorations.



- **Transparency:** Perfect for visualizing the restoration during injection molding.
- **Accuracy:** Delivers precise reproduction of tooth anatomy.
- **Versatility:** Ideal for challenging aesthetic cases.
- **Efficiency:** Speeds up clinical workflow, saving valuable time.

According to a study by Machado et al\*, EXACLEAR™ excelled in maintaining high translucency and superior light transmission capabilities, even with increasing thickness of the material.

\*Not a registered trademark of GC America Inc.

†Compressive modulus, translucency, and irradiance transmittance of clear PVS materials used for resin injection molding technique. Study by Nadia Machado, Mateus G Rocha, Dayane Oliveira, Kevin G Reardon, Emerson Martins, Nathaniel C Lawson



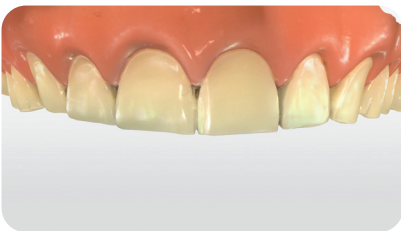
# How to Perform the Injection Molding Technique (Anterior Workflow)



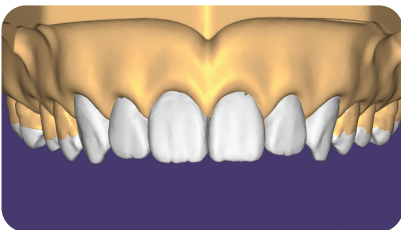
1. Initial patient situation.

## NON-CLINICAL STEPS

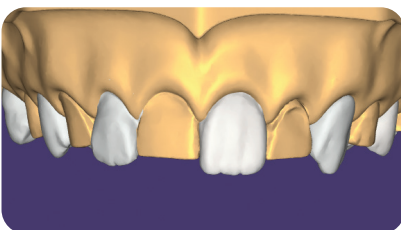
### I CREATION OF WAX-UPS



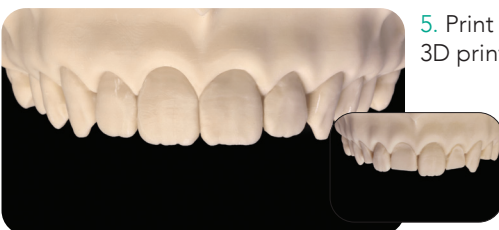
2. Take an impression of the patient (digital or conventional).



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



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



5. Print TOTAL and partial 3D printed models.



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



7. Seal the two models (PARTIAL and TOTAL): 3D-printed models: separator\*\* Gypsum models: water hydration for 5 min.



8. Take impressions of both TOTAL and PARTIAL models with **EXACLEAR™** using a non-perforated tray.

\*If you are working with a conventional wax-up on a gypsum model, make the TOTAL silicone index first and afterwards, remove carefully the wax from the teeth alternately. Only then you can make your PARTIAL silicone index full stop.

\*\*The application of a separator is not mandatory, and it will only be necessary when the resin of the 3D-printed model isn't fully polymerised, leading to a reaction between its surface and the vinyl polysiloxane material. In the case of gypsum models, immersion in water for 5 minutes is mandatory.

# Step-by-Step Guide (continued)

## CLINICAL STEPS

### I TOOTH PREPARATION AND ISOLATION

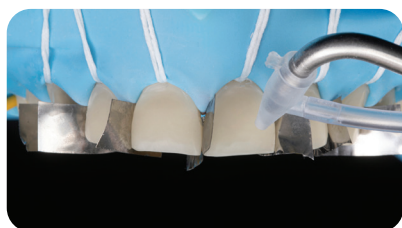
Injection Molding Technique is a preparation-free technique. Nevertheless, teeth can be slightly prepared to fit the new restoration design planned on the wax-up, if desirable.



9. Isolate from tooth 4 to 13 with rubber dam.



14. PARTIAL silicone index: create an access hole in the silicone index at the incisal border of teeth 7, 9 and 11. Do this preferably from the inside to the outside of the index.

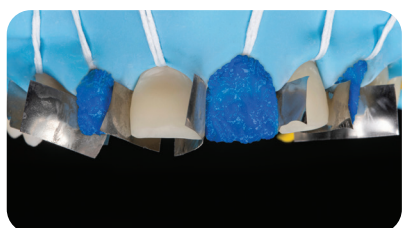


10. Sandblast teeth 6 to 11.



15. Inject **G-ænial™ Universal Injectable** using the PARTIAL silicone index. Inject it for the first tooth until it completely fills up the mould of the tooth. Hold firmly and polymerise for 5 sec. Repeat the process for the second and third teeth.

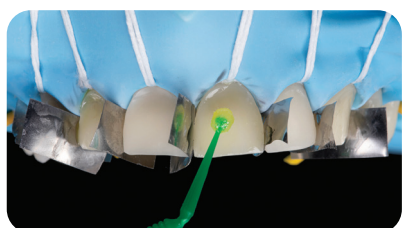
### II CREATION OF THE FIRST SERIES OF VENEERS USING THE ALTERNATE INJECTION TECHNIQUE



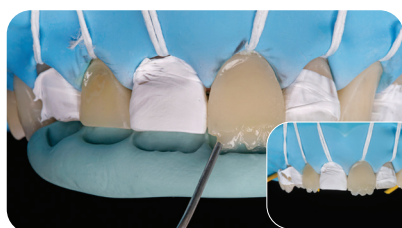
11. Selectively etch (only enamel) teeth 7, 9 and 11 for 30 sec. Rinse and remove excess water (slightly dry).



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



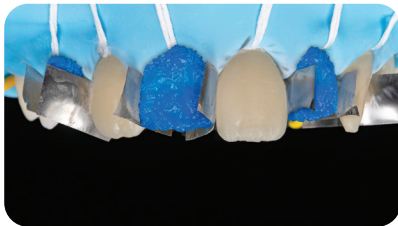
12. Apply **G-Premio BOND™** on teeth 7, 9 and 11 for 10 sec. Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.



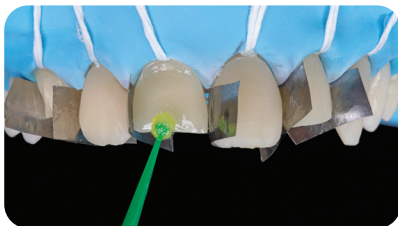
13. Optionally, for a more natural look of the restoration, mamelons can be designed by using opaque **G-ænial™ Universal Injectable** or an opaque paste composite with the help of the putty silicone index. Don't forget to light-cure.

# Step-by-Step Guide (continued)

## III CREATION OF THE SECOND SERIES OF VENEERS USING THE ALTERNATE INJECTION TECHNIQUE



17. Selectively etch (only enamel) teeth 6, 8 and 10 for 30 sec. Rinse and remove excess water (slightly dry).



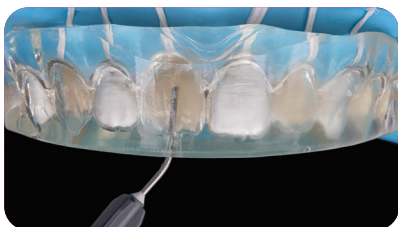
18. Apply **G-Premio BOND™** on teeth 6, 8 and 10 for 10 sec. Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.



19. Optionally, for a more natural look of the restoration, mamelons can be designed by using opaque **G-ænial™ Universal Injectable** or an opaque paste composite with the help of the putty silicone index. Don't forget to light-cure.



20. **TOTAL silicone index**: create an access hole in the silicone index at the incisal border of teeth 6, 8 and 10. Do this preferably from the inside to the outside of the index.



21. Inject **G-ænial™ Universal Injectable** using the **TOTAL silicone index**. Inject it for the first tooth until it completely fills up the mould of the tooth. Hold firmly and polymerise for 5 sec. Repeat the process for the second and third teeth.



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

# Step-by-Step Guide (continued)

## IV FINISHING STEPS



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



24. Adjust the occlusion.



25. Polish with the fine grey rubber polisher.



26. Final result.





# Injection Molding Technique

## Ordering information

Contact your local GC representative for more information or to schedule a demo.



### G-aenial™ Universal Injectable Syringe Refills

Contains: Two 1.7g (1.0mL) syringes, 10 long dispensing tips and 10 short dispensing tips.

012364 A1	012365 A2	012366 A3	012367 A3.5
012368 A4	012369 B1	012370 B2	012371 CV
012372 CVD	012373 AO1	012374 AO2	012375 AO3
012376 JE	012377 AE	012378 XBW	012379 BW

### G-aenial™ Universal Injectable Unitip Refills

Contains: 15 0.16mL unitips.

012348 A1	012349 A2	012350 A3	012351 A3.5
012352 A4	012353 B1	012354 B2	012355 CV
012356 CVD	012357 AO1	012358 AO2	012359 AO3
012360 JE	012361 AE	012362 XBW	012363 BW



### 012691 G-Premio BOND™ Kit

Contains: One bottle (5mL), 50 disposable applicators and 20 disposable dispensing dishes.

### 012696 G-Premio BOND™ Bottle Refill

Contains: One bottle (5mL).

### 009276 G-Premio BOND™ Unit Dose Refill

Contains: 50 unit doses (0.1mL) and 50 disposable applicators (fine).

### 009552 G-Premio BOND™ Dual Cure Activator (DCA) Refill

Contains: One bottle (3mL).



### EXACLEAR™

#### 008482 Refill

Contains: Two (48 mL) cartridges and 6 mixing tips (size L).



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