

## "Elevating your everyday restorative practice – all about direct restorations"

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### Adhesive Update

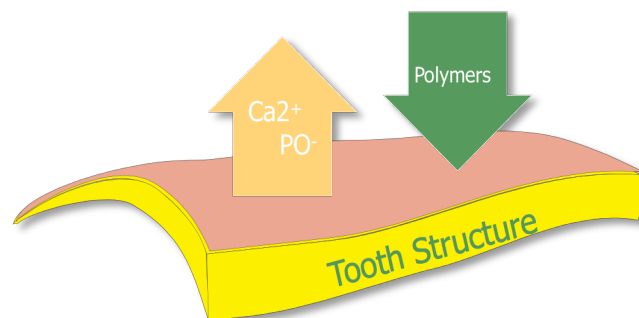
#### Classification

Total – Etch		Self-Etch	
Three-Step TE-3S	Two-Step TE-2S	Two-Step SE-2S	One-Step SE-1S
Etch	Etch	Self etching Primer	
Primer	Primer/Adhesive		
Adhesive		Adhesive	Self etching Primer Adhesive
Optibond FL, Scotchbond Multipurpose	Optibond Solo Plus, Single Bond,	Clearfil SE Bond, OPTibond XTR	Scotchbond Universal, All-Bond Universal.

What is a Multimode Adhesive: It is a One-Step adhesive that can be used as a Total-Etch or as a Self-Etch or selective etching enamel - Scotchbond Universal, All-Bond Universal.

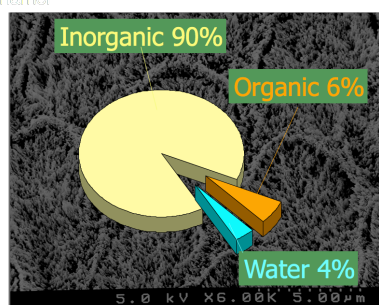
#### Mode of action:

Replace what was removed.

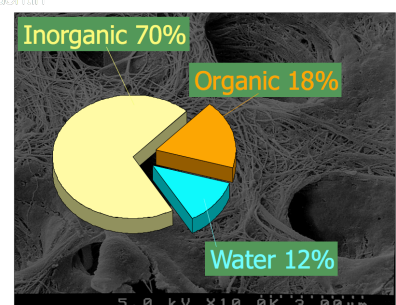


#### Enamel vs Dentin

enamel



dentin



- Dentin varies from person to person, from tooth to tooth and changes through life.
- Normal dentin reliable to bond.
- Sclerotic dentin – Secondary dentin - Caries affected dentin. Difficult to bond with lower bond strength obtained.
- Liner suggested because chemical bond to Calcium.



## STEPS by STEP

- Etch enamel - Always!!!! ---- YES!!! For all adhesives!!!!
- Place the etchant on enamel first, wait 15sec, then place on dentin...
- Leave dentin moist after etching.
- Primer takes time to work – 20sec.
- Agitate primer for better infiltration.
- Dry primer thoroughly to evaporate solvents.
- Light cure your adhesive.
- Apply composite in increments.
- Read instructions after all.
- Bond deteriorates with time!!!! More so to dentin than enamel.
- Strategies to prevent degradation of adhesion.
- Save as much enamel as possible.
- Avoid contamination.

## Resin Composites

### Shade selection

An adequate light source, intensity and wavelength, should be available for color selection. Color-corrected fluorescent tubes which resemble natural daylight are recommended.

Remove unwanted bright colors from patients clothes and remove lipstick.

Use a prophyl cup with pumice to clean the tooth to be restored and adjacent teeth. Proximal areas can be cleaned with a blue Eptabond strips (GC America)

The Vita shade guide is initially used to assess tooth shade. The mid-facial third of the tooth to restore should match to the mid-facial third of the Vita shade. Unfortunately, resin composite shades vary from brand to brand and do not closely resemble the Vita shade guide.

It is recommended to fabricate a resin composite custom shade guide. Use this shade guide to find a shade that matches the mid-facial third of the tooth to restore. If there is extensive tooth loss, adjacent teeth are used to obtain a match.

This selected shade will be the basic shade of the restoration. All other shades are derived from this one. Mostly the dentin will be one or two shades darker in the A range. If required a clear translucent shade is used to imitate translucent areas of the incisal edge. (fig 4)

### Lingual matrix

The lingual matrix technique saves time and effort during the restorative procedures. It preserves and reproduces the palatal contour and working surface of the anterior tooth/teeth to restore.

The lingual matrix is made by taking an impression of the palatal aspect from an existing and properly contoured restoration, from a laboratory wax-up or from a quick mock-up of a fractured tooth or defective restoration.

A quick setting material, bite registration materials, or a putty material can also be used.

The lingual matrix covers all the palatal areas of the teeth to restore and at least one tooth distally and approximately 2mm of gingiva. It should extend facially half of the thickness of the incisal edge, if excess occurs it should be trimmed back.

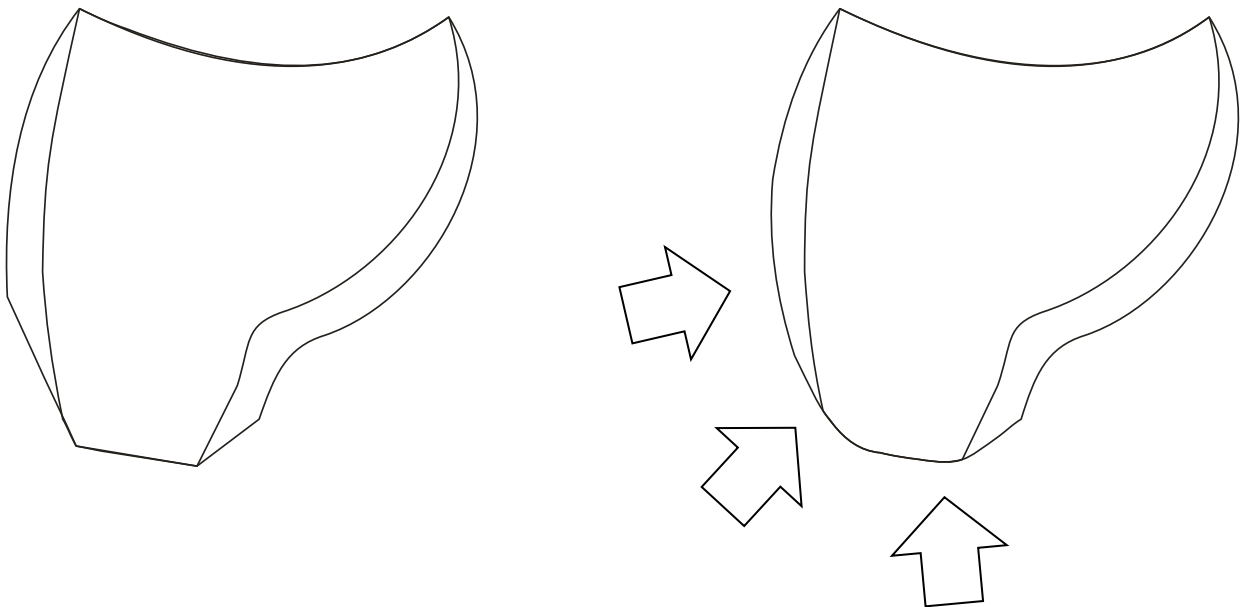
### Isolation and tooth preparation

Preferably, isolation is achieved with a rubber dam. Retraction cord can be used to achieve gingival retraction when rubber dam is not utilized. Plastic retractors, cotton rolls and a gauze pads also can be used.

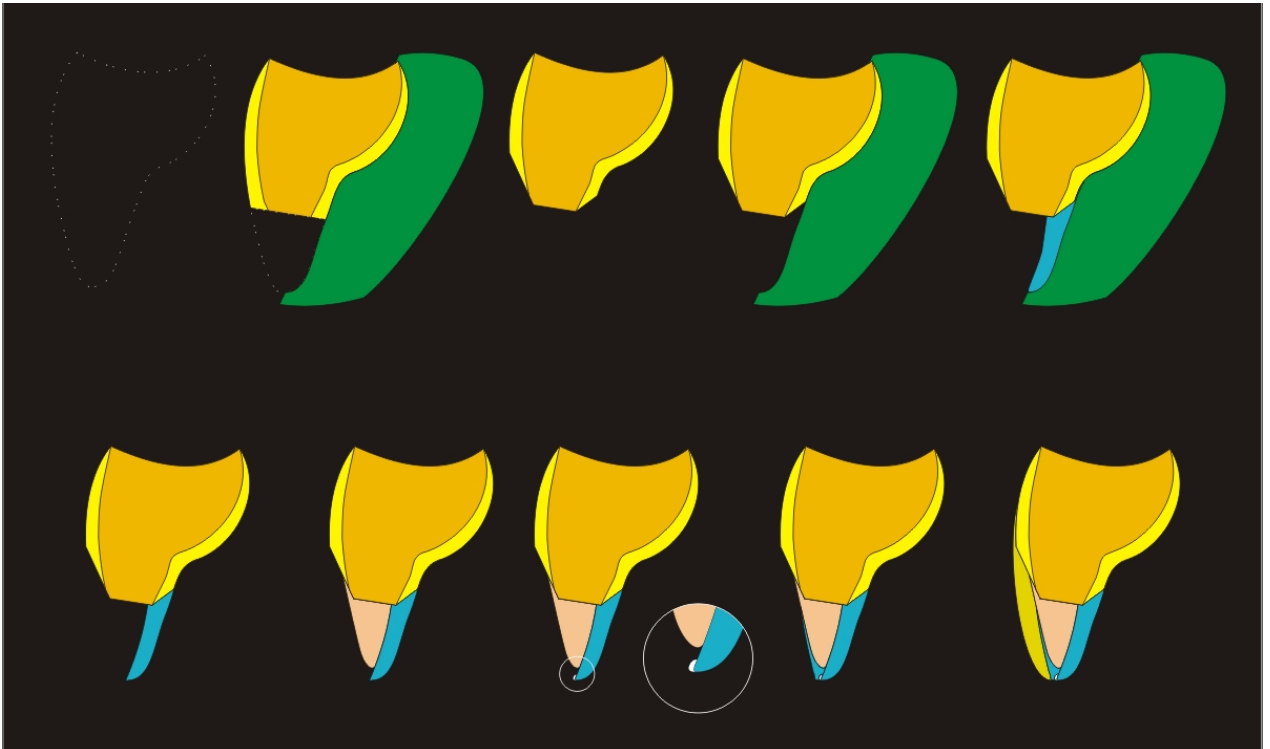
Preparation is accomplished by removal of carious tissue and/or removal of an existing restoration.

In order to achieve proper blending of the restoration over tooth structure, increase the surface area for retention and improve strength of the restoration, bevels are placed at the margins of the preparation. The facial bevel, an esthetic bevel, is an infinite scalloped long bevel of approximately 2+mm in length and initiates inside the DEJ. The lingual bevel, a functional bevel, is a well 45° defined angle of 1mm in length and is restricted to enamel. All internal line angles should be rounded.

Careful attention should be paid to the incisal and gingival bevels because they are also functional and esthetic.



The tooth is build up by successively applying layers of various opacities, from the lingual to the facial.



#### Lingual increment – lingual shell

Position the lingual matrix in place in the mouth and score the margins of the preparation in the matrix. Remove the matrix. Using an Almore instrument apply a uniform thin layer,  $\pm 0.5\text{mm}$ , of translucent material to the matrix over the area to be built. The material should extend to cover the lingual bevel and incisally to complete the lingual half of the incisal edge.

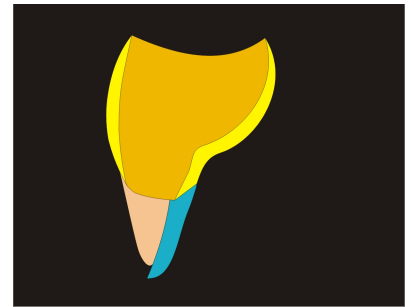


Take the matrix with the material to the mouth and position it in place. Make sure the material is adapted to the lingual bevel, polymerize for 40 sec. and remove the matrix. The lingual increment is now a matrix to place all increments.



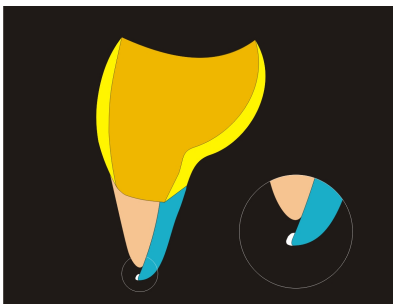
### Dentin increment

Apply the dentin opacity or a high opacity material to replace the dentin in one or more layers. Each layer should not exceed 2mm in thickness. Use the contra lateral tooth as a model to mold the mammelons. This increment should extend gradually over half of the facial bevel to provide adequate blending and masking the transition between tooth and restorative material. A brush is very useful for this purpose. Attention should be placed not to overfill the preparation in order to leave space to the incisal and enamel increments. Polymerize for 40sec.



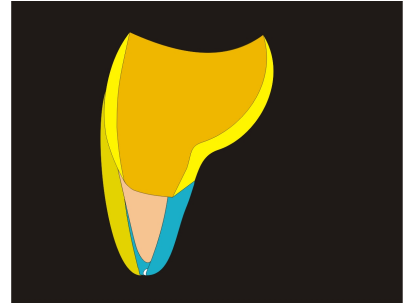
### Incisal increment

Place a layer of incisal material over the mammelon depressions and over the incisal edge. If a halo needs to be reproduced a white opaquer can be painted over the incisal edge using a brush or a high opaque material can be sculpted. Polymerize for 40sec.



## Facial-enamel increment

An enamel or medium opacity material is used to replace the facial remaining portion of the restoration. A mylar strip is placed proximally to help carry the material lingually if necessary. Before polymerization remove the matrix with a sharp pull. An interproximal carver (IPC) is used to uniformly spread the composite over the facial. Excess material is carried incisally and clipped with the IPC. The facial increment is then brushed with a #2 flat brush. Polymerize for 40 sec.



## Contouring and polishing

Step by Step.

1. Tooth length.
2. Inciso facial line angle
3. Facial contour
4. Facial planes
5. Line angles
6. Point angles
7. Embrasures
8. Macroanatomy – Depressions and elevations
9. Microanatomy - Surface characterization
10. Luster