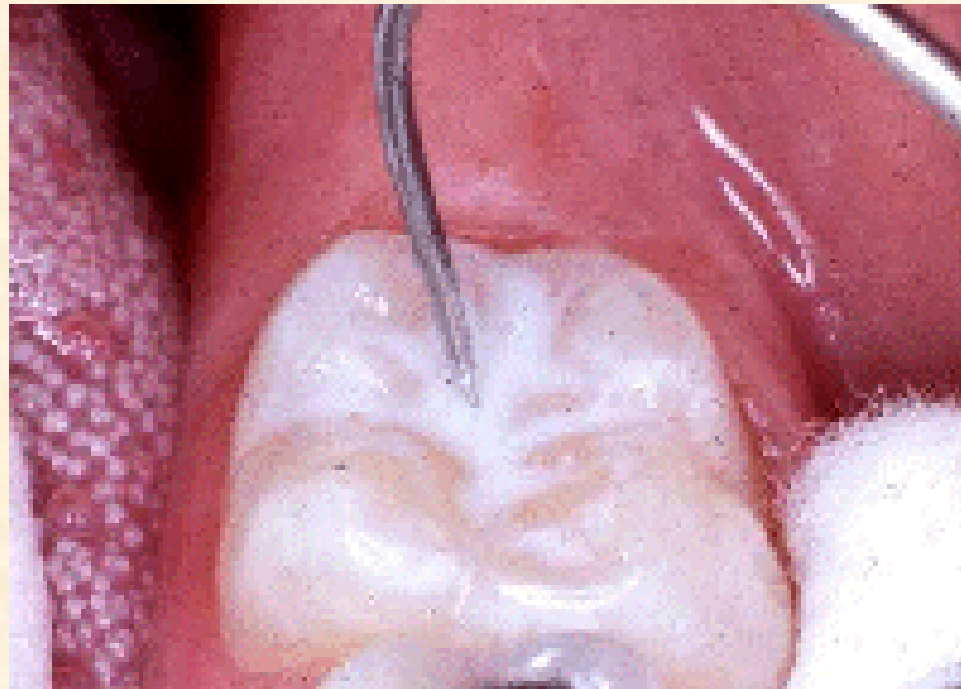


# Sealant Application

by

Dental Assistants



# Course Objectives

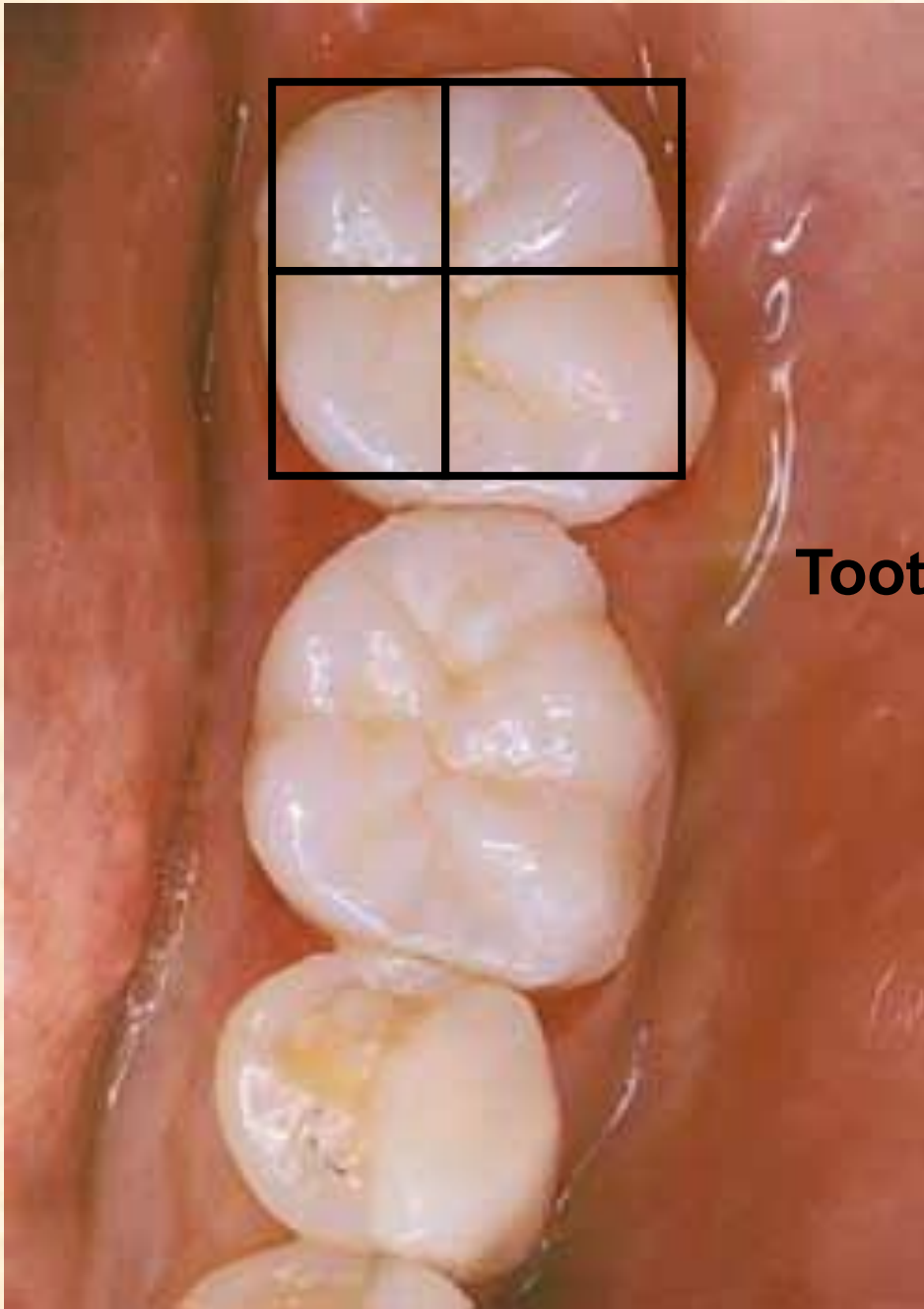
After the course, you will be able to,

- Adhere to the rules and regulations as they apply to dental assistants placing sealants,
- Identify indications and contraindications for the placement of sealants,
- Recognize anatomic landmarks on teeth that influence sealant placement,
- Follow safe practice guidelines when applying sealants,
- Determine the armamentarium needed to place sealants,

- Compare the various types of sealant material,
- Educate patients and/or parents with regards to sealants,
- State the negative aspects of acid etching,
- Compare the various methods of moisture control necessary when applying sealants,
- Prepare a tooth for a sealant including isolation and acid etching,
- Seal a tooth following a predetermined regimen,
- Self evaluate the success of sealant placement.

# Rules and Regulations

- In Tennessee, only assistants who are registered can apply sealants after taking a Board approved course,
- Assistants must receive certification by the state before they can begin applying sealants,
- A dentist must check the patient before and after a sealant is placed.

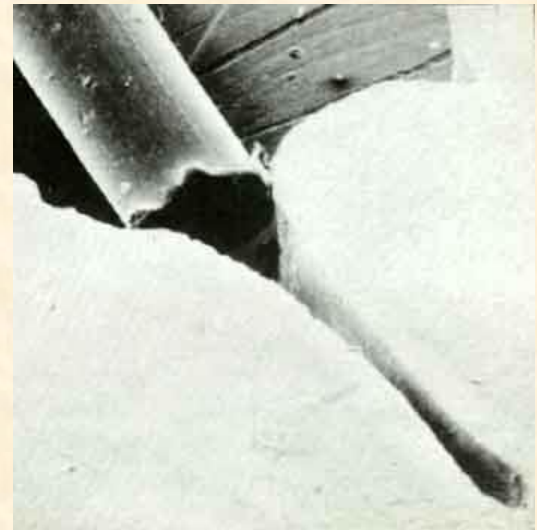


Teeth develop from “lobes”  
(usually 4, sometimes 5)

A fissure is formed where  
two lobes come together

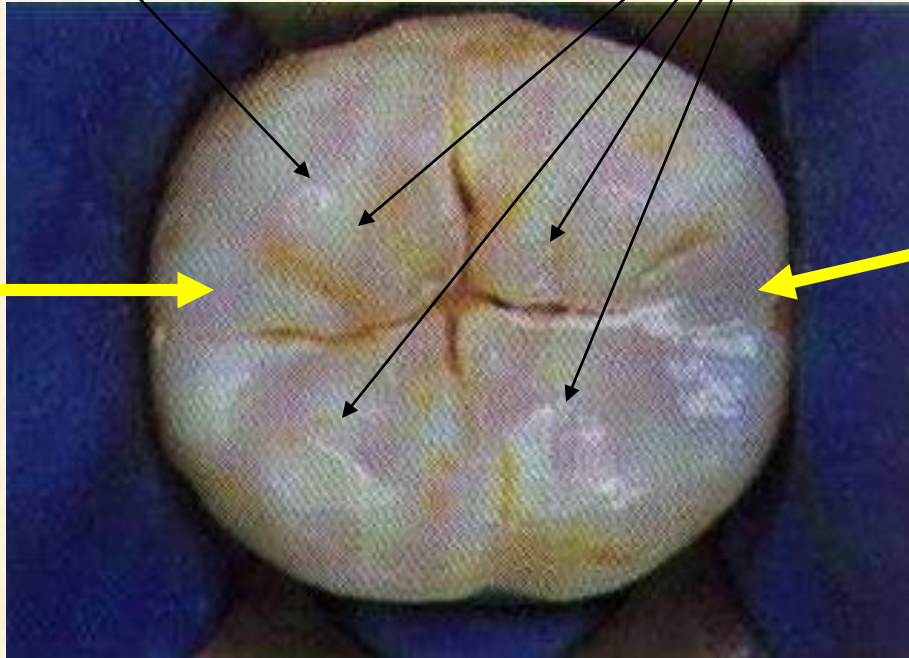
### **Tooth Anatomy**

A “pit” is formed where  
Two fissures cross



Cusp

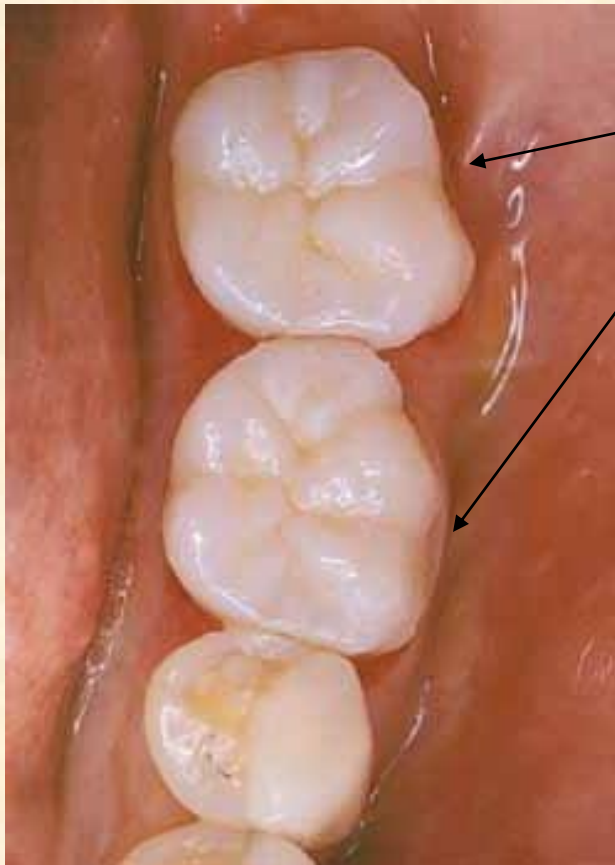
Triangular Ridge



Mesial Marginal Ridge

Distal Marginal Ridge

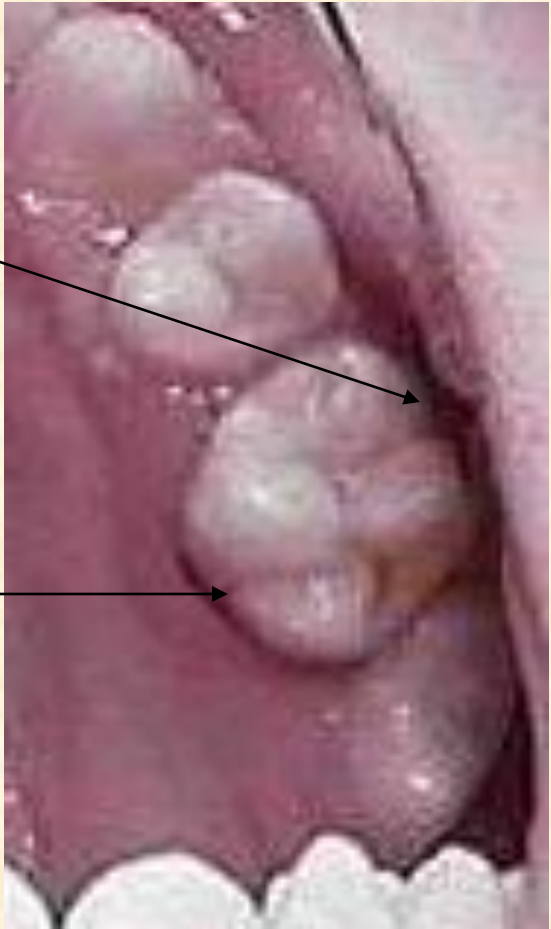
# Permanent first molars are the top priority for sealing!!



Mandibular 1<sup>st</sup> molar

Pits

Lingual Groove



Maxillary 1<sup>st</sup> molar

# Other pits to seal



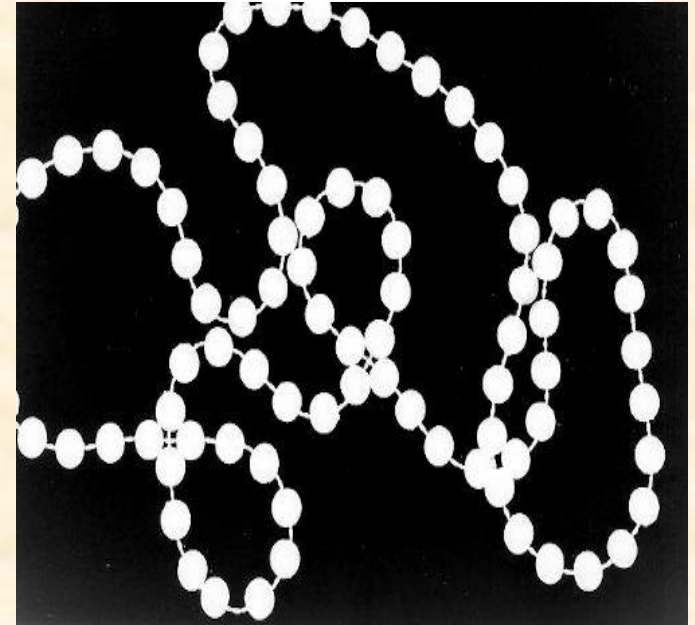


# What is a Sealant?

- A manmade “resin”, also known as a plastic
- Most common resin is Bis – GMA, same resin used in composite restorations
- Sealants were developed in 1960’s by Dr. Bounacore
- Numerous studies have shown their effectiveness, 65% reduction in caries after 5 years.
- Sealant material undergoes “polymerization” to become hard.

# What is polymerization?

- Sealant material begins as single molecules so it is soft and movable (monomer).
- A “catalyst” is added which makes the single molecules join together to form chains (polymer),
- The “catalyst” is either a chemical or light.
- The chains intertwine making the sealant hard,



# Light cure vs Self Cure



Light activated catalyst  
(light cure)



Chemical catalyst  
(self cure)

# Types of Curing Lights

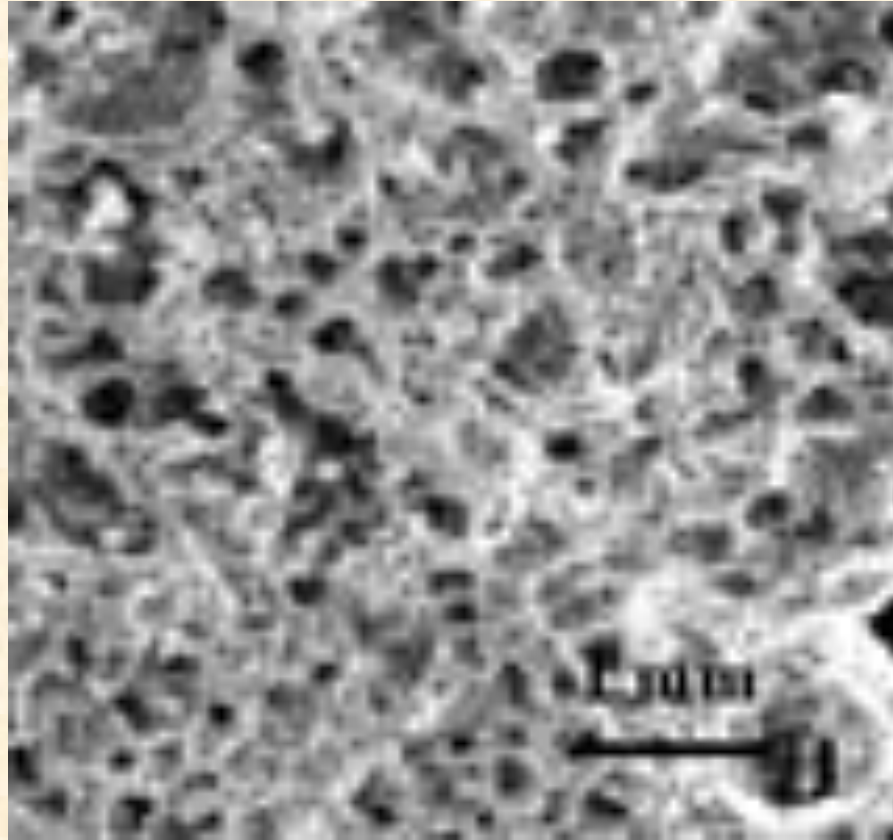
- Halogen – curing time approx. 20 seconds
- LED – curing time varies
- Xenon, plasma arc – less than 5 seconds
- Laser – curing time varies
  
- Age, contamination can increase curing time
- If in doubt, cure longer

# What is “Etchant”?

- Originally 34 – 50% Phosphoric acid in liquid or gel form
- It creates “micropores” that make tooth structure appear “chalky white”



# Micropores from Etching



Sealant flows into micropores providing retention  
If micropores not contaminated with saliva!!

# Priming/drying agents

- Primers are “low viscosity”, “hydrophilic” agents
- apply before the sealant material to drive water from micropores
- Consider using if having adherence problems



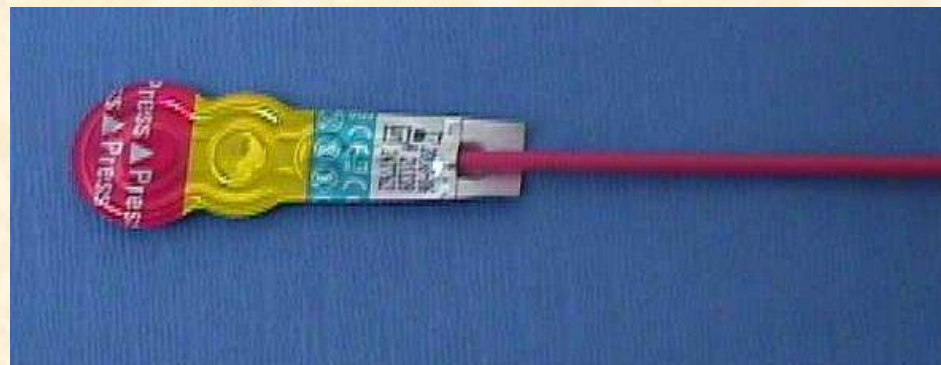
**Ultradent “Primadry”**

# Etchant/bonding agents

- Etchant/bonding agents use acidic Bis-GMA monomers to create micropores
- Eliminates separate etching step
- Acidic monomers occupy micropores blocking out moisture
- Early research says adhesion better especially in the presence of moisture



# Etchant/bonding agents



# Self Etching light cured sealant



# Filled vs Unfilled

- Unfilled sealants are 100% Bis GMA, easily abraded
- Unfilled sealants are clear, hard to detect,
- Tinted unfilled sealants are more easily detected
- Unfilled sealants self adjust if high



# Filled vs Unfilled

- Filled sealants contain quartz, feldspar particles to make tougher, wear better
- Filled sealants are opaque, tooth colored
- The more filler, the more adjustment necessary if high



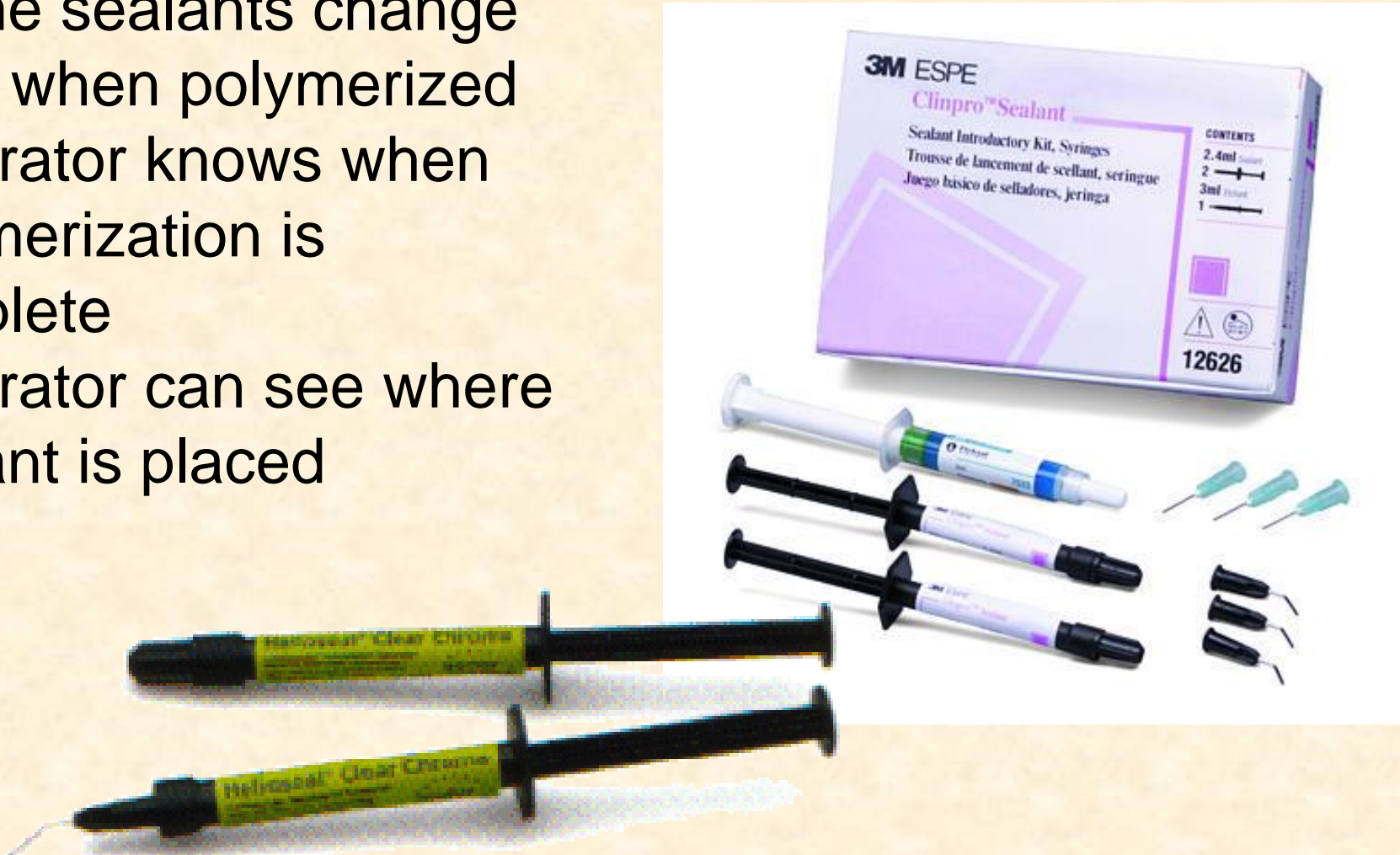
# Fluoride in Sealants

- Fluoride placed in sealants to remineralize incipient caries if present,
- No studies prove fluoride in sealants is effective.



# Color Change

- Some sealants change color when polymerized
- Operator knows when polymerization is complete
- Operator can see where sealant is placed



# Popular Sealant Brands

- Clinpro (3M)
- Helioseal (Vivadent)
- Delton (Dentsply)
- Embrace (Pulpdent)
- Guardian (Kerr)
- Prismashield / Fluoroshield (Dentsply/Caulk)
- Ultraseal (Ultradent)
- others



# Other Materials

- Triage (Fuji)
- Glass Ionomer cement
- Retention a problem

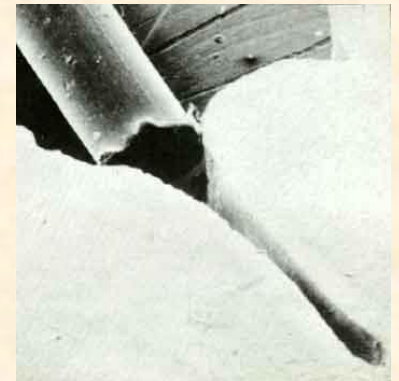




**“To seal or not to seal, that is the question”**

## When to Seal – Absolutely

- Pits and fissures are deep and “sticky”
- Patient is caries prone
- Patient is cooperative



**“To seal or not to seal, that is the question”**

## When to Seal – Maybe

- A “suspicious” or incipient lesion exists,
- The tooth is partially erupted but can be kept dry,
- The patient is susceptible to caries, regardless of age (xerostomia, deciduous teeth)
- Retention not quite as good with deciduous teeth



**“To seal or not to seal, that is the question”**

## **Don't Seal if...**

- Tooth has obvious occlusal or proximal decay and needs a restoration,
- Tooth has a large occlusal filling already,
- Moisture contamination is likely because of patient behavior, partial eruption, etc

# Standard Application Technique

1. Prepare the tooth
2. Isolate the tooth
3. Apply etchant
4. Rinse and dry the tooth
5. Apply sealant and cure
6. Floss / Check occlusion
7. Educate patient

# 1. Prepare The Tooth

- Check pits and fissures for debris with explorer
- Clean as necessary with,
  - Prophy cup and pumice (coronal polishing DA's only)
  - Air abrasive system (dentist only)
  - Dry toothbrush
- Rinse with water several seconds



## 2. Isolate the Tooth and dry it



Rubber Dam



Garmer cotton roll holder



Dri-aid (bibulous pad)

# 3. Etch the tooth

- Apply etchant as directed,
- Apply to those areas where sealant is to be placed
- Be careful of tissue contact
- Do not use excessive force on etchant syringe,



# 4. Rinse and Dry The Tooth

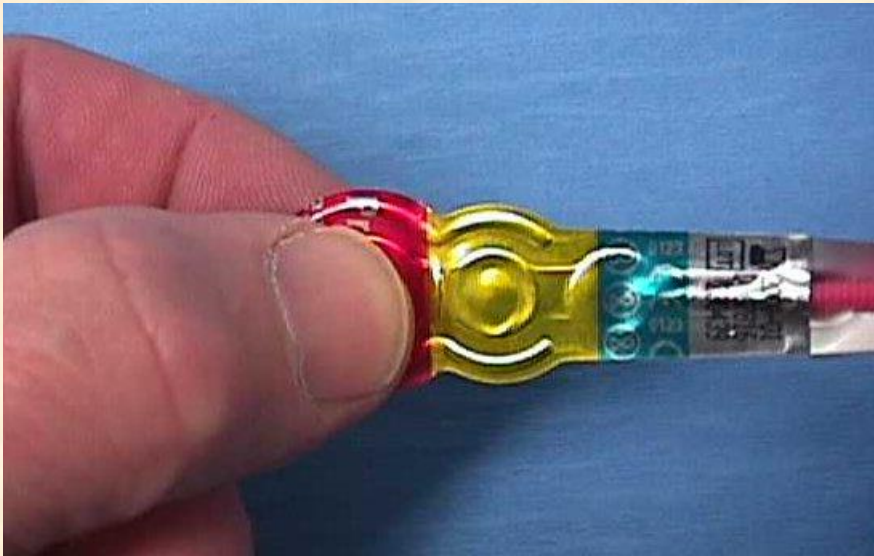
- Place evacuator adjacent to tooth
- Rinse with water until etch removed
- Check for “chalky” appearance, reapply etchant if necessary
- Place new cotton rolls or dri-aid as necessary
- Dry tooth and keep dry
- Use a primer/drying agent as necessary



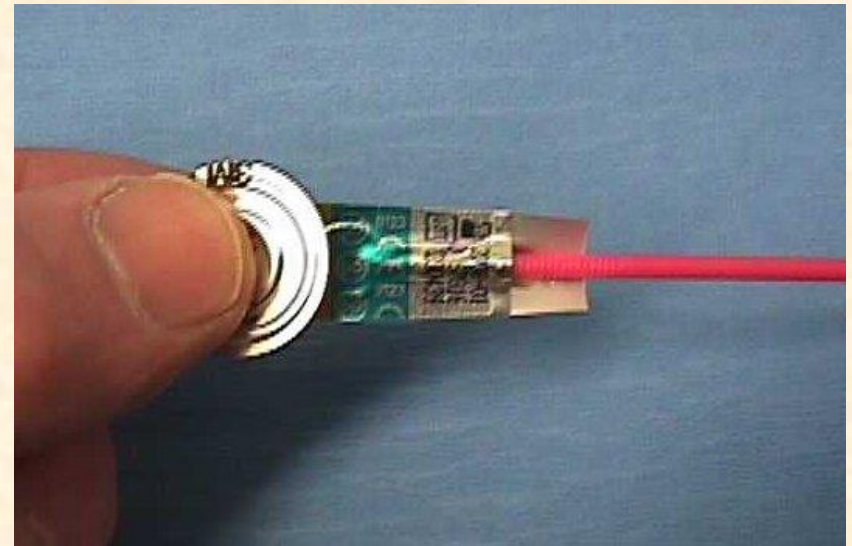


# Etchant/bonding agent Technique

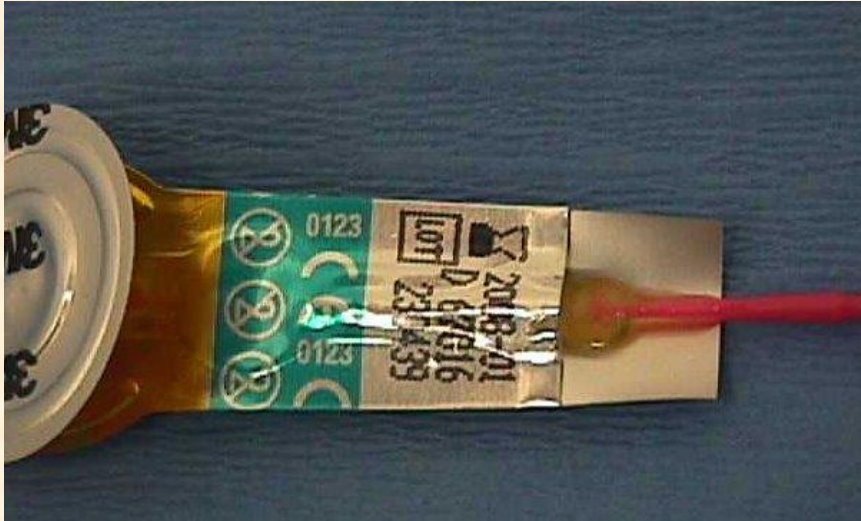
SKIP STEPS 3 AND 4



Squeeze Red dot



Fold red dot over yellow dot,  
Squeeze both dots



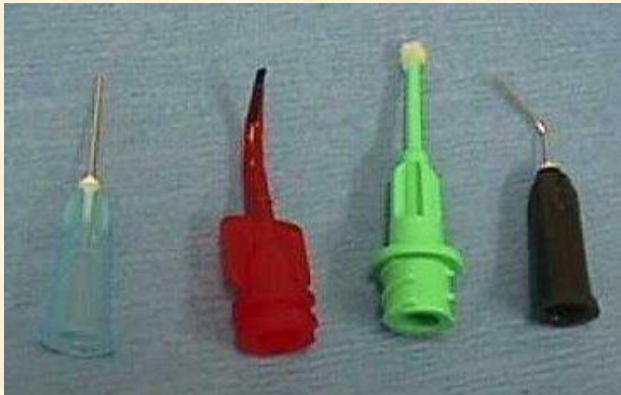
Remove red handled brush  
from package



Vigorously scrub tooth surface  
For 15 seconds then air dry

# 5. Apply Sealant Material

- Apply SMALL amount of sealant in center of fissure
- Drag material into fissures with applicator
- Cure with light following light manufacturer's directions

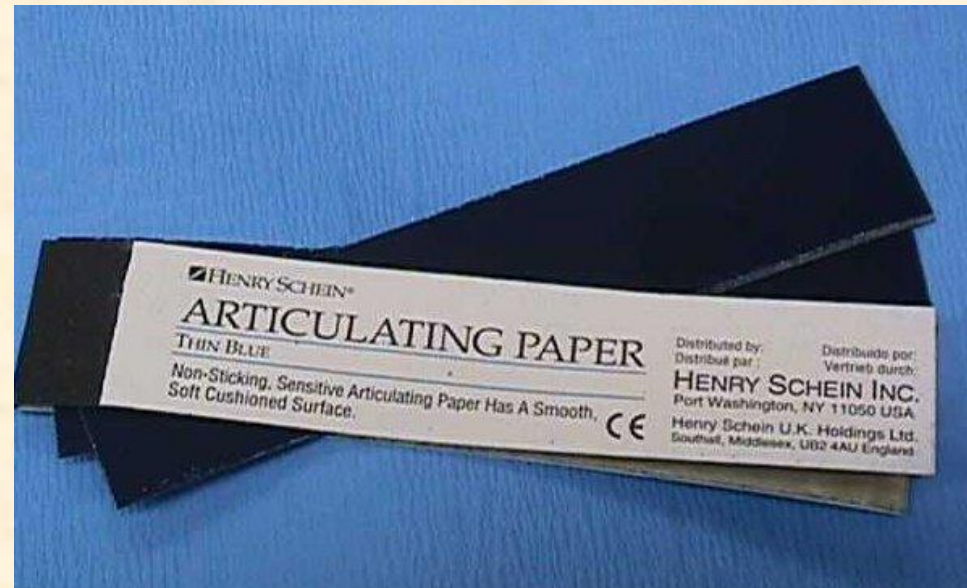


# 5. Apply sealant material

- Check for voids, bubbles, reapply material as needed
- Check for adherence, try to remove
- If loose, remove sealant and begin at step 2
- If bubbles or a void exists, apply more sealant material and cure
- Floss contacts to check for excessive material

# 6. Check occlusion

- Check occlusion with articulating paper,
- Unfilled material will adjustment naturally
- Filled material may require adjustment by the dentist



# 7. Educate the Patient

- Sealants should be evaluated every six months,
- Patient should notify office immediately if sealant appears dislodged,
- If unfilled sealant feels high, inform patient it will feel normal the next day.

# Safe Practice Guidelines

- Follow standard infection control precautions
- Dispose of unit dosed material after use.
- Avoid tissue contact with sealant material and etchant (allergic response to sealant material and/or tissue burn with acid a possibility)

# Why do Sealants Fail?

- Improper etching
- Tooth not properly cleaned
- There are no pits and fissures
- The tooth was not dry when sealed



The End

