1. Seek/Sable Seek
   Ultradent

2a. Caries Detector
   Kuraray

2b. Caries Finder/Caries Finder G
   Danville Materials

3. Cari-D-Tect
   Gresco

4. SNOOP
   Pulpdent
These materials are used to help you distinguish between affected and infected dentin. Affected dentin is not infused with bacteria, and even though it might be softer than what we usually consider to be good, sound, hard dentin, should not be removed, while infected dentin must be removed before restoring the cavity. The dye evidently works by bonding to denatured collagen in the dentin, which is a byproduct of the carious process. They also help identify cracks and the location of even partially calcified pulpal tissue as an aid in canal identification for endodontic treatment.

**Do They Work?**

Is this concept of staining cavities to ensure removal of all caries really necessary? The studies are equivocal. Some support the use of these products, while others have found they encourage excessive sound tooth removal. There is even a concept called the “pink haze”, which is lightly stained, noncarious dentin that appears pink (if you use a red dye), but it is not to be removed. Therefore, if you choose to continue to use one of these products, you should not just remove all the stained dentin indiscriminately.

**Color**

The original was formulated with red dye, but there is a trend to use other, darker colors. This is due to the fact that red dye can be confused with blood if there is an exposure or, in the case of a cervical lesion, bleeding from the tissue. Darker colors, however, can be confused for amalgam stains.

### Caries Detecting Dyes

<table>
<thead>
<tr>
<th>Product</th>
<th>Cost/ml</th>
<th>Color</th>
<th>Solvent</th>
<th>Dispenser</th>
<th>pH</th>
<th>Effect on Bond Strength</th>
<th>Effect on Bond Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seek</strong></td>
<td>$5.62</td>
<td>Red</td>
<td>90% Propylene Glycol</td>
<td>Syringe</td>
<td>6.9</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td><strong>Sable Seek</strong></td>
<td>$5.62</td>
<td>Dark Green</td>
<td>70% Propylene Glycol</td>
<td>Syringe</td>
<td>6.5</td>
<td>No Effect</td>
<td>Slight Negative Effect</td>
</tr>
<tr>
<td><strong>Caries Detector</strong></td>
<td>$2.67</td>
<td>Red</td>
<td>Propylene Glycol</td>
<td>Squeeze Bottle</td>
<td>8.7</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td><strong>Caries Finder</strong></td>
<td>$2.75</td>
<td>N/A</td>
<td>Propylene Glycol</td>
<td>Either Squeeze Bottle or Syringe</td>
<td>4.6</td>
<td>Slight Positive Effect</td>
<td>Slight Positive Effect</td>
</tr>
<tr>
<td><strong>Caries Finder G</strong></td>
<td>$2.75</td>
<td>N/A</td>
<td>Propylene Glycol</td>
<td>Squeeze Bottle</td>
<td>5.7</td>
<td>Slight Positive Effect</td>
<td>Slight Negative Effect</td>
</tr>
<tr>
<td><strong>Snoop</strong></td>
<td>$2.38</td>
<td>Dark Blue</td>
<td>47% Propylene Glycol, 47% Water</td>
<td>Squeeze Bottle</td>
<td>2.8</td>
<td>Slight Negative Effect</td>
<td>Slight Positive Effect</td>
</tr>
<tr>
<td><strong>Cari-D-Tect</strong></td>
<td>$1.57</td>
<td>Very dark blue</td>
<td>Water</td>
<td>Either Squeeze Bottle or Syringe</td>
<td>5.6</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
</tbody>
</table>

**Effect on Bond Strength**

We tested all of our CHOICES to see if any of them had a negative effect on bond strength, including their use in combination with a self-etch adhesive. The results are listed in the commentary for each product.

**Procedure**

These materials should be used as early into a cavity preparation as possible, since one of their main purposes is to keep you from removing too much tooth structure. They are applied for about 10 seconds and rinsed off. Any deeply stained tooth structure should be removed, usually with slow-speed burs or spoon excavators. They should be reapplied after you remove all the stained dentin to confirm no residual caries remains in the tooth. If you are near the pulp and the dentin is still stained, you will have to make the decision to excavate the additional caries or stop and place an indirect pulp cap. This is where the “pink haze” is most critical.

Some clinicians apply one of these products at the exam visit as a way of determining which pits and fissures are carious. However, there is very little justification for this procedure, especially if the teeth have not had a thorough prophy to remove plaque and other debris from these hard-to-access areas.
Caries Detecting Dyes

WARNING

You have to be careful or some of the dye will find its way to your clothes. If it does stain your clothes or carpet, attempt to remove it as soon as possible. These products can also stain restorations, especially those with less-than-perfect margins. Dyes can be difficult to remove in these areas. Therefore, limit their application to the tooth that you are treating.

Seek/Sable Seek

(4.2)

Cost: $26.99/4.8ml ($5.62/ml)  
Shelf life: 3 years  
MSDS: Included

Includes:
• 4 syringes (1.2ml ea)  
$17.99/4 ($3.75/ml)  
• 20 Black Mini Brush tips

Description
Seek  D&C red dye in a 90% propylene glycol base.  
Sable Seek  FD&C dark green dye in a 70% propylene glycol base.

pH
Seek  6.9  
Sable Seek  6.5

Effect on Bond Strength

<table>
<thead>
<tr>
<th>Product</th>
<th>Effect on Bond Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>OptiBond Solo plus</td>
<td>No effect</td>
</tr>
<tr>
<td>Prime &amp; Bond NT</td>
<td>Slight negative effect</td>
</tr>
<tr>
<td>Clearfil SE Bond</td>
<td>Slight positive effect</td>
</tr>
</tbody>
</table>

Packaging
Clear plastic box with clear plastic lid. The printing on the labels of the syringes resisted disinfection procedures well. Expiration date is on box and is also chiseled into the individual syringes. LoFlo syringes have basically eliminated drips when changing syringe tips, but it's still prudent to be careful when removing the tip from the syringes.

Directions
Plain paper foldout in 13 languages with 11 black and white photos. Good information, logically presented.

Caries Detector

(4.0)

Cost: $32.00/12ml ($2.67/ml)  
Shelf life: 3 years  
MSDS: Not included

Includes:
• 2 btls (6ml ea)

RAVES & RANTS

The original formula from Fusayama  
Convenient packaging, with two bottles for two treatment rooms  
Only one color  
No convenient applicator
**Caries Detecting Dyes**

**Description**
1% acid red 52 in propylene glycol base.

**pH**
8.7

**Effect on Bond Strength**

<table>
<thead>
<tr>
<th>Bonding Agent</th>
<th>Caries Finder</th>
<th>Caries Finder G</th>
</tr>
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<tbody>
<tr>
<td>OptiBond Solo plus</td>
<td>Slight positive effect</td>
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</tr>
<tr>
<td>Prime &amp; Bond NT</td>
<td>No effect</td>
<td>Slight negative effect</td>
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<td>Slight positive effect</td>
<td>No effect</td>
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</tbody>
</table>

**Packaging**

Translucent plastic squeeze bottle in a non-resealable plastic pouch. The printing on the bottle resisted rubbing off during disinfection procedures well, but the expiration date is only printed on label of pouch, which would likely be discarded.

**Directions**

Plain paper, three languages. Simple, straightforward. Warns against leaving the dye in the cavity longer than 10 seconds. Longer contact time can presumably result in staining of the inner layer of carious dentin, which should not be removed.

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**Caries Finder/Caries Finder G**

**Danville Materials**

**Bottle**
Cost: $27.50/10ml ($2.75/ml)

**Syringe**
Cost: $9.95/1.0g/1.0ml ($9.95/ml)
• Includes 5 syringe tips

**Shelf life:** 3 years
**MSDS:** Included

**RAVES & RANTS**

+ Gives color and delivery options
+ Regular is original formula
- Green lowers Prime & Bond NT bond strength
- Syringe is most expensive by far

**WHAT'S NEW?**

Syringes

**Description**

Caries Finder 1% Acid Red 52 in propylene glycol base.
Caries Finder G FD&C green in propylene glycol base.

**pH**

<table>
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<tr>
<th>Product</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caries Finder</td>
<td>4.6</td>
</tr>
<tr>
<td>Caries Finder G</td>
<td>5.7</td>
</tr>
</tbody>
</table>

**Effect on Bond Strength**

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<th>Bonding Agent</th>
<th>Caries Finder</th>
<th>Caries Finder G</th>
</tr>
</thead>
<tbody>
<tr>
<td>OptiBond Solo plus</td>
<td>Slight positive effect</td>
<td>Slight positive effect</td>
</tr>
<tr>
<td>Prime &amp; Bond NT</td>
<td>No effect</td>
<td>Slight negative effect</td>
</tr>
<tr>
<td>Clearfil SE Bond</td>
<td>Slight positive effect</td>
<td>No effect</td>
</tr>
</tbody>
</table>
Description
Very dark blue FD&C (almost appears black) dye, water-based.

pH
5.6

Effect on Bond Strength

<table>
<thead>
<tr>
<th>Adhesive</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>OptiBond Solo plus</td>
<td>No effect</td>
</tr>
<tr>
<td>Prime &amp; Bond NT</td>
<td>No effect</td>
</tr>
<tr>
<td>Clearfil SE Bond</td>
<td>Slight positive effect</td>
</tr>
</tbody>
</table>

Packaging
Two options: (1) In the 30cc kit, a transparent plastic squeeze bottle with a Luer-Lock attachment on its top is contained in a Ziploc bag with syringes, needles, and dropper tip. These are enclosed in a larger sealed plastic bag. The expiration date is printed on the moisture-resistant bottle label. You connect the syringe to the bottle using the Luer-lock attachment and fill the syringe as much as you need. However, with only four syringes and tips included, it is obvious that you need to buy a bunch a la carte. You can also attach the dropper tip to this bottle for easy dispensing into a well or dappen dish.

(2) The 7cc squeeze bottles are packaged in tandem in a clear Ziploc bag along with instructions, all of which is enclosed in a sealed plastic bag. The expiration date is on the moisture-resistant bottle labels.

Directions
Plain paper, simple to understand.

RAVES & RANTS

- Least expensive
- Two choices for dispensing
- Why only four syringes?
- Almost black color could be confused with residual amalgam stain

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Caries Detecting Dyes

Cost: $47.00 ($1.57/ml)
Includes:
- 1 bottle (30ml)
- 4 syringes
- 4 needle tips
- 1 dropper tip

Cost: $26.50 ($1.89/ml)
Includes:
- 2 bottles (7ml ea)

Shelf life: 2 years
MSDS: Included

Description
Dark blue dye in water (47%) and propylene glycol (47%) base.

pH
2.8

Effect on Bond Strength

<table>
<thead>
<tr>
<th>Adhesive</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>OptiBond Solo plus</td>
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<td>Slight negative effect</td>
</tr>
<tr>
<td>Clearfil SE Bond</td>
<td>Slight positive effect</td>
</tr>
</tbody>
</table>

Packaging
White plastic squeeze bottle with screw-on cap. Comes in a clear plastic tube. Dispensing “straws” are also included. These are small gauge, translucent white plastic tubes, 4.25cm in length, which are inserted into the orifice of the bottle so you can dispense the material directly into the preparation. This keeps drips to a minimum and, because the straw can be bent anywhere along its length, allows you access to all areas of the mouth. Expiration date can be found on the moisture-resistant label.

Directions
Plain paper, five languages, simple, easy to follow.
Seek/Sable Seek, with their syringe delivery, score high in convenience, but some felt they were difficult to control the volume applied to the tooth. They rinse off cleanly and give you the option of two colors, but are also more expensive than the other products. They have a slight positive effect in bond strength for one of our test adhesives, while also having a slight negative effect on another. Their pH was the closest to neutral of this group.

Caries Detector is the original product created by Fusayama, giving it the ultimate pedigree. In addition, its double bottle kit automatically stocks two treatment rooms. It does not affect bond strength on two adhesives and slightly enhances it on the third. It also has the highest pH in this group.

Caries Finder gives you the choice between red or green, although the green had a slight negative affect on the adhesion of Prime & Bond NT. Nevertheless, it boosted the values of other adhesives. The red version is now available in a syringe, although in this delivery, it is the most expensive product in this category.

Cari-D-Tect is the only product with a primarily water-based solvent, has no negative effect on any of the adhesives, and is the least expensive. However, its packaging leaves something to be desired.

SNOOP gives you a unique dark blue color and snappy name. It slightly decreased the bond strength of the conventional adhesives, but slightly increased that of the self-etch type. Its aqueous formula may not be as effective as the products with propylene glycol as the primary base. Its pH is also lowest in this group.

**OTHER PRODUCTS IN THIS CATEGORY**

<table>
<thead>
<tr>
<th>Caries Marker</th>
<th>Doctor</th>
<th>To Dye For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voco</td>
<td>Den-Mat</td>
<td>Roydent</td>
</tr>
</tbody>
</table>