

## Patient Information about Veneers

The purpose of this article is to help patients who like to do their own research understand and interpret what they read on the internet and hear from other people. Then to be able to put it into perspective.

Natural beauty and esthetics that we see in nature is achievable through bonding technology of veneers to natural teeth. The process of bonding a veneer to a tooth allows light to transmit through the veneer and pick up the optics of the tooth. A veneer is defined as some material (porcelain or composite) that is bonded to the tooth. It is a partial covering of the tooth. You can also have a bonded crown which has the same optics; it just covers 360 degrees of a tooth. Cemented systems will not allow the porcelain to transmit light as a natural tooth does so the optics is changed. Therefore cemented crowns even if made of all porcelain, are not as life like as a general rule as bonded porcelain. One variable is the skill of the ceramist. Ceramics is art work; the greater the artistic gifts of the ceramist the more that can be done. Each veneer or crown is like a sculpture, the result dependant on the artistic skill of the maker. The best approach for a patient I believe is to select an outstanding knowledgeable dentist trained on all the veneer systems to select what is best to meet the patient's desires. The knowledge, skill and artistic ability of the dentist and ceramist are key to an exceptional result no matter what system is used. This is art and science, not products rated by consumers report.

One of the biggest differences between veneering systems is how much the tooth is to be reshaped before the veneer is placed. Each Veneer system has different requirements. This is done by the dentist. As a general rule the greater the desired change in shape, arrangement and color the more reshaping is desired. The more room the ceramist has the easier it is to make dramatic changes in color, shape and arrangement. A potential disadvantage is if the reshaping leaves the tooth with less than 50% of the bondable surface of the tooth in enamel, then the long term bond strength of the veneer is significantly reduced. Research shows that enamel bond is stronger long term than dentin bond strength. Twenty year studies show enamel bond strengths stay strong while dentinal bond strengths decrease over time. The other issue is the more reshaping into dentin the more frequent occurrence of tooth sensitivity. This is dependant on the bonding technique of the dentist and varies greatly from one dentist to another, but as a general rule all enamel bonding has no sensitivity and deep dentinal bonding has the most potential for post bonding sensitivity. For an experienced dentist in adhesive technology this sensitivity is only a temporary stage that last for a couple weeks on a rare occasion if the nerve of the tooth is healthy. Research shows that post treatment sensitivity is dependent on the health of the nerve of the tooth, the amount of reshaping done and the technique of bonding used by the dentist. It also shows that the veneer will have strong long term bond strength as long as more than 50% of the veneer is bonded to enamel. In practical terms almost all situations can be treated with long term success as long as 50% or more of the veneer is bonded to enamel. If for some reason less than 50% of the enamel is left then turning it into a bonding crown will correct this retention problem. Tooth reshaping for veneers falls into three categories.

1. No or minimal reshaping all in enamel. Example Durathins Veneers.

Advantages- strong long term bond, no sensitivity, and reversible.

Limitations- unable to make as dramatic changes in color and arrangement, veneer often slightly wider and thicker than optimum.

2. Moderate reshaping of tooth. Greater than 50% of veneer bonded by enamel.

Advantages- 90% of all cases have enough room to achieve an excellent result in color and arrangement. With excellent bonding technique no long term sensitivity and good long term bond strength.

Limitation- not reversible, roughly 10% of cases cannot achieve optimum shape, arrangement or color.

3. Heavy reshaping- less than 50% of veneer bonded by enamel. These are the Reshaping designs that cause most of the problems you read about.

Advantages- it is easier for the ceramist or dentist to achieve dramatic changes to shape, arrangement and color.

Limitations- decreased long term bond strength, more change of post treatment sensitivity, bonding more technique sensitive or demanding.

Veneers are made of one of four materials no matter what they are named.

1. Composite material.

There is different chemical composition of composites, but for this discussion I have lumped them together since this is not what patients are hearing about from advertising and the internet. Composite veneers are mostly hand made by the dentist in the patient's mouth in one appt. The teeth are shaped and then the veneer is layered, shaped and polished onto the patient's teeth. The result is dependant on the skill and artistic ability of the dentist. Composite tends to be slightly weaker than porcelain and on average can chip and stain more easily. This can be overcome by bite design, case selection and excellent polishing and finishing skills.

2. Pressed Ceramic (Porcelain)

This porcelain is stronger than feldspathic (stacked) porcelain but requires more thickness and therefore more tooth reshaping. It is monochromatic (one color) but can be customized by a skilled ceramist through cutting back and layering feldspathic porcelain to it to create a beautiful polychromatic veneer. I often select this porcelain for clenched and grinders whom we must add tooth length and the patient has a high smile line where natural esthetic requirements are high.

3. Feldspathic (stacked) Ceramic (Porcelain)

This porcelain is where the greatest master ceramists can display their artistic and natural beauty. All the color and intrinsic characterization is layered into the veneer giving the ceramist the greatest range of natural effects that a tooth can have in nature. This is my material of choice for patients who do little or no clenching and grinding, have a high smile line and have the highest esthetic standards for natural characterization. It can be made very thin. The limitation is strength, so case selection important, especially if lengthening teeth significantly.

4. Leucite reinforced pressed ceramic (porcelain).

This porcelain is stronger than the rest and therefore can be made thinner. It is monochromatic porcelain that depends on optic bonding properties to pick up colors of the tooth to be more polychromatic. It is designed to go with the no or

minimal reshaping technique since it can be very thin (.2 mm). To keep it thin, it would have less ability to alter color of the tooth, without giving up translucency of the tooth. This porcelain is patented and can only be made by the Cerinate design studio in California. The skill of the ceramist is dependant on who the cerinate lab hires. Independent ceramist or ceramist in other lab cannot use this system.

The following is a list of commercially available veneer systems that are advertised direct to the patients in the media and the internet.

Lumineers- are a leucite reinforced pressed ceramic (porcelain) made only by the Cerinate Design Studio of the Denmat Corporation. This is designed for the minimal or no reshaping technique. The benefit is that it is a reversible procedure requiring no needles or temporaries. It can be made to a thickness of only .2 mm, like a contact lense. Since it is advocated in the no –minimal reshaping technique the teeth are some what broader (.4 mm) and thicker (.2mm). and dramatic changes in color and shape are more difficult without making thicker. This is an excellent choose for the patients who are fearful of having their teeth reshaped but want some esthetic improvements.

Mac Veneers- This is a veneer made by Micro Dental Laboratory. They use predominately pressed ceramic made by Ivoclar called Empress but they also have some ceramists who are trained in stacked (feldspathic) ceramics.

DaVinci Veneers- This is a veneer made by DaVinci Dental Laboratory in California. This is the laboratory that made the veneers for Bill Dorfman DDS in the TV show “Extreme Makeover”. They make veneer predominately from feldspathic ceramic (stacked porcelain).

Empress Veneers- This is a pressed ceramic made by Ivoclar Corporation and sold to dental laboratories all over the world. There are other dental companies that make pressed ceramic but Ivoclar is the biggest and best know. Any ceramist can buy and use this system. I have discussed its strengths and weaknesses above in my discussion of pressed ceramics.

Feldspathic (stacked)Veneers- example is Durathins. These porcelains are sold to ceramists all over the world; one of the biggest producers is the Vita Corporation. I have discussed its strengths and weaknesses above in my discussion of feldspathic (stacked) porcelains.

In my office I use all four types of veneer materials depending on my patient’s desires, expectations and the material capabilities. Composite veneers are done by me with Cosmo dent Microfill and hybrid layering technique. My personal ceramists uses both customized pressed ceramics (empress) cutback for layered stacked porcelain over it for high strength cases a (clenchers and grinders) and Feldspathic stacked porcelain is my choice for non clenchers and grinders

because it's thinness, layering beauty and range of coloring and characterization. Our ceramists is on site for seating to make any changes desired on the spot although they are not often needed since our process predetermines this in the temporaries and wax-up stages. When a patient wants a no reshaping technique we use Lumineers from the Cerinate Design Studio in California since they are so strong and thin. In these cases we have to return the case if we want significant changes, but this is rare. The good news we do not have temporaries to deal with. If a patient wants us to use a laboratory like DeVinci or Micro Dental (Mac Veneer) we can. I would discuss this with each patient.

Veneers Process in Our office.

Composite veneers.

1. Examination and Digital Photos
2. Models made from patients impression. Patient critiques Digital images. Of proposed result. While patient is gone, Dr. Sowell does wax-up or mock-up. If needed.
3. Consultation. Patient previews mock-up or wax-up. And computer imaging.
4. Any needed gum treatment or bleaching done if needed.
5. Teeth shaped if needed and agreed to by patient and composite layered onto teeth, characterized, shaped and polished. S- Appliance made.

Pressed or Feldspathic Ceramic Veneers

1. Examination and Digital Photos.
2. Patient critiques digital images of proposed result. Models from patient's impression for wax-up taken.
3. Consultation. Previews if needed.
4. Any gum treatment or bleaching done if needed.
5. Teeth are shaped, impression taken, temporaries make and placed.
6. EVT- Esthetic verification of temporaries. First set of teeth. Photo and models of any needed changes.
7. Bonding of final Veneers, ceramist available for any changes desired on site. S-appliance made.
8. Follow up check of contours and bite.

Lumineers/ Durathins (no shape change) Veneers

1. Examination and Digital Photos.
2. Patient critique digital images of proposed result. Models from patient's impression for wax-up and assimilation (mock-up).

3. Cosmetic contouring and try-in of assimilation (mock-up), any needed gum treatment and bleaching if needed.
4. Final Impression
5. Try-in Final Bonding.
6. Contouring, separation, polishing. S- Appliance.