

Get Nailed At Home

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Understanding Nail Terminology

Many of us hear terms associated with nails and artificial nail enhancements that are either unclear in their definition, or they are confusing by their very nature. Many of these terms are chemically related, yet they can be simple terms to understand. This list contains terminology associated with natural and artificial nails, procedures, and a few product or additive definitions

Adhesive: A chemical that causes two surfaces to stick together

Allergen: A substance capable of producing an exaggerated or adverse reaction, such as sneezing, coughing, rash or irritation in sensitive individuals.

Allergic Reaction: Allergic reaction, or an allergy, is an adverse reaction to the body usually characterized by skin redness, itching, blisters and localized swelling.

Acrylic: A polymerized polymer coating... This coating is formed through the combination of an exact mix ratio of monomer to polymer

Bacteria: A single cell organism. Some bacteria are capable of causing disease.

Balance Point Positioning: Stabilizing your working hand on your other hand for steady control.

Breathing Zone. The two foot sphere around each person's mouth, from which all your breathing air is drawn.

Chemical: Everything you see and touch except for light and electricity

Contamination: To make impure, infected, corrupt, etc, by contact with or addition of something

Cuticle: True cuticle is the layer of translucent or colorless skin that is constantly being shed from the underside of the proximal nail fold.

Dehydration. To remove moisture from a surface, substance or object which will improve adhesion and help to prevent yeast, bacterial and fungal infections.

De-lamination: The peeling apart of two improperly adhered surfaces. Natural nails can de-laminate due to a lack of natural oil and moisture levels in the nail plate layers. Most often referred to as 'lifting'.

Dermis: The dermis is the bottom layer of skin. The surface of the dermis is grooved with many tiny channels, slits or tracks, upon which the nail moves as it grows.

Etch; The process of rendering a design on a hard surface (such as glass) by corroding its surface with acid. This term is often used to describe the filing process used to remove the surface shine from natural nails in preparation for a nail enhancement service. 'Etching' is usually accomplished by using a heavy grit file to remove the surface shine, and to disrupt the nail plate layers. Today's products do not require the use of this damaging method to ensure adhesion.

Epidermis: The epidermis is the upper most layer of skin. It is attached to the bottom of the nail plate and is ridged with tiny 'rails' that run in the same direction as the dermis grooves. The effect is much like a train riding on its tracks as it moves forward.

Flexibility: Determined by how much a substance will bend under force

Fungi: Fungi are microscopic plant organisms consisting of many cells, such as mold, mildews and yeast. Fungi are incapable of manufacturing their own food and behave as either parasites or saprophytes.

.Gel Nails: Gels are made by pre-joining some of the monomers into short chains called oligomers. Oligomers are single chains that are several thousand monomers long. Gels create rigid surface coatings and are usually cured by exposure to ultra violet light.

Hazardous Ingredient: Any substance which may be capable to causing physical or health related injury to an exposed individual.

Hyponychium; The hyponychium is that portion of the epidermis under the free edge of the nail.

Lateral nail fold: The lateral nail fold is the surrounding soft tissue around the sides of the natural nail.

Lunula: The lunula, or half moon, is located at the base of the nail. The area under the lunula is the front of the matrix. The light color of the lunula may be due to the reflection of light where the matrix and the connective tissue of the nail join.

Matrix: The matrix is that part of the nail bed that extends beneath the nail root and contains nerves, lymph and blood vessels. The matrix produces the nail and its cells undergo a reproducing and hardening process. The matrix will continue to grow as long as it receives nutrition and remains in a healthy condition.

Mold: Any of various fungous growths formed on the surface of organic matter. Mold is not a human pathogen.

Nail Bed: the nail bed is the portion of skin upon which the nail plate rests. It contains blood vessels that supply nutrients to the fingertip.

Nail Plate; The hard keratin coating that protects the fingertip and underlying tissue

Nail Root: The nail root is at the base of the nail and is embedded underneath the skin. It originates from an actively growing tissue known as the matrix.

Overexposure: Chemical hazards caused from prolonged, repeated exposure beyond levels specified as safe by regulatory agencies.

Prep: Prep contains chemicals such as Ethyl and/or Butyl Acetate, Isopropyl Alcohol and other ingredients. Prep is a temporary dehydrator and deep cleanser that will remove the moisture and some of the oils from the nail plate layers. It will disinfect the nail plate, is a pH balancer, and aids in physical and chemical bonding. The effects of prep will last approximately 30 minutes before the nails oil and moisture are replaced by natural means.

Sanitation: Sanitation reduces the number of pathogens or bacteria on a surface.

Sensitization: Sensitization is a type of allergic reaction in which the affected person becomes increasingly sensitive to the allergy causing substance through repeated and prolonged contact.

Sterilization: Sterilization completely destroys all living organisms on an object or surface.

Strength: The ability of a substance to withstand breakage under force.

Ventilation: To admit fresh air into a space in order to replace stale air.

Viscosity; The measure of a liquid's ability to 'flow'; related to the thinness or thickness of a liquid.

- **WHAT IS RULE NUMBER ONE IN ANY NAIL APPLICATION?**
- **NO BLOWING ON THE NAIL**

There are some simple yet serious rules to know about gel.

- a) It hardens as soon as it hits uv light.... Which means you absolutely **MUST** keep all your gels and your brush away from the light or it will harden. This also means the sunlight. So **PLEASE** be sure to move everything away from the light when you turn it on.
 - b) The secret to gels is thin coats. And cure thoroughly. Thicker is not better.
 - c) When using the file or the buffer to file and shape your nails, be sure to have the lid on the gel as if any dust lands in the jar it will potentially create nightmares for you, by leaving lumps on the nail, and you will have to begin your buffing all over to remove them, as any time you buff you remove the shine.
 - d) To remove the gel from the container, scoop a small amount out using only one side of your brush. Do not plunge the entire brush in as you will only be needing gel on one side of the brush, and it can also cause air bubbles to form and they will then be carried onto your nail.
 - e) Try not to be too fussy in your application, as you will be buffing later to smooth the nail.
 - f) If gel is self-levelling ... which means it will spread evenly over the nail. Which is why it's very important to apply thin coats, or it will run in to the cuticle, **STAY AWAY FROM THE CUTICLE**.
 - g) When you need to wipe your brush, its fine to wipe the excess gel back in to the jar... you certainly don't want to waste it. But when you want to wipe your brush clean on a pad, please gently wipe from side to side. Do not stab it onto the pad or you will damage the bristles.
 - h) Be sure to wipe all the excess gel from the rim of the jar before replacing the lid.
 - i)
- Never smoke, eat or drink near your products. Always store food away from chemicals and wash your hands before eating or going to the restroom. A cigarette lighter will produce a spark that may ignite flammable liquids and vapors. Coffee cups can easily collect dusts. Hot liquids, like coffee and tea, will absorb vapors right out of the air. Dusts can settle on your food, and your food can absorb the vapors



Chemicals

Treat all chemical products with respect. Don't be fooled by marketing terms like "nontoxic", "natural", and "organic."

Organic simply means the chemical contains carbon in its structure. Most things on earth are organic. Cow dung, poison ivy, and road tar are all 100% organic and natural.

Natural simply means "occurring in nature." Nature is a wicked place; filled with poisonous substances. Natural doesn't mean a product is safe, wholesome, or even better.

- *Don't judge a chemical by what it CAN do -- what's important is how easily you can prevent the potential hazard.*
Alcohol (in beer and wine) CAN cause liver damage -- if you drink a couple quarts a day for 5 years! It won't happen because you have a margarita with lunch.
- *There is no need to fear chemicals, just be careful and wise.*
Know your products, read and understand all product warning labels, and follow the manufacturer's application guidelines for all your products.
- *To reduce exposure to vapors, ventilate, don't circulate!*
Air-conditioning units are designed to circulate the existing air in a room. A ventilation system will 'remove' the existing air and draw fresh air into the room. Vented manicuring stations will help 'control' dusts and vapors, but only if the charcoal filter is changed regularly

Understanding Your Natural Nails

According to an article in Nailpro Magazine, the desire to have long beautiful nails first began during China's Ming dynasty (1368-1644), when aristocratic women grew their nails up to 10 inches long as a sign that they performed no manual labor. To protect their nails, they often sheathed them in gold or silver. Chinese men also grew long nails as a sign of their masculinity and to protect themselves from evil. Our fascination with long nails continues to grow, and has established nails as a multi-billion dollar industry.

Ask someone to show you their fingernails, and they will usually point to the nail plate; however, the plate is only one of the many parts that comprise the complete nail unit.

The Nail Unit

Proximal nail fold: means 'nearest attached end' and is the soft tissue that protects the emerging nail plate.

Lateral nail fold: Is an extension of the proximal nail fold and protects each side of the nail plate.

Eponychium is the visible part of the proximal nail fold that appears to end at the base of the nail.

Cuticle: The eponychium will shed a thin, colorless layer of skin that rides on the nail plate and appears to grow from under the proximal nail fold. It is this transparent skin, which is called the 'true cuticle', that is removed during the manicuring process.

Lunula: The opaque pale white 'half moon' at the base of the nail, and forms the emerging immature, plump nail plate cells. As these cells grow forward, they lose their inner material and become flat, hard and transparent.

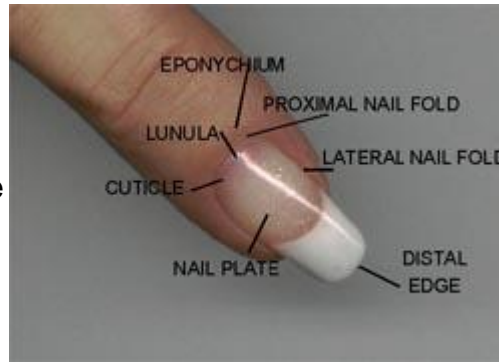
Distal Edge: The distal edge is commonly referred to as the 'free edge'.

Nail Plate: The nail plate is made of keratin protein formed by amino acids. These proteins are a strong, flexible material made from many layers of dead, flattened cells. Hair and skin are also keratin protein; however, they are much softer and more flexible.

Matrix: The matrix produces the cells that become the nail plate. The size, length and shape of the matrix determine width and thickness of the nail plate. It is the shape of the fingertip bone that determines if the nail plate is flat, ski-jump, arched or hooked.

Nail Bed: The nail bed is made of two types of tissue: dermis and epidermis. The dermis is the lower portion which is attached to the bone, while the epidermis lies just underneath the nail plate. The epidermis moves forward with the nail plate and is attached to the dermis by tiny 'rails and grooves' that allow the nail plate to move -- much like a train rides on its tracks. As we age, the nail plate becomes thinner and we see evidence of the 'rail and groove' as vertical ridges in the nail plate.

Solehorn: This type of cuticle is a layer of translucent, dead tissue that is shed from the seal between the nail plate and the hyponychium. It either sloughs off on its own, or is removed during the manicure process. This skin, if not properly removed, can become stained with nicotine and/or other chemicals and will give the appearance that the distal edge of the nail plate is discolored.



Hyponychium: Refers to the soft skin that is the distal end of the nail unit and the nail bed. It lies directly under the 'free edge'.

Onychodermal Band: This is the seal between the nail plate and the hyponychium. It is found just under the free edge and can be recognized by its glassy, grayish color.

Cutaway of the Finger

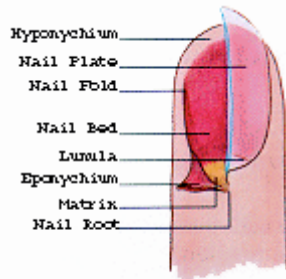


Figure 1

The Onychodermal Band is found in that portion of the nail where the nail bed ends. It cannot be seen on some individuals while it is highly prominent on others.

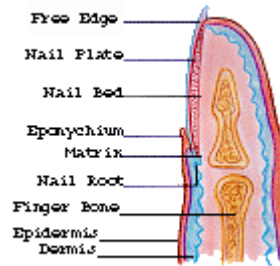


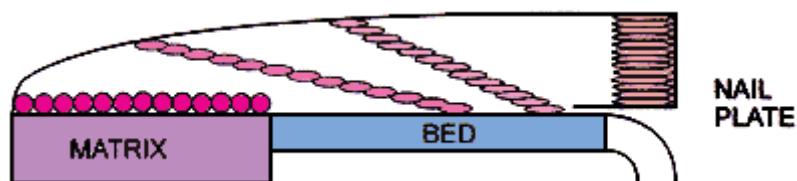
Figure 2

The shape of the nail plate is determined by the shape of the finger bone. In this figure, one can see that the nail plate follows the shape of the finger bone and the plate is fairly flat.

Photographs: Milady's Standard Textbook of Cosmetology

Nail Growth

The matrix, the *Mother of the Nail*, is the part of the nail unit that lies underneath the proximal nail fold just in front of the nail root. The leading edge of the matrix is seen as the lunula. The matrix cannot be seen on all nails, but is generally seen on the thumbs, index and middle fingers. The soft, plump cells that comprise the nail plate are developed in the matrix. As they grow out, they lose their inner material and become flat, hard and translucent. The oldest cells are the most compact, making the nail plate harder and denser closest to the free edge. The longer the matrix, the more cells it can produce, resulting in a thicker nail plate. Any damage to the matrix can be seen on the emerging nail plate.



The nail plate is held together by strong, interconnecting bands of protein fibers, and is kept flexible by a sticky residue of oils and moisture that constantly flow upward from the nail bed. When this residue transmits through the plate, it creates a matte shine on the surface of the plate. It is also the substance that allows the nail plate to bend and flex under pressure. The plate rides forward on the nail bed in a 'rail and groove' effect - much like a train riding on its tracks. As we mature, the nail bed produces less oil and moisture, and this rail and groove effect becomes evident as vertical ridges in the plate.

Many factors determine nail growth, and each fingernail will grow at different rates. Heredity and health determine how fast the nail plate will grow, although the growth slows as we age. People who use their hands a lot usually experience a

faster growth rate. The thumbnail will grow about 1 1/2 inches per year, and the left thumb will usually grow faster than the right. The index fingernail will grow the fastest, followed by the pointer and ring finger, which grow at almost the same rate. As a rule, the longer the finger, the faster the plate will grow. Nails also grow faster in summer than in winter, and faster during pregnancy. After pregnancy, the rate drops back to normal. Age also affects the growth rate with nail growth peaking between 10 and 14 years and slowly declining after age 20. Factors that slow nail growth include being immobilized or paralyzed, poor circulation, malnutrition, lactation, serious infections, psoriasis and certain medications. Some people erroneously believe that eating certain foods or using special creams, oils or lotions will increase the growth rate. Although the nail plate requires certain nutrients for proper growth, there is very little evidence that eating any particular food will cause them to grow faster. Creams, oils and lotions are sometimes sold as 'growth accelerators', although these claims are false, misleading and illegal. No cosmetic product may claim that it can alter or change any body function. These products and others are only for beautifying the nail plate, and only medical drugs can make such claims.

The Building Blocks

The nail plate cells are made of keratin which is a type of protein composed of amino acids. A protein can be thought of as a long chain that can be tied together like the rungs on a ladder to form a 'cross-link'. This cross linkage gives the nail plate strength, while the oils and moisture form the 'cement' that hold the nail plate cells together and keep them well lubricated, resulting in a strong, flexible nail.

We equate nail strength with hardness, though in actuality, nails are only strong if they have a combination of strength, hardness and flexibility. If something is strong, it simply means that it can withstand the forces meant to break it. A glass rod is strong, but can be easily broken. **Hardness** measures how easily the plate is dented or scratched. **Flexibility** determines how much the plate will bend. **Strength** shows how likely the plate is to break under force, and **Toughness** is a combination of these properties. The combination of strength and flexibility create the ideal nail plate.

Many factors can cause changes in the nail plate, resulting in lowered levels of strength and flexibility. For instance, water will absorb into the nail plate causing the cells to shift and change shape. Repeated or prolonged exposure to water can result in dry, split, brittle, or peeling nails.

Solvents will also have a drying effect, although the effects are only temporary. Repeated and prolonged contact with water (the universal solvent) or other household solvents can have a lasting effect on the nail plate, or result in irritant or allergic contact dermatitis from overexposure. The symptoms of these two types of dermatitis will generally manifest itself as red, swollen, irritated or itchy skin. Remove the 'allergen/irritant', and the symptoms will disappear. This is why nail technicians across the country recommend their clients wear protective gloves when exposing themselves to excess amounts of water or household chemical solvents (cleaners). Remember, everything we see and touch is a chemical except for light and electricity. Some chemicals are more hazardous than others, which is why reading the warning labels on the products we use and following the manufacturers instructions for safe use are imperative. Allergic contact dermatitis from overexposure to any potentially hazardous chemical will remain with us for life. Every time we expose ourselves to the 'allergen', an outbreak will occur

Tips on Glue / Adhesives

Cyanoacrylates

Certain types of cyanoacrylates are used as tip adhesives and are formulated differently. They are sensitive to moisture and work best when there is no air. Most set slowly or turn to a rubbery gel in the presence of air. When the air supply is cut off, the adhesive quickly sets. This feature is beneficial for the nail technician, allowing maximum working time and a quick set once the tip is properly placed. Thinner adhesives set faster, but this is not always good because extremely fast setting adhesives give lower strength. If you have a client whose tips just don't seem to hold or they separate in a few weeks, try a slower-setting thicker adhesive.

Thin adhesives work best if the tip to nail plate fit is perfect. If there is a gap between the tip as there generally is with ski-jump nails, nails with missing sidewalls, bitten or broken nails, then the thicker, slower setting adhesives will give the best retention. Thicker adhesives (gel adhesive) will fill in the gaps and irregularities and allow for a tighter bond. With gel adhesives, less is more. These adhesives usually contain dissolved methacrylate powder to give the bond more strength, especially in the gaps. Some adhesives contain special wetting agents which help improve nail adhesion, strength and clarity. Since these adhesives are not cross-linked, they are affected by moisture. Clients who frequently wet their hands should be warned that all cyanoacrylates are moisture sensitive, and should be instructed to wear gloves whenever possible. This is true of both adhesives and wraps.

Glue

The word "glue" is commonly misused -- especially in the professional nail industry. People often use this term to mean anything that is sticky. Glue is a name for a certain type of adhesive. True glues are adhesives made from animal protein, hide, bones and hooves. No professional nail adhesive is made from animal by-products, so it is incorrect to call them 'glues'. The proper term is *adhesive*. The professional nail industry uses advanced monomer adhesives, not *glue!*

Let's Start

Whenever we begin a painting on canvas, we always prepare our canvas by applying a coat of white primer. Why? Because it allows the paint to better adhere to the porous surface. This same principal holds true for nail enhancement coatings. In order for the products to properly adhere to the porous surface of the nail plate, one must begin with a clean nail.

This begins with simple hand-washing and scrubbing the nail plate to remove surface oils and other contaminants that interfere with proper adhesion. Nail scrubs will do much more than remove oils. Scrubs get rid of bacteria and fungal spores which lead to infections. Skipping this step is the major cause of nail infections, and can also cause enhancements to lift at the cuticle.

No Rough Stuff!!

One of the most dangerous misconceptions in the professional nail industry is that products don't stick unless you "*rough up*" or '*etch*' the nail plate. This is absolutely false and very harmful to your nails. Heavy abrasives strip off much of the natural nail plate, leaving it thin and weak. This leaves no supporting structure for the enhancements. Rough filing also damages the nail bed; it promotes allergic reactions and causes painful burning sensations, infections, loss of the nail plate, product lifting, and breakage. Thin nails are more flexible. This extra flexibility allows the enhancement to bend too easily, and creates invisible, hairline fractures that lead to breakage.

TIP - APPLICATION

1. Wash hands with anti-bacterial hand soap. Start with clean, dry nails.
2. Select the appropriate tip to fit the natural nail. When selecting tips, chose one that fits snugly (but not too tight). Too small of a nail will spring back up when it is pressed onto the natural nail, too large will tend to overlap the side wall and touch the skin. Try to find the best fit for each nail. You may file the sides or cut the tip for a perfect match. Now set them aside in the order from thumb to pinky. Be careful not to mix them up or you could put the wrong size on the wrong nail.
3. Gently push back cuticles with a Pumice Stick. It is necessary to ensure all debris and skin is removed from the nail bed or it will cause the product to lift.
4. File the free edge of your natural nail to a round shape. To remove any sharp edges

5. Using a clean fine/medium File, **gently** remove all surface shine from nail. **Do not over file; this step is just to remove surface shine and oils.**
6. Remove dust with dust brush. Be sure not to touch the clean and prepared nail with your fingers.
You need to keep the nail plate clean, dry and sanitized. Be sure not to contaminate the nail with bacteria or oils from touching them with your fingers. **NEVER BLOW ONTO THE NAIL.**
7. Spray a **Nail Prep** thoroughly on the nail and surrounding skin. Nail Prep disinfects and dehydrates the nail for better adhesion and to prevent mold and fungus). **** (IF YOU DO NOT HAVE nail Prep you can use alcohol)****

PLEASE READ THE FOLLOWING DIRECTIONS THOROUGHLY BEFORE BEGINNING TO GLUE THE NAIL TIPS ONTO THE NAIL. YOU MAY WANT TO PRACTISE THE APPLICATION METHOD WITHOUT GLUE A TIME OR TWO BEFORE ACTUALLY PROCEEDING WITH THE APPLICATION PROCEDURE. AS THE GLUE MOVES VERY QUICKLY AND DRIES VERY QUICKLY. THERE IS LITTLE TIME FOR ERROR.

8. Starting with the pinky nail tip. Hold artificial nail tip upside down, (by the tip of the nail, not the side with the groove) (in the opposite hand that you are placing the artificial tip onto), place a small amount of Get Nailed at Home Adhesive to the underside groove. Once you have deposited the small amount of adhesive into the artificial nail groove, Gently but quickly turn the tip over to position artificial tip onto the natural nail at a 45 degree angle so the free edge of the natural nail and groove of the artificial tip fit together. Press down onto the artificial nail surface pushing out air between the artificial tip and the natural nail. Hold for 10 seconds. Do not press down too firmly as that will cause you to squeeze out the adhesive, and the nail will not hold. Allow to totally set. You will be able to gently tug on the tip and it will feel secure and not come off. Apply to entire hand.



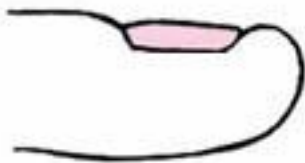
The Bitten Nail

Even though we all wish we had clients with perfect nails and cuticles, let's not forget about the nail biter client. While the biter is on a quest for order, the consistent 'chewing' perpetuates the cycle. Properly applied nail enhancements can help break that cycle.

We have all been witness to clients, friends, co-workers and/or family members whose fingernails look very much like this drawing. The free edge has been bitten to the point that the 'smile' line has become a frown. I suppose I'd frown too if I looked like this.

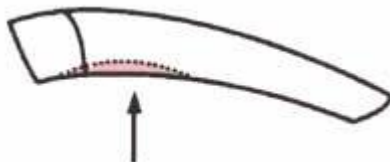


Looking at this type of bitten nail from a side view, one can see that there is a skin 'bulb' at the free edge that has 'puffed up' in a feeble attempt to protect what is left of the free edge from further biting. This skin can be tough and calloused from the trauma of biting.



When we attempt to apply a tip to this type of nail problem, pressure is applied to this skin 'bulb'. In an attempt to return to its normal shape, the skin can apply such force as to cause the enhancement to lift, crack or break. Some of us may even witness the enhancement 'pop off' with very little hand usage.

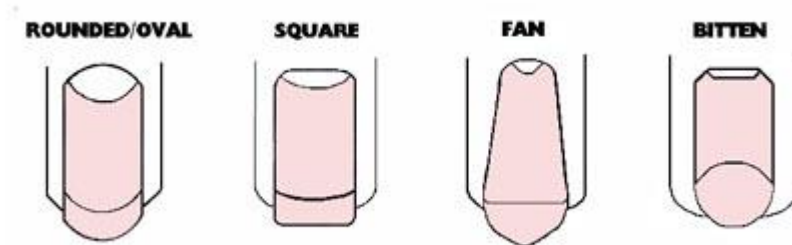
We can eliminate this problem by customizing the tip for a perfect fit not only to the nail plate length, but to the skin as well. By carving out the sidewall of the tip, it eliminates the area of pressure and the tip will ride over the skin much like a saddle on a horse. When customizing the tip, reduce the length of the contact area as well, so no more than 1/2 the length of the nail bed is covered with the tip. It is advisable to use a gel adhesive for air-tight retention of the tip to the nail plate.



After the tip is applied, shortened, blended; the natural nail should be cleansed, dehydrated.

9. With sharp nail clippers cut the tip to desired length. Cut one side first then the other. Do not try to cut the entire tip straight across, this may cause the tip to crack down the centre.

Assess your nail needs according to: Lifestyle, activity level, nail plate shape/configuration and fashion preference. Never build a nail that is 'too long' for the first time, or for a nail biter, or if you have small children, or a very active/sporty lifestyle. Nails that are too long will repeatedly crack and break resulting in unnecessary natural nail damage and valuable replacement time. The length of the nail bed needs to properly and structurally support the extension edge. If the edge is too long or improperly designed to the nail plate shape, service breakdown will occur. You will need to assess the nail plate shape and length to decide on the most flattering, long-lasting and complimentary look. The ideal free edge design will be a mirror image of the natural cuticle shape; i.e., an oval cuticle line = an oval free edge.



10. With a medium/coarse File, blend the plastic nail tip flush with your natural nail. You may file in one direction or back and forth. **(to avoid nail damage, be extremely careful not to file your natural nail.... Only the plastic tip)**

With clean medium/coarse File, file tips to desired length and shape.

- Nails that are *too long* for your lifestyle and activity level (repetitive downward tip pressure) result in service breakdown. If your nails become too long between appointments, shorten the length with the 240-grit file.

The higher the activity level, the shorter the enhancement should be. An active length = 1/4 the length of the nail bed. An average length = 1/2 the length of the nail bed, and a full fashion length equals the length of the nail bed. Extensions longer than the length of the foundation (the nail bed) will cause undue downward pressure with normal use of the hands and fingers which may result in a broken or torn natural nail plate.

11. If you will be applying product you need to take a medium/coarse File, remove all shine from the surface of the plastic tip. (This is an important step, as the product will not adhere to a shiny surface).

12. Remove dust with dust brush. Do not touch your nail bed with your fingers, this will cause a transfer of bacteria and oils onto the nail, and may cause the product to lift, or contamination.

Chemical Information

Most people believe chemicals are dangerous or toxic substances. Ask someone about chemicals and they might mention toxic waste dumps or factories dumping poisonous waste into streams. Actually, everything we see and touch is a chemical, except for light and electricity. Air is a combination of many chemicals; oxygen, hydrogen and nitrogen. Clean, pure mountain stream water is a chemical. A newborn baby's skin is 100% chemical.

Why do people only think of chemicals in a negative way? It is because of the dramatized and exaggerated images created by the media. These images are misleading and inaccurate. The truth is, 99% of the chemicals we come in contact with in our lives are completely safe and beneficial. Water is the most common salon chemical. Water can be very dangerous! In fact, it can kill you within minutes. Try sticking your head in a bucket full of water for 5 minutes. Foolish? Yes! Since we were very young, our parents taught us the potential hazards of water; it is dangerous to swim after a big meal or use a blow dryer in the bathtub, and not to drive fast on wet pavement. We all learned the rules, and the same holds true for salon chemicals. There are 'safe working' rules we must follow, or we will suffer the consequences. Every chemical can be safe and every chemical can be dangerous -- it's up to you!

No chemical in the world can be harmful unless you *overexpose* yourself. Every chemical substance has a safe and unsafe level of exposure. Exceeding the safe level of exposure is the danger we must learn to avoid!

Some chemicals are dangerous even in tiny amounts and are not suited for salon use. Professional products are formulated to be as safe as possible, though no nail product or other cosmetic product is free from all risks. A normally safe product can become dangerous if used incorrectly. Even gardeners and mechanics must follow safe working procedures.

Monomers and Polymers

Monomers are like Tinkertoys ®; they can be arranged and rearranged into almost unlimited combinations. Monomers can hook together into extremely long chains; each chain containing millions of molecules. Very long chains of molecules are called **polymers**. Polymers can be liquids, but they are generally solids. Chemical reactions that make polymers are called **polymerizations**. Sometimes the term *cure* or *curing* is used, but it has the same meaning. A **monomer** is a molecule that makes **polymers**.

It takes an *initiator* molecule to begin this chemical reaction. The initiator molecule touches a monomer and excites it with a boost of energy. Monomers prefer the quiet life; they don't appreciate too much excitement, so they look for ways to get rid of the extra energy. They do this by attaching themselves to the tail of another monomer, passing the energy along. When this reaction begins, monomer chains sprout up everywhere. They grow longer and longer, becoming knotted and tangled until they are a teeming mass of microscopic strings.

This game of 'tag' continues the chain of monomers becomes longer and longer until the growing polymer chain can't find anymore monomers. Once the monomer is all gone, the chain reaction stops and the polymer is formed, although the chemical reaction is not finished. The surface may be hard enough to file, but it will be days before the chains reach their ultimate lengths.

Cross-linking Monomers

A cross-linker is a monomer with 'arms'. Normal monomers can join only head to tail. Cross-linkers also join head to tail, but their extra 'arms' grow new chains. These cross-linking monomers join with other nearby chains and can link three or more chains. Cross links are like rungs on a ladder; creating strong net-like structures. Cross-links can also join many other layers of cross-linked nets. The result is a three-dimensional structure of great strength and flexibility. This is how many types of artificial nail enhancements are made

Shrinkage

All polymers shrink when they form, there is no exception in any nail product. Monomers don't normally touch each other and bounce around the container at high speeds trying to avoid other monomers. They join only when the conditions are right, and then they embrace very tight. Imagine billions of monomers suddenly coming closer together -- the effect is very noticeable. In fact, nail enhancement polymers shrink between 3-20% with some shrinking more than others. Excessive shrinkage (above 12%) causes many problems, such as lifting, tip cracking, and other types of service breakdown.

Initiators

Energy is the final key to understanding how monomers become polymers. All monomers need energy to make polymers. Initiator molecules control everything. They are the starting gun that begins the monomer race. Some initiator monomers gets their energy by only absorbing light energy while others absorb only heat energy.

Product Types

Light-cured products are energized into polymerizing by absorbing light energy, usually UV (ultra-violet) light. Not all light-curing products use UV light -- some have initiators that use visible light. Sunlight and even artificial room lights can start polymerization in the container.

Heat-cured products use the heat in the room and body heat to cause polymerization. Many monomers cure at room temperature, 68° - 74° F. Tip adhesives (also monomers) and wraps are examples. A few products require normal incandescent light bulbs -- these are not light-curing monomers. They are using the extra heat released from the light bulb and are still heat curing.

Allergic reactions

Allergic reactions to many types of cosmetics may occur when the skin is repeatedly exposed to small amounts of allergy causing ingredients. Dermatologists have a special name for allergy causing substances; they are called *allergens*. For example, pollen is a common allergen. In fact, most allergens are natural substances, (i.e. poison ivy, ragweed). Some ingredients used in cosmetics may also be allergens. Usually these ingredients are beneficial for the vast majority of people. However, just as there are people sensitive to pollens, some people are sensitive to cosmetic ingredients. Of course, the great majority never experience any problems. But, a smaller number of people may develop skin allergies when exposed over a period of time. Allergic skin reactions usually occur after several months (or years) of exposure to the ingredient's). It is important to understand that cosmetic related skin allergies usually don't happen right away.

Fragrance ingredients are the most common cosmetic allergens. In fact, sensitivity to preservatives (necessary for proper shelf-life) and fragrances account for most cosmetic-related skin allergies. Of course, other types of ingredients may also cause sensitive clients to develop symptoms such as redness, itching or other signs of irritation. Simple irritations usually reverse themselves when exposure is discontinued. However, symptoms may worsen with repeated exposure or could develop into skin allergies. Once skin develops an allergic sensitivity to an ingredient, the allergy will be permanent! When the skin's immune system recognizes an ingredient as an allergen, it never forgets and will always react negatively upon exposure. Clearly, all nail professionals should understand the importance of avoiding product overexposure.

Skin allergies can occur with any type of artificial nail enhancement. Often, the allergy begins as a slight itch or reddish area, or a spot that feels 'warm'. If the facial area is touched with contaminated fingers, the skin might become irritated near the chin or around the eyes. On the fingernails, if ignored and overexposure continues, these symptoms can become an annoying itch of the nail beds or water blisters around the cuticle area, sidewalls or fingertips. If ignored still, the symptoms might spread to hand or wrist. Luckily, all of this is easy to avoid - if you understand your products and use them wisely.

Which type of enhancement products can cause skin allergies? All of them can! But "can" is different than "will" -- in most cases, these allergies can be avoided and the nail professional is the key! UV gels, liquid monomers, wraps and tip adhesives share several ingredients capable of causing skin allergies. What's the reason for these skin reactions? In a nutshell, the culprit is *overexposure* caused by *prolonged* or *repeated* skin contact and usually many months, sometimes years of exposure.

For instance, a sticky, water-resistant product remaining on the skin for long periods may lead to overexposure via *prolonged contact*. Or, constantly touching uncured gel or liquid monomers on a brush handle may create overexposure by *repeated contact*. Touching the brush flags to the soft tissue of the eponychium, sidewalls or under the free edge are common ways of overexposing. No matter which type of enhancement product is used, each shares the same general requirement - they must be cured properly if they are to be used safely. In short, skin contact must be avoided with uncured gels, monomers, resins and adhesives.

Below are a few of the main reasons enhancement-related skin allergies occur and some useful tips for avoiding them.

Cause #1: UV gels are usually very sticky, adhering tenaciously to brush handles, tabletops and containers. This can make it more difficult to avoid prolonged and repeated contact. Also, UV light is required to harden the gel. The various types of bulbs (used in UV lights) quickly begin to emit less and less UV light. After a while, they don't produce enough UV light to properly cure the product. After 12-18 months (depending on your usage) these bulbs emit less than half the UV light of a new bulb - even though the bulbs continue to emit UV visible blue light. This often fools nail professionals. UV light is *invisible*, so you cannot see when the intensity is lower. Inexpensive UV bulbs (often with lower quality) may save a little money, but will leave uncured (un-reacted) ingredients in the product. On the other hand, some gels heat us excessively, causing you to jerk your hand from the light. Shortening the time under the light produces the same effect as using old UV bulbs - incomplete and improper cure of the enhancement. What's the result of incomplete cure?

Un-reacted ingredients can be left inside the enhancement. These are ingredients that normally would react and become a permanent part of the artificial nail. Un-reacted ingredients are usually fairly mobile. In other words, they can migrate through both the artificial and natural nail, until reaching the soft, living tissues of the nail bed. Such allergies often cause you to complain about "itchy" or "warm" nail beds.

Prevention: Avoid skin contact and keep implements and containers clean. Keep table area free of UV gel and dusts. Avoid laying your arm(s) in the dusts or where you wipe your brush. Freshly hardened dusts still contain small amounts of un-reacted ingredients.

Use only high quality UV bulbs from a reputable source and replace them often. Clean the bulbs after use to prevent dusts and/or product build-up. Apply thinner layers of gel to prevent excessive heat (exotherm). Thinner layers will allow the product to cure more completely. Don't shortcut the recommended time your hands are in the UV light and make sure they are positioned correctly by following the instructions provided.

UV or visible light-curing gels have been around for many years, but have recently gained popularity. Newer products are beginning to meet the tough demands of the professional nail industry.

The thickness of the gel coating has a great effect on the degree of cure. It is much better to use three or four coats rather than one or two thicker coats. Thinner coats allow more light to penetrate the layer, thereby reducing shrinkage. Shrinking is normal, but above 12% causes many problems, such as lifting, cracking and other types of service breakdown. Gel enhancement products shrink up to 20%. You can sometimes feel the effects of excessive shrinking, commenting that the enhancement may feel 'tight' or complain of throbbing and/or a heat sensation on the nail bed. These symptoms can occur immediately or up to 24 hours after application, and depends entirely on how much the gel shrinks. Excessive shrinkage is not only discomforting, it can cause damage or trauma to the nail bed. Excessive shrinkage can squeeze the nail plate, causing it to 'pop' free of the track that holds it to the nail bed. Once the separation has occurred, it easily travels farther up the nail plate and infection can occur in the space between the nail plate and the nail bed. Other causes of trauma are over-filing, heavy abrasives and high-speed drills, over-priming or wearing nails that are too long for your lifestyle, activity level and nail plate shape.

Shrinkage can be minimized by applying multiple, thinner coatings of gel. People with thin, damaged nail plates are easily injured by excessive shrinkage and other trauma. Keep the natural nail plate and surrounding skin healthy, and you are less likely to have problems. Always read, understand and follow the manufacturers instructions for proper preparation, application, curing and finishing of your gel product. The success of the application is entirely up to YOU!

GEL APPLICATION – OVERLAY ON NATURAL NAILS OR NAIL TIPS

(FOR NATURAL NAIL OVERLAY BEGIN HERE AFTER YOU HAVE ETCHED THE NAIL AND REMOVED ALL TRACES OF NATURAL NAIL OILS.)

1) Apply a thin layer of Gel - just enough to wet the nails not to run into the cuticle.) Carefully scoop a small amount of gel onto your brush, keeping one side clean by swiping it on the edge of the jar.

2) Apply a thin coat of gel over the entire nail plate beginning in the center of the nail and working the gel toward the free edge. Stroke the gel in much the same manner as a polish application, pulling the brush from the cuticle to the free edge. Seal the free edge by swiping your brush lightly across the free edge.

3) During application, be sure the brush hairs do not 'fan' out. If they do fan out, you are applying too much pressure and not enough gel will be left on the nail plate to allow for shrinkage during the curing process, and the result will be tiny 'craters' where the gel has pulled away during the curing process. Should this occur, re-apply a thin coat of gel making sure to apply less pressure. Do not over-work the gel as this will result in air bubbles and/or an uneven curing.

4) Repeat this process on all five fingers of the hand. Before curing, check your work again to be sure the entire nail plate is evenly covered with a thin layer of gel. Check the cuticle and sidewall lines to be certain that no gel is touching the skin, and if so, remove it with an orangewood stick. Be sure you have left a tiny margin all around the cuticle and sidewall line free of product, to allow for proper shrinkage and to prevent repeated and prolonged contact with sensitive skin.

5) Cure for 2 minutes. Do not remove the sticky residue or dispersion film.

6) Apply a second layer of Clear gel, a little heavier than the first layer, be sure to avoid the cuticle area and pull the gel completely over the tip. Cure in light unit for 2-3 minutes

- 7) Apply a third thin layer again avoiding the cuticle area

- 8) Remove from light unit and wipe off the sticky dispersion film with pad saturated with Gel cleaner. This will remove the sticky 'uncured' layer on top of the enhancement, even though the nails will still feel slightly tacky which is normal.
Inspect nails for an even surface, and if 'craters' are evident, apply one thin layer of gel and cure.

- 9) Your nails should feel even and smooth. At this stage you can apply cuticle oil to the cuticle area, Nails are complete.

- 10) Inspect nails for an even surface, and if 'craters' are evident, or if *nails are a bit uneven, you may wish to buff the top (slightly) in a type of "rolling over the nail" motion with the soft side of the file or the white cube buffer. DO NOT OVER FILE.*

- DO NOT TOUCH THE TOP OF THE GEL NAIL WITH ANYTHING, AS YOU WILL DEPOSIT DEBRIS OR OILS ONTO THE NAIL, WHICH WILL CAUSE THE FINAL TOP COAT TO GO ON UNEVEN OR YOU WILL HAVE BUMPS IN IT. DUST REMAINING POWDER COMPLETELY AWAY WITH YOUR DUST BRUSH.**

- 11) Once nails are completely free from all residue, apply another coat of clear gel.

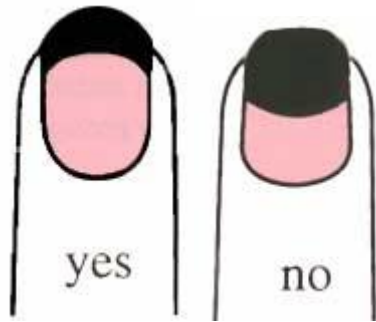
- 12) Cure for 2-3 minutes and nails are complete. Wipe film

- 13) Apply gel to the other hand following the previous procedures.

White Gel as a Frosted Manicure look,

Follow steps 1-12 from natural tip application, then begin here on clean, sanitized, etched nails (nail tips)

Frosting 1) Paint a thin layer of white on the free edge of the nail, in the area you wish to have white.



Frosting 2) Wipe excess gel from your brush onto a clean paper towel.

Frosting 3) Coming from one side of your nail swipe the gel from behind, in one complete sweeping motion to create a half moon look or what is called a “smile line”.

UNTIL YOU GET GOOD AT APPLYING THE WHITE, I RECOMMEND YOU DO ONLY ONE NAIL AT A TIME SO THE GEL DOES NOT MOVE.

Frosting 4) Cure for 2 minutes under light.

Frosting 5) Remove from light, there will be a dispersion film on the nail. **DO NOT REMOVE IT.**

Frosting 6) Continue with step 1 – 13 (gel application) by applying the clear gel directly over the white.

Application Instructions for Gel Fillings.

1. Remove polish. Wash and dry hands.
2. Push back cuticles with Pumice Stick.
3. With a clean fine/medium File, file the entire surface of the nail. Blend in around the cuticle until the artificial nail is flush with the natural nail. Be sure to remove any signs of lifting. Be sure to remove all surface oils and debris as this can cause lifting and contamination.
4. Shorten, if required, and reshape. Remove dust with dust brush.
5. Apply a thin layer of Clear Gel - just enough to wet the nails (not to run into the cuticle.) Cure for 2 minutes. Do not remove then sticky residue or dispersion film.
6. Apply a second layer of Clear gel, a little heavier than the first layer, be sure to avoid the cuticle area and pull the gel completely over the tip.
7. Remove from light unit and wipe off dispersion film with pad saturated with Gel cleaner.
8. Your nails should feel even and smooth. At this stage you can apply cuticle oil to the cuticle area, Nails are complete.

11. If nails are a bit uneven, you may wish to buff the top (slightly) in a type of "rolling over the nail" motion with the soft side of the file or the white cube buffer. **DO NOT OVER FILE.**

DO NOT TOUCH THE TOP OF THE GEL NAIL WITH ANYTHING, AS YOU WILL DEPOSIT DEBRIS OR OILS ONTO THE NAIL, WHICH WILL CAUSE THE FINAL TOP COAT TO GO ON UNEVEN OR YOU WILL HAVE BUMPS IN IT. ONLY DUST REMAINING POWDER COMPLETELY AWAY WITH YOUR DUST BRUSH.

12. Once nails are free from all residue, apply another coat of clear
13. Cure for 2-3 minutes and nails are complete.

For Frosted Fill ins..... you must file the white off completely and Follow steps 1-4 then begin here

Frosting 1) Paint a thin layer of white on the free edge of the nail, in the area you wish to have white.

Frosting 2) Wipe excess gel from your brush onto a clean paper towel.

Frosting 3) Coming from one side of your nail swipe the gel from behind in one complete sweeping motion to create a half moon look or what is called a "smile line".

Frosting 4) Cure for 2 minutes under light.

Frosting 5) Remove from light, there will be a dispersion film on the nail. **DO NOT REMOVE IT.**

Frosting 6) Continue with step 5 – 13 by applying the clear gel directly over the white.

Removal of Gels

Nail Enhancement Removal

A common myth is that enhancements should be taken off every few months to let the nail plate 'breathe'. There is no scientific evidence to support this notion. Nail plates do not require time to breathe, nor are they *capable* of breathing. Each time product is removed and reapplied, the underlying nail plate becomes thinner and weaker. This is especially true when the enhancement is picked or pried from the nail plate. Improper removal is a crime against the client's nails. It is a major reason for natural nail damage as these are *not* gentle techniques. Each of these techniques will rip up layers of natural nail plate. You must take your time or the client's nails will suffer the consequences.

Cross-linking makes enhancements more resistant to solvents in nail polish and polish removers. Unfortunately, it also makes product removal more difficult. Only uncross-linked polymers dissolve in solvents. Cross-links prevent the enhancements from dissolving. Then, how is the product removed? The solvent swells the polymer network until it breaks into chunks. The same effect is seen when a roll of paper towels is put into a bucket of water. It will break up even faster if you poke it with a stick. The enhancement will also swell more quickly if the solvent is slightly warm. Warming the solvent can cut product removal time in half.

Most gel products are difficult to remove because they are highly cross-linked and resistant to many solvents. Usually, the product must be filed from the nail plate. This can damage the plate and underlying bed if not performed with care. The heavy consistency often causes gel users to apply the product too thickly. This creates unnatural and unsightly enhancements and makes removal very difficult. Gel enhancements should only be removed when it is absolutely necessary as gel removal is a time-consuming process.

If you must remove gel enhancements, use the following guidelines:

- Slowly file (not drill) the enhancement with a medium-grit file, leaving a very thin layer of product. Do not file all the way to the natural nail plate.
- Soak in warm product remover.
- Once softened, scrape the remaining product from the nail plate with an orangewood stick.

Home care

- Repetitive or severe pressure on the nail extension will lead to cracks that result in full-blown breaks. Treat your nails as *jewels*, not *tools*!
- Properly applied product will shrink when cured and create an airtight seal. Mechanical forcing of product through extreme pressure, picking or nipping rough edges will result in lifting. Use a 240- grit file to remove rough edges or blend any lifting into the natural nail plate. Holding the file flat to the area of lift, gently file in the direction of the lifted material until the area of lift is removed. *Do not over-file!* Over-filing removes vital nail plate layers and will weaken the natural nail foundation. To re-seal the product, massage a drop of oil into the nail surface, then buff to a dull shine with the 360-grit buffer. You may also choose to buff to a high shine with a 3-way buffer.

- When changing polish between maintenance appointments, remove polish with regular polish remover and a lint free cotton or gauze wipe. I have never recommended the use of non-acetone polish remover as it requires more time to soften polish, thereby remaining on the product surface, softening and weakening the surface layer. After the enamel has been removed, wash hands and scrub nails with a soft nail brush. Apply cuticle oil to the product surface and massage into the cuticles and overlay. Using the 360-buffer, buff the oil into the nail surface to re-seal the product. Buff to a high shine with a 3-way buffer or apply one thin coat of base coat, two thin coats of enamel and a thin application of topcoat, allowing the layers to dry between coatings.
- Fungus infections (Greenies) are caused by air-borne spores (pseudomonas bacterium) that have become trapped between the overlay and the nail plate layers. These spores require food to eat and moisture to grow. The nail plate layers contain contaminants along with the natural oil and moisture. Should any lifting occur between visits, buff away the area of lift. *Do not attempt to glue the area of lift.* Most *instant* glues are *not* moisture resistant. Instant glue also sets-up the instant it is exposed to air. The glue cannot 're-seal' lifted material and may incorporate air-borne bacteria or spores into the area of lift. The bacteria or spores will be trapped between the nail plate and the overlay, utilizing the natural nail contaminants as food and the moisture to grow. The results are a greenish to brownish stain on the nail plate which is a by-product of the infection. Should any area of lift be too large to remove by filing, or visible discoloration is present, please call for a nail repair appointment.
- To prevent the spread of communicable or infectious disease, never share your files or implements with others, whether at home or in the salon.

Your personal implements can be purchased through several different outlets: An 'over-the-counter' beauty supply, drug or department stores or from your salon. Sanitize files and implements after every use in an approved sanitizing solution, rinse well, dry and store in the container. . keep them in a clean, dry storage container between uses

- Wear gloves when performing household chores, working in the garden or whenever you use cleaning solutions of any kind.

Most household cleaning solutions contain chemicals that will affect the overlay and result in service breakdown. Some household pest sprays contain a chemical that may actually melt the surface of the overlay and compromise the integrity of the product.

WARNING:

DO NOT SWALLOW.

KEEP AWAY FROM CHILDREN.

DISCONTINUE USE IF SENSITIVITY OCCURS.

KEEP AWAY FROM EYES.

ONLY USE IN WELL VENTILATED AREA!

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