

Gel Manicures and Pedicures

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While gel systems for manicures and pedicures have been available for more than three decades, their recent popularity is driven by technological advances in the current (fifth generation) version of these systems, making them easier to use, faster, and safer than ever.

What's So Great About Gels?

The features and benefits of modern gels are many.

Gels wear considerably longer than nail polish, requiring fewer trips to the salon, allowing for greater intervals between applications, and saving precious time for busy women. Gels typically stay on for two to three weeks, needing attention only, or largely, because of the natural growth of the nail near the cuticle.

Further, gels are significantly more durable than nail polish and highly chip-resistant, even for those who work with their hands.

Gels not only wear longer and are more durable, but they dry instantly, so that smudges, track marks, and ruined manicures and pedicures are largely things of the past. The instant-dry feature is an especially big boon to women in cold and snowy climates who can now slide into warm boots or shoes without waiting for their nails to dry.

In addition, today's gel systems afford women a rich and varied choice of shades, comparable to the broad range of offerings available for nail polish.

Modern gels also dry quickly to a shiny, enduring high gloss finish.

And, unlike acrylics or even polishes, pure gel systems have no smell associated with their application.

Lastly, but, very importantly, this newest generation of gels goes on, and comes off, more easily, and is dried or cured, more quickly. But, more about these features later.

What Are Some Uses of Gels?

Most gels are applied over the natural nail to create a gel coating. However, gels can also be applied over nail tips. Moreover, they can be applied over nail appliqués to create a shiny surface or longer wear time. Lastly, gels can be used as nail art to create intricate shapes and designs.

How Are Gels Different From Nail Polish?

Gels are nail "enhancements" that "build up" the nails. Nail polish is a simple thin, film coating. Gels have different features and properties than nail polish. Nail polish is more easily and

quickly applied, and more easily removed, than gels. For someone who wants to change colors every day or two, nail polish is a better choice than gels.

Are Gels for Everybody?

While gels have many advantages, there are reasons why some may choose not to use them. Further, like other nail enhancements, gels are not recommended for children.

Gels services in salons, and gels, in general, can cost significantly more than traditional manicures and polishes. Moreover, while the time it takes to apply gels has decreased substantially with each new generation, it still takes longer to complete a gel manicure than, for example, a quick nail polish change. Moreover, the removal process for gels is less convenient than a simple wipe with a remover to take off nail polish.

What are Gels?

Gels are made by several manufacturers and come in many varieties. Some of the products called “gels” are “pure” gels, while others are, in fact, “hybrid” systems that combine gels and nail polishes. Gels are activated when exposed to ultraviolet (UV) light. Since gels can cure prematurely in light, they are sold in opaque containers. Heat can also initiate polymerization or curing and, therefore, gels should be kept away from heat, as well as light.

Not unexpectedly, traditional gels have the consistency of a gel, or toothpaste, and are packaged in tubes or jars. Such gels are applied to the nails with a long-handled, specialized brush. Many of the newer gels, however, come in bottles that resemble nail polish bottles and are applied with a nail polish-type brush attached to the cap, inside the bottle. The viscosity (thickness) of these more modern-day gels is lower than the more traditional gels. While the lower viscosity gels may be applied more easily, both types of gels continue to be popular today since certain special effects, such as some glitters, and certain shades, especially lighter ones, may be more easily achieved with the more traditional, higher viscosity gels.

Gels contain three primary ingredients—pre-polymers, light initiators, and colorants. The backbone of gel systems are pre-polymers, urethane (meth)acrylates. These (meth)acrylates, derived from building blocks called monomers, are color-less, sensitive to light, and cure, or polymerize, when exposed to light. Photo-initiators or accelerators are added to the formula to initiate and speed the curing process. Lastly, a colorant, such as a pigment, or, in the case of a hybrid system, colored nail polish or dispersant may be added to the gel.

What are the Key Gel Products?

Gel systems contain three distinct products—a base coat, a color coat, and a top coat.

The base coat, which is applied first, promotes adhesion to the nail, or surface, to which the gel is applied. After the base coat, a color coat, or two, is added, if a color is desired. Lastly, a clear top coat is added to create shine. Gels can also be applied without a color coat, utilizing only a base and a top coat, or can be applied without a top coat, depending on the desired look. As with all nail care products, skin contact should be avoided due to the potential of gels to cause sensitization or allergic-type reactions. If gels find their way to the skin surrounding the nail, the

gel should be immediately wiped clean or removed by use of a bamboo stick or other means. Also, if any sensitization or irritation occurs, use should be discontinued immediately.

How Are Gels Applied and Removed?

Before applying the base coat, in order to promote adhesion it is important to cleanse, dehydrate, and remove oils from the surface of the nail with alcohol or a similar product. Some gel systems require light buffing, or light filing, of the surface of the nails before applying the base coat. Others do not. It is important to read the manufacturer's instructions and Material Safety Data Sheets (MSDS). Users should avoid aggressive filing of the nail surface, or the use of electric drills, in preparing the nail surface since such actions can weaken or harm the natural nail. Further, gels are never appropriate for thin, weak or damaged nails or cuticles.

Between each coat of gel, the hand, or foot, is alternately placed inside a light, or lamp, which, when activated, by a switch, touch, or other means, turns on and "cures" the gel. After the specified time, on most machines, the light will automatically turn off. Like with gel products themselves, there are many sizes and types of gel lamps available. Some are large enough to accommodate five digits at a time; others may cure only a single finger at a time. The type of light source also varies. Traditionally, gel lamps have contained two or four fluorescent or UV bulbs to cure the gels. More recently, LED lamps have begun to appear. The cure time for each system and each lamp varies by manufacturer. The required time for curing each coat typically ranges from one to two minutes per coat in the more traditional gels and lamp systems to 15 to 30 seconds per coat in the newer gel systems and LED lamps. If the user experiences any heat or discomfort from the light, the hands or feet should be withdrawn immediately.

Like the application of gels, the process of removing gels from the nails will vary by manufacturer. It is important to read the manufacturer's instructions and MSDS sheets. Generally speaking, gels should be removed every two to three weeks. The longer gels stay on, generally, the harder they are to remove. Also, glitters can add to removal time. Again, as with preparation of the nails for the application of gels, aggressive filing, or the use of electric drills, on the nail surface in removing gels should be avoided since such actions can damage the natural nail. Some of the manufacturers of the more traditional gel systems suggest that the nails be soaked in acetone to facilitate removal of the gels. While acetone is perfectly safe, it can dry or irritate the skin. More recently, many manufacturers have developed foils, or wraps, with small, precise, nail-sized pads that will absorb acetone or other nail polish removers and are then wrapped around each nail for 15 to 30 minutes. These removal wraps tend to be gentler, and less harsh, on the nail and the surrounding skin.

How Safe are Gel Systems?

Gels have been on the market for over three decades without any significant issues. Moreover, today's gels are better, faster and safer than ever.

The primary building blocks of gels are urethane (meth)acrylates. These are in wide use in many industries and in many applications, including ones used by physicians, dentists, and surgeons. After thorough study and review, the Expert Panel of the Cosmetic Ingredient Review (CIR), based in Washington, D.C., found the monomers responsible for the polymerization of gels to be "safe as used" in nail enhancements. In reaching its conclusion, the CIR, however, cautioned

that skin contact should be avoided due to the potential for sensitization or allergic-type reactions.¹

Insofar as the lamps for gel systems, again, today's lamps are better, faster, and safer than ever. While the lamps emit UV-A and UV-B rays, the amounts are very low, especially given the infrequency of exposure (every two to three weeks) and the short exposure intervals for each coat.

The typical exposure time for even the more traditional lamps is only one to two-minute intervals per coat. Moreover, traditional lamps typically utilize only two (or sometimes four) UV bulbs of only 9-watts each. These bulbs contain special internal filters which remove almost all of the UV-B. The amount of UV-B to which a client is exposed from gel lamps is about the same as spending 17 to 26 additional seconds in sunlight each day of the two weeks between appointments.² The resulting exposure to UV-A is the equivalent of spending 1.5 to 2.7 additional minutes in sunlight each day between salon visits, the amount of time it might take to walk to a car.³ Further, today's more modern LED lights and gel systems require only 15 to 30 seconds per coat and result in even less UV exposure.

Some critics have unfairly compared gel lights to tanning beds. Tanning beds typically have twelve individual 100-watt bulbs. Moreover, tanning beds contain internal reflective material on large surface areas intended to increase exposure. Also, tanning bed users often utilize these devices more frequently and for much longer durations.

How Can I get More Information on Gels?

If you need more information or have questions, contact the manufacturer of the gel system you are using.

¹ Final Report of the Safety Assessment of Methacrylate Ester Monomers in Nail Enhancement Products, *International Journal of Toxicology* 24 (suppl 5):53-100 (2005) *available at* http://ijt.sagepub.com/content/24/5_suppl/53.abstract

² Do UV Lamps Emit Unsafe Levels of Ultraviolet Light?, D. Schoon, P. Bryson, and J. McConnell (2010) *available at* http://probeauty.org/docs/nmc/UV_Lamp_Letter.pdf

³ Id.