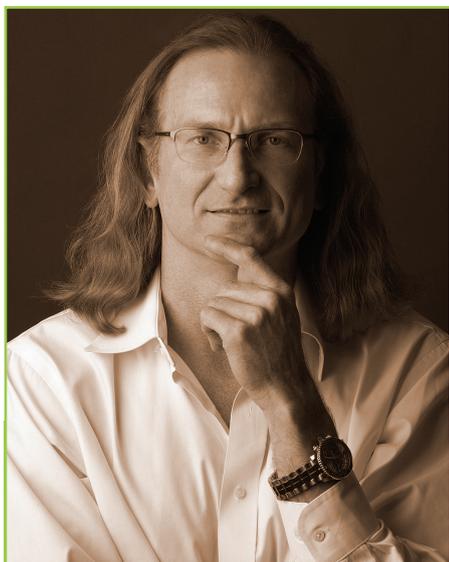


THE SCI-FILES



DOUG SCHOON

Doug Schoon is an internationally recognised scientist, author and educator with over 30 years' experience in the cosmetic, beauty and personal care industry. He is a leading industry authority known for his technical and regulatory work and is co-chair of the *Nail Manufacturers Council (NMC)*.

Doug was CND™'s chief scientist and head of the R&D laboratory, QA, and field testing/evaluation departments for almost 20 years and has authored several books, video and audio training programmes, as well as magazine articles about salon products, safety, and practices for salon professionals.

In 1986, Schoon founded *Chemical Awareness Training Service (CATS)* – the beauty industry's first safety training company. This was followed by his book, *Nail Structure & Product Chemistry*, 1st and 2nd Edition, which has become essential reading for nail professionals. More recently, he has launched *Face-to-Face with Doug Schoon*, an internet learning series that focuses on nails, nail products and services.

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Watch Doug's internet series on nails, nail products and services at www.facetofacewithdoug schoon.com

Globally renowned scientist and nail expert, **DOUG SCHOON**, explores the ideas and concerns surrounding nails, techniques and products

THE EXPLORATION OF POWDER GELS

get a lot of questions about products that look like a gel when applied, but are then dipped into a powder. These are called 'powder gels', but this same name is used to describe two different types of nail coatings. In other words, there are two different nail services that are both considered 'powder gels'.

One example is when the surface of a UV gel coating is sprinkled with acrylic powder before UV curing. Why is this done? This isn't likely to enhance any of the properties of a UV gel coating, or make it any more durable. Some claim this makes the nail coating more susceptible to solvents and therefore easier to remove.

Using UV gel in this way is an improvement over original 'dip powder' systems that were first popular in New York City salons during the early 1990's. Versions of this original dip system are still in use today.

Originally, salons began applying cyanoacrylate adhesives (glue) to the nail plate, after which the entire finger was dipped into their acrylic powder used for L&P enhancements. These are non-UV curing systems and were called 'dip powder' systems. They are mostly based on cyanoacrylate monomers, which are members of the acrylic chemical family. Cyanoacrylate nail coatings lack strength and durability and break down quickly. Cyanoacrylate monomers link together to form hard polymers, so why do they break down so readily? Cyanoacrylate based polymers are highly sensitive to water and moisture and don't last long when repeatedly or excessively exposed in any fashion. That is why the newer powder systems rely instead on UV gels, rather than cyanoacrylate monomers.

UV gels are mostly based on urethane acrylate resins, which are also members of the acrylic chemical family. Both urethane acrylate and urethane methacrylate resins form hard polymer nail coatings that are much more water-resistant and durable than cyanoacrylate-based nail coatings.

Despite some limitations, cyanoacrylate monomers (aka resin) are great for many purposes in nail salons, including when creating fibreglass or silk nail coatings. Modified

cyanoacrylates are used as 'glue' to adhere artificial nail tips or decorative objects to the natural nail. Cyanoacrylates are extra sensitive to moisture and solvents as they don't form cross-linked polymer structures upon curing.

Examples of cross-linked nail coatings are two-part monomer liquid/polymer powder and UV cured nail coatings. Cross-links between the polymer chains make nail coatings highly resistant to attack by water or other solvents. Exposures to warm water, such as in hot baths, will accelerate the breakdown of cyanoacrylate nail coatings and adhesives.

Fibreglass or silk material is embedded into the cyanoacrylates monomer to increase the strength and durability of the nail coating. In contrast, dip powder systems replace this material with acrylic powder to provide some additional strength. Without using fibreglass, silk or acrylic powder, cyanoacrylate nail coatings are not nearly as durable and would make poor nail coatings.

In my opinion, it is a big negative for dip powder systems to require clients to dip their fingers into a powder as this is unsanitary. Salons that dip multiple clients' fingers into the same powder have an increased risk of transmitting an infectious microorganism that can lead to an infection.

If your region has regulations against 'double dipping' into cosmetics, then a powder dip system may be in violation of those regulations. Some of the newer systems wisely suggest that the acrylic powder is sprinkled over the top of the nail instead. I don't recommend dipping multiple clients' nails into the same powder, especially given that many salons don't require clients to wash their hands or nails before receiving a service.

Finally, it is a myth that some cyanoacrylates release formaldehyde when they undergo service breakdown. This is extremely unlikely to occur in the salon setting. Cyanoacrylates in general are considered safe for salon use. I do believe any of these types of nail services are generally safe when properly used, but nail professionals should always perform their nail services in a sanitary fashion and this responsibility should be their first priority. 