



UNDERSTANDING YOUR ADHESIVE – A GUIDE FOR EYELASH EXTENSION TECHNICIANS



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Adhesive 101

Eyelash Extension adhesives are all currently Cyanoacrylate based. The primary ingredient is usually Ethyl (but sometimes Methyl) Cyanoacrylate.

Thickeners, fillers (e.g PMMA), stabilisers and colourants (e.g. Carbon Black) may also be added during manufacture to change colour, reduce brittleness, increase flexibility, improve shelf life etc.

The colour, drying times, consistency and bonding abilities depending on the formula used in manufacture.

Cyanoacrylate adhesives are acrylic resins that require water or moisture to polymerise or cure (transform from a liquid to a solid /harden). When you apply adhesive to a surface, it reacts with any moisture on the surface it is applied to (adherents) and in the environment (humidity).

Alkalines and alcohols increase the polymerisation rate.

In addition to being used for bonding Eyelash extensions, Cyanoacrylate adhesives are used:

- in the nail salon industry
- for industrial purposes
- in woodworking
- for hobby and model building
- in forensics (finger printing).

N-Butyl or Octyl Cyanoacrylates are usually used in the medical and veterinarian fields.

The first Cyanoacrylate adhesive was sold in the late 1950's by Eastman Kodak.



TLDR Checklist for best bonding, retention and minimum vapour/irritation

1. Surfaces to be bonded (aka natural lashes) are cleansed, rinsed and dried before application.
2. Humidity and temperature of your working area (environment) are within the ranges recommended for use of your product by your supplier.
3. Working area (environment) is well-ventilated.
4. Adhesive product is 'fresh'. Adhesive dispensed from bottle is not stringy or gloopy or developed a skin.
5. Adhesive layer between the extension and natural lash is as thin as possible.
6. Extensions are bonded tightly and securely, working from zone to zone, eye to eye at a speed appropriate to your adhesive drying time.
7. Lashes and eye area are gently cleansed, rinsed and dried at the end of treatment to remove any residue.

Summary:



Result = stronger bonds, better retention and less chance for irritation.

Adding a cleaning step at the end of treatment further reduces the chance of irritation.

The Nitty Gritty

1. Why you should ALWAYS cleanse, rinse and dry your client's lashes before beginning eyelash extension application.

Natural oils, makeup, shampoo/conditioner or soap residue and dust/particles in the air can all settle on the natural lash and interfere with the bonding process. If the surface is not clean, your adhesive will not bond the eyelash extension to the natural lash properly.

In addition, PH matters. PH refers to the acidity or alkalinity of a solution:

- ❖ The natural PH level of skin and hair is usually around 5.5
- ❖ A PH level of 0 to 6.9 is considered acidic. Shampoos and conditioners are usually slightly acidic (between 5 & 7), as is saline solution (5.5).
- ❖ A PH of 7 means a solution is neutral, such as distilled water.
- ❖ A PH level of 7.1 to 14 is considered alkaline. Soaps are usually alkaline.

Acidity slows down adhesive curing and delays forming from liquid to solid. A PH level between 5.5 and 7 won't have any significant impact.

Alkalinity speeds up adhesive curing, sometimes affecting the strength of the bond or causing curing before the two surfaces have a chance to bond together.

Even if your client arrives at your salon fresh from the shower and free of makeup, you need to cleanse your client's lashes before you begin eyelash extension application. This ensures you have complete control of the surface condition. Always rinse well and dry the lashes after cleansing and before starting treatment.



Did you know?

Products such as permanent colours, perming lotions and straightening cremes are alkaline based. This is why technicians who work in a hairdressing salon can sometimes have issues with their adhesive bonding and retention. Good ventilation can help to address this issue.



2. Why Humidity and Temperature in your work area matters



Generally, the higher the relative humidity (RH) in the work area, the faster your adhesive will cure. However room temperature also influences the curing process. For example, if humidity is low, but temperature is higher, trying to bring your humidity level up by introducing additional moisture could cause the adhesive to cure too quickly.

Understanding the relationship between temperature and humidity can help you to deal with issues controlling your environment.

Why you need to monitor your environment

Different adhesives perform better in different humidity levels and temperature. Using your adhesive in the correct environment for your particular product will ensure it performs consistently and cures quickly and correctly.

You can measure and monitor temperature and humidity in your room with a Two in One Thermometer and Hygrometer. These are easily obtained from your hardware store or online.

When you know what your current temperature and humidity levels are, you can take action to bring them up or down if needed or adapt your application process to compensate when conditions are not ideal.

Tips to keep in mind:

- ✓ A consistent relative humidity range between 50% and 65% is best. At lower levels curing will be delayed and monomer adhesive vapour will be more likely to appear.
- ✓ Low humidity slows curing, higher humidity speeds curing.
 - At humidity levels under 30%, curing time will be VERY slow and may not cure sufficiently.
 - At humidity levels 80% and above, curing is too fast and 'shock polymerisation' will take place. The bond strength will be poor and adhesive may dry before you can even get the extension to the natural lash.
- ✓ Vapours are more likely to be irritating to the eyes and throat in dry air (less than 50% humidity).
- ✓ Generally, optimal room temperature range for adhesive curing is 20°C to 24°C .
- ✓ Low temperature slows curing, warmer temperature speeds curing. A 10°C increase in temperature will make curing roughly twice as fast e.g. instead of a 4 second drying time, it will be 2 seconds.





3. Why your working area needs to be well-ventilated.

Cyanoacrylate adhesives produce vapours that are irritating to the eyes and mucous membranes during the curing process.

Ventilating your working area helps to disperse curing vapours in the air. Some things you can do to ensure your working area is well-ventilated include:

- ✓ Opening windows and doors where possible
- ✓ Placing fans near open doors or windows. Fans should pull air in one end of the working area and push it out the other end
- ✓ Positioning your work area so the fan is behind you to direct any vapours away from the breathing zone of yourself and your client
- ✓ Always turning on air conditioners or air purifiers if you have them.

4. Why your adhesive needs to be 'fresh'

Opening the Bottle

Each time you open your adhesive bottle to dispense the product, the adhesive inside is exposed to moisture in the air. Over time, the viscosity (or thickness) begins to change. This is why it is recommended you change your adhesive bottle every 4 weeks for best retention.

If your adhesive becomes stringy or gloopy, it should be discarded. Remember - when in doubt, throw it out!

Once a bottle is opened, keeping the lid tightly closed and storing in a cool, dry, well-ventilated place out of sunlight at around 20°C will give you the longest use. Do not store in the refrigerator once opened as condensation may form, damaging your adhesive.

For best long term storage results once opened, store adhesive bottles upright inside a glass jar with a sealed lid containing rice or silica gel sachets to remove any moisture. Keep your jar out of sunlight in a cool, dry, well ventilated place.



Working with the Adhesive



The same principle applies for an open bottle but curing begins much faster when you dispense your adhesive - it's a smaller quantity and totally exposed to the moisture in the air.

Be smart with your adhesive use. If you put down a small bead of adhesive on your crystal or jade stone, you can use most of it before it starts curing. Make a new bead every 15-20 minutes (depending on your humidity and temperature) and don't add to the same spot - adding new adhesive to a bead that has started to cure is asking for trouble! Cover stickers or tape are great for keeping things clean.

When you are applying the adhesive if it pulls strings, a fresh bead should be dispensed.

5. Why Less is MORE when it comes to Adhesive

Cyanoacrylate adhesives bond best when the adhesive layer between the surfaces is as thin as possible.

Cyanoacrylate adhesives contain an inhibitor that prevents hardening by keeping the molecules apart inside the container to maintain liquid form.

When exposed to water (or humidity), the inhibitor is dissolved and triggers a reaction, with the molecules polymerising (linking together) to form a long, strong chain that cures the adhesive to a solid state, joining the bonded surfaces together.

The curing reaction starts at the surface of the bonded material and continues through towards the centre of the adhesive layer. In a thick joint of adhesive, this reaction may stop before it reaches the centre, preventing the adhesive from fully curing.

What does this mean?

You need to apply adhesive to extensions thinly. Imagine your eyelash extension is a tiny hook. Dip the blunt end into the adhesive using a motion as if you were drawing a 'C' shape in the air. When you pull the extension out of the adhesive, reverse the 'C' shape motion. *Pulling the extension out slowly will pick up less adhesive.*

Think of the adhesive bead on your crystal or tile as a bubble you don't want to pop. Make slow, precise movements, taking the blunt end of lash through the middle of the "bubble". Be careful not to touch the bottom or you will wipe the adhesive off the lash as you bring the extension back out.



If you see black streaks of adhesive on your cover sticker, you are going to the bottom of the bead. Your adhesive should stay in a bead and not get moved around.

Thinner bonds:

- ✓ are stronger and last longer
- ✓ cure faster and more evenly
- ✓ reduce the chance of 'stickies' and blooming
- ✓ reduce the amount of vapours released
- ✓ result in cleaner work.

6. Why you should work from zone to zone/eye to eye

When an adhesive product says it will dry in 1-2 seconds, it means the time it will take for the natural lash and the eyelash extension to join together and the adhesive to harden. At this point the edges may still be very slightly tacky. The surface layers will be bonded, however the inner layers are still curing and the adhesive doesn't yet have a secure hold. If you start work immediately on a neighbouring lash, when you isolate you may cause the lashes to catch, resulting in stickies.

For Volume work, the adhesive has more surface to work around and in for secure attachment. A fan will hold its shape when attached within the 1-2 seconds if undisturbed, but the adhesive will still be slightly flexible. If you push the fan aside working from lash to lash, the lashes may move from their properly fanned shape or close up if the adhesive pushes up the base.

Working from zone to zone and eye to eye gives the adhesive time to get to handling strength - where you can safely push the lashes aside during isolation. Handling strength is generally achieved within 30-60 seconds at room temperature in appropriate conditions (depending on how fast your adhesive is).

It is also important to ensure the extension or fan is attached tightly to the natural lash, minimising any gap between the two surfaces. The larger the gap, the longer the adhesive will take to cure and the bond will not be as strong.



7. Why you should cleanse and rinse the lashes and eye area at the end of application.

Some adhesive residue can settle on the eye area or lashes during application. This residue is a byproduct of the cure process. Unreacted cyanoacrylate monomers in vapour form can leave the surface of the adhesive and become airborne. Because they are heavier than air, they will generally fall back down on the nearest surface in the form of tiny white flakes. The monomers react with surface moisture when they land.

In small amounts it may look like a fine powdery residue or a rainbow effect in certain light. In larger numbers, you will see a whitish haze near the bond area - *also known as blooming*. This *can* be due to shock polymerisation (curing too quickly), however a slower cure time also increases the chance of monomer vapours.

To minimise blooming and reduce any sensitivities:

- ✓ Use minimal adhesive and ensure a tight, secure bond between the NL and the extension.
- ✓ Ensure you are working in the correct humidity range. If humidity is too low, adhesive remains uncured longer. Too high and shock curing can also cause blooming.
- ✓ Ensure you are working in the correct temperature range. Higher temperatures can cause unreacted monomers to become airborne.
- ✓ Ensure your product is not old (stringy and thick or 'gloopy'). Old product does not cure as quickly as fresh product.
- ✓ Ensure your environment is well ventilated. Cross-ventilation is useful in carrying airborne monomers away.
- ✓ Avoid acidic surfaces. Acidic surfaces slow down curing. If your cleansing and rinsing preparation has not reduced acidic levels sufficiently on the NL, you may need to use an alcohol based primer or accelerator.



And the final important step:

- ✓ Gently cleanse the eye area and the lashes, then rinse with saline or water at the end of treatment to wash away potential irritants from any residue that may have settled on the skin or lashes. Softly pat dry.

Washing the lashes and eyelids very gently then rinsing at the end can reduce irritation significantly.

Traditional advice was to keep the lashes dry for 24-48 hours. This meant that any chemical residue irritants could be sitting on the skin for 1-2 days before being washed away!

By the time your lash application is complete, if the lashes can be brushed and your client can comfortably open their eyes, your adhesive will be safe to cleanse and rinse. Be aware that it is possible the last few extensions placed may shock polymerise if they are wet too quickly, but this is unlikely if you take the appropriate time to conduct your post service checks properly first.

Other Tips

NEVER wipe adhesive on eyepads or tape under the client's eyes.

- ❖ The vapours from uncured adhesive cause eye irritation
- ❖ The adhesive can potentially have an exothermic reaction with the tape, which can generate smoke, strong irritating vapours and cause thermal burns.

More on Shock Polymerisation

Your adhesive needs to cure from the outside in to create a strong bond and eliminate vapours. 'Shock polymerisation' can happen when the outer layer of the adhesive cures so fast it blocks moisture to the inner layer. This shrinks the adhesive and reduces the strength of the bond. Shock polymerisation can occur:

- ❖ If your humidity is higher than 80%
- ❖ If there is too much water either on the surface (lashes aren't dried properly after cleansing) or applied to the bond (nano mister or humidifier used for too long during application)
- ❖ If there is too much alkaline or accelerator present on either surface or in the environment.



The difference between Drying, Fixing and Full Curing

Drying times for adhesives indicate the time it takes for two surfaces to join together e.g. Dry time 1-2 seconds.

Adhesives 'fix' when the bond is strong enough that the joined surfaces can be handled without compromising the long term strength of the adhesive. For example, when you can safely push the extended lash aside during isolation without sticking or popping off. This is typically within a minute (and even less for fast drying adhesives). At this point the adhesive will have achieved 50-60% strength. After about an hour the adhesive will be at 90% strength.

Full cure is achieved when the adhesive has reached its highest bond strength. This is typically 24 hours.

What does this mean?

Your adhesive will dry within seconds when applied correctly in optimal conditions. Within a minute (or less) your adhesive joint is at handling strength, about 50-60%. Full bond strength continues to increase during the following 24 hours. Excessive heat or moisture in this time can affect the final strength. This is why saunas, sunbeds and swimming are not recommended in the first 24 hours.

Priming the Natural Lashes

Unless your Client has very oily skin that cannot be dealt with by a thorough cleanse, we do not generally recommend using specialty primers before lashing. Most contain alcohol which can dry out the lashes and make it more difficult for the adhesive to 'grab'. As Cyanoacrylate adhesives also polymerise in the presence of alcohol, an unintended affect may be that curing is accelerated.

Saline solution is an effective primer in most cases - just use it as your rinsing solution after cleansing the lashes.

Dispose of used Products safely

Follow instructions for safely disposing of used chemical containers.

If you use a cover sticker or tape when dispensing adhesive on your crystal or jade stone:

- ✓ When you have finished, remove the sticker or tape and hold it under running water to harden the adhesive.
- ✓ Fold in half and place in an airtight container or bin with lid on. Hardened Cyanoacrylate is a thermoplastic and can be disposed of with plastic rubbish or in general waste.

