UV Gel Nails: Latest Findings & Best Practices

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Topic Overview

UV Curing

UV Nail Lamps

Proper Use
UV Curing
Proper Cure Achieves a Proper Balance
Three Types of Cure

Under Cure

Over Cure

Proper Cure
Degree of Cure
(% cured)

Nail coatings harden when they reach 50% Cure.
Maximum toughness reached above 90% Cure.

(% reaction of all possible oligomers/monomers)
Degree of Cure
(% cured)

Nail coatings harden when they reach full cure.

40% Gap

Maximum toughness reached above 90% Cure.

Are your nails in the Gap?
Curing

Proper curing, e.g. proper use of correct lamp:

Prevents service breakdown
Ensures durability/longevity
Curing

Short term over curing, e.g. incorrect lamp:

Excessive Shrinkage
Heat Spikes & Onycholysis

Long term over curing, e.g. sunlight exposure:

Discoloration
Brittleness & Cracking
Curing

Oxygen blocks curing to create a sticky inhibition layer.

**Under** curing often leads to pocket lifting and higher potential for adverse skin reactions.
UV Nail Lamps
Energy is Needed for Polymerization

Heat

or

UV
Additional types of UV energy are emitted from the Sun that are not used to cure nail products!
Photoinitiators
(PI)

This type of ingredient absorbs UV energy and uses the energy to polymerize or harden the artificial nail.

Typically 1-3% PI is used.
Photoinitiators

Different PI’s have varying sensitivity to a range of wavelengths in the UV-A range.

400 nm - 315 nm
Different UV curing coatings contain different PI’s in different combinations, different concentrations and cure at different wavelength ranges.

That’s a Lot of Differences!
If I already have a UV lamp!
Why buy another?
There are many types of UV bulbs! and...
...many, many different UV nail lamps and there is no such thing as a “universal lamp”.
Common Nail Lamp Questions

Is Wattage Related to UV Output?

Is it Better to Cure Faster?

Can I Use Just One Lamp?

Is UV Exposure Safe?
Common Nail Lamp Questions

Is Wattage Related to UV output?

Wattage is a the amount of energy consumed by an electrical device such as a light bulb, hair dyer or sound speakers.

NOT a measurement of UV output or “strength”.
Common Nail Lamp Questions

Is it Better to Cure Faster?

Yes and No!

A 30 second cure is fine for a product designed to cure in 30 seconds, but NOT for those designed to be cured for two minutes.

*Faster* is not always better!
Common Nail Lamp Questions

Can I Use Just One Lamp?

For proper curing only use the lamp designed for the product of your choice!
Common Nail Lamp Questions

Can I Use Just One Lamp?

• Many different photoinitiators, blends & wavelengths.
• Photoinitiators concentrations vary significantly.
• Wide range of bulb types, including LEDs.
• Many types of lamp designs, e.g. distance from nails.
• The electrical components influence UV output.
Common Nail Lamp Questions

Do LED nail lamps emit UV?

Yes! Like traditional UV nail lamps, LED nail lamps safely emit low levels of UV.
Is UV Exposure Safe?

The following table, based on a study conducted by Dr. Robert Sayre, shows the exposure level for several lamps expressed as the percentage of the allowable monthly exposure.*

• Assumes 10 minutes/twice per month exposure, rather than a more typical range of 4-8 minutes.
<table>
<thead>
<tr>
<th>Nail Lamp</th>
<th>UV Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nail Lamp 1</td>
<td>2.2%</td>
</tr>
<tr>
<td>Nail Lamp 2</td>
<td>1.9%</td>
</tr>
<tr>
<td>Nail Lamp 3</td>
<td>1.2%</td>
</tr>
<tr>
<td>Nail Lamp 4</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

of permissible monthly exposure.
<table>
<thead>
<tr>
<th>Nail Lamp</th>
<th>Exposure Percentage of Permissible Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.2%</td>
</tr>
<tr>
<td>2</td>
<td>1.9%</td>
</tr>
<tr>
<td>3</td>
<td>1.2%</td>
</tr>
<tr>
<td>4</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

The difference between traditional and LED lamps is **1.7%**.

All UV Nail Lamps are Safe!
Important to note risks are further reduced since exposure is not daily, but instead just **twice per month** and the back of the hand is highly resistant to UV.
An “MED” is the minimum dosage of UV needed barely redden the skin.

A study performed in 1966 demonstrated that various parts of the body require different amounts of UV to cause reddening.
An “MED” is the minimum dosage of UV needed barely redden the skin.

A study performed in 1966 demonstrated that various parts of the body require different amounts of UV to cause reddening.

The back of the hand was identified as the least UV sensitive part of the body and is four times more UV resistant than the forehead or cheek.¹

<table>
<thead>
<tr>
<th>Body Area</th>
<th>MED (Relative to lower back)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back</td>
<td>1.0</td>
</tr>
<tr>
<td>Chest</td>
<td>0.87</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.87</td>
</tr>
<tr>
<td>Forehead</td>
<td>0.87</td>
</tr>
<tr>
<td>Cheek</td>
<td>0.87</td>
</tr>
<tr>
<td>Neck</td>
<td>0.91</td>
</tr>
<tr>
<td>Topside of Arm</td>
<td>1.52</td>
</tr>
<tr>
<td>Topside of Forearm</td>
<td>2.08</td>
</tr>
<tr>
<td>Lower Leg</td>
<td>3.26</td>
</tr>
<tr>
<td>Back of the Hand</td>
<td><strong>3.48</strong></td>
</tr>
</tbody>
</table>

After extensive testing of UV nail lamps, leading UV expert, Dr. Robert Sayre says,

“Physicians are grossly exaggerating exposures.”
After extensive testing of UV nail lamps, leading UV expert, Dr. Robert Sayre says,

“...this UV source properly belongs in the least risky of all categories.”
After extensive testing of UV nail lamps, leading UV expert, Dr. Robert Sayre says,

“UV nail lamps are safer than natural sunlight or sunlamps.”
A second UV nail lamp study conducted at a different independent laboratory confirms that twice monthly UV nail services compares to an additional two minutes natural sunlight exposure each day!
Still Concerned?

Wearing SPF 15 broad spectrum sunscreen or covering your hand with a cloth further minimizes exposure!
Proper Use
Proper Use

Requires that UV gels must be “properly”:

- Applied
- Cured
- Maintained
- Removed
Magnified nail plates showing types of damage created by improper removal of nail coatings. Typically, damaged areas appears on the surface as “white spots”.

Look Like Proper Use?

Peeling

Scrape

Residual Coating
Soaking the nail plate in ANYTHING for more than a few minutes temporarily softens the surface, making it more susceptible to damage for up to one hour after soaking, e.g. water or acetone.
Proper Use

Adverse skin reactions are caused by:

- Prolonged Exposure
- Repeated Exposure
Proper Use

Avoid Skin Contact with:

Uncured UV Gels
UV Gels Filings/Dusts
Surface Inhibition Layer
Dissolved Coating Material
Nitrile Gloves are Best; Avoid Latex!
If possible ventilating to the outdoors is best, but local source capture ventilation with activated charcoal filters also works well in salons.
Proper Use

Dust masks are for dusts only and are NOT a suitable replacement for proper and appropriate ventilation; also some masks types are not useful in salons.
Proper Use

Use only high quality dust masks, e.g. those with an **N-95** rating. Avoid thin paper mask used by doctors and not designed for dusts.
Proper Use

• Avoid ventilation systems that create “ozone”.
• Ozone is an eye, nose, throat and lung irritant.
• Ozone hides odors, it doesn’t remove them.
Proper Use

• Rely upon proper/appropriate ventilation.

• Local Source Capture systems ideal!

• Exhaust to the outdoors is best! (or)

• A thick bed of activated charcoal works too.

• Use a “dusts” mask not a “doctors” mask.
Main Topic Review

UV Curing
UV Nail Lamps
Proper Use
Main Topic Review

UV Curing

UV Nail Lamps

Proper Use

Achieve a Proper Cure

Use the Correct Nail Lamp

Work Safely!

Use Proper Appropriate Ventilation!

Avoid Under Curing

Safe as Used in Salons

Remove Coatings Without Damage!

Avoid Skin Contact!
Thank you for joining us

For more information on the NMC- and the documents they produced - visit their site:

probeauty.org/ncm

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