

# gel polish

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## Gel Polish

Colour that hardens under a UV or LED lamp instead of drying in air. Gel polish transformed the manicure — two to three weeks of chip-free wear instead of two days — and it introduced two problems that plain [Nail Polish](#) never had: **a monomer allergy** and **an exposure question about the lamp**.

## How curing works

Gel polish is not a lacquer. It is a **photopolymerisable resin system**: liquid acrylate monomers and oligomers plus a **photoinitiator** that, when it absorbs UVA light around 365–405 nm, generates free radicals and triggers rapid cross-linking. The liquid becomes a hard, solvent-resistant, cross-linked plastic in 30–60 seconds.

That cross-linking is why it does not chip, and why it cannot be removed with ordinary polish remover — it has to be soaked off in acetone, or the surface broken first so the acetone can get in.

## HEMA allergy — the significant one

**Hydroxyethyl methacrylate (HEMA)** and its relatives are the monomers doing the cross-linking, and

**uncured acrylate monomer is a potent skin sensitiser.** Once sensitised, the reaction is permanent and can generalise.

What it looks like: itching, redness and swelling of the fingertips and nail folds; nail plate lifting and separation (onycholysis); and — because people touch their faces — eyelid and facial dermatitis with no obvious cause. Severe cases have caused permanent nail damage.

Two things drive it, and both are technique:

1. **Product touching the skin.** Gel must be kept off the cuticle and sidewalls. This is the single most important rule in the whole category.
2. **Under-curing.** An old lamp, a wrong lamp for the product, or too short a cure leaves monomer uncured and reactive on the surface.

The EU acted on this directly: **Regulation (EU) 2020/1682 restricted HEMA and di-HEMA trimethylhexyl dicarbamate in nail products to professional use only**, with mandatory warnings. There is no equivalent US restriction, and HEMA-containing gel polish is sold to consumers freely. **HEMA-free formulations exist** and are worth seeking out — though the alternative monomers are not automatically non-sensitising.

## The lamp

UV nail lamps emit **UVA**. The exposure per manicure is short, and expert assessments have generally concluded that the skin cancer risk from ordinary use is very low — though laboratory work reporting DNA damage in cells exposed to nail-lamp UVA has kept the question open, and the honest position is that this is not fully settled.

The mitigation costs nothing: **fingerless UV-protective gloves**, or a broad-spectrum sunscreen on the hands twenty minutes before the appointment. Given how cheap that is, there is no reason not to.

## Removal, which is where the damage happens

**Peeling gel polish off takes layers of nail plate with it.** That is the cause of the thin, weak, peeling nails people blame on the gel itself.

Proper removal: file the shiny top layer to break the seal, soak in acetone-wrapped cotton for 10–15 minutes, and **gently push the softened product off**. If it resists, soak longer. Never scrape a hard surface.

## Where it sits in the rules

**Cosmetic** in the US — FDA primary category **(10) manicuring preparations**. Colour additives must be approved for the intended use, with certified colours from **FDA-certified batches**. There is **no premarket approval** and no US restriction on HEMA in consumer products.

In the EU, **HEMA and di-HEMA TMHDI are restricted to professional use** under Regulation (EU) 2020/1682, and permitted colorants come from the **Annex IV** closed positive list.

## Shelf life

**18–24 months.** Gel polish is **light-sensitive by design** — it must be kept in an opaque bottle, capped, and

away from sunlight and lamps, or it thickens and eventually cures in the bottle. A gel that has gone stringy or gritty is partly polymerised and should go.

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- [Cosmetics](#) — what the label is legally allowed to say, and the full catalogue.
- The rest of *Colour* — [Nail Polish](#) · [Dip Powder](#) · [Base Coat](#) · [Top Coat](#) · [Quick-Dry Drops](#).
- [Acrylic Nails](#) — the other methacrylate system, and the MMA problem.
- Regulatory statements here follow the FDA and EU sources listed on [Cosmetics](#), read 16 August 2026.