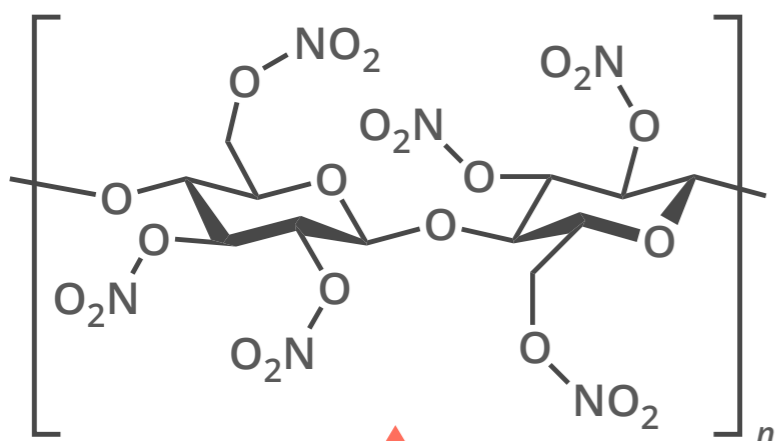


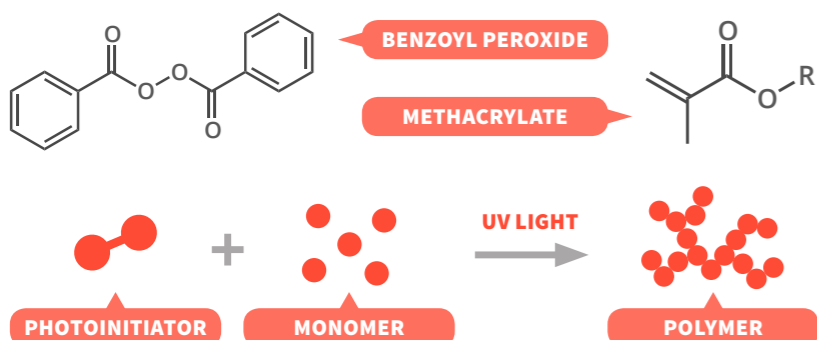
# THE CHEMISTRY OF NAIL POLISHES

## FILM-FORMING POLYMERS



NITROCELLULOSE

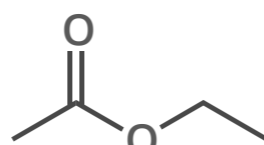
Conventional nail polish contains a polymer dissolved in a solvent. When applied the solvent evaporates and the polymer forms a film. The most common polymer is nitrocellulose.



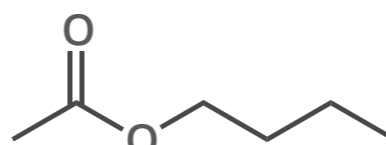
Gel nail polish is made up of methacrylate monomers and a photoinitiator such as benzoyl peroxide. Exposed the mixture to UV light triggers polymerisation and solidification.



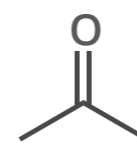
## SOLVENTS & PLASTICISERS



ETHYL ACETATE



BUTYL ACETATE

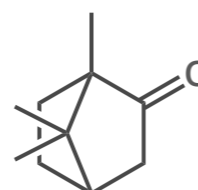


ACETONE

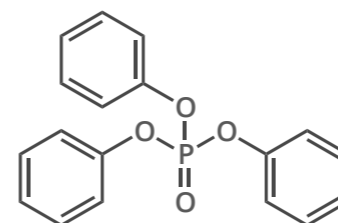
Ethyl acetate and butyl acetate are commonly used solvents, and give nail polish its characteristic smell. Ethyl acetate and acetone are used in nail polish removers. Plasticisers (below) stop polish from cracking or chipping.

DIBUTYL PHTHALATE

Previously used as a plasticiser but phased out due to health concerns. Its use in nail polish is now banned in the EU.



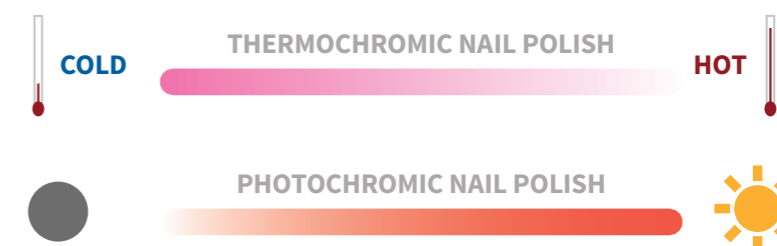
CAMPHOR



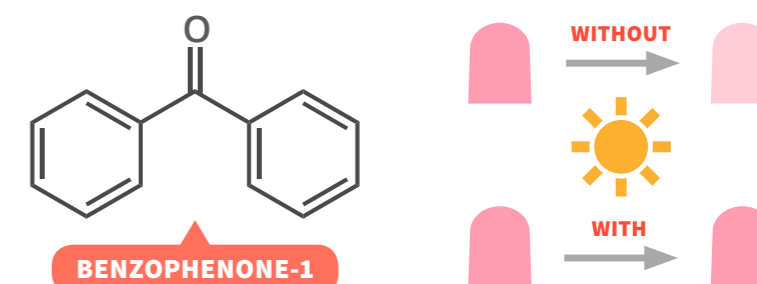
TRIPHENYLPHOSPHATE

## PIGMENTS & OTHER AGENTS

Pigments in nail polish are either inorganic pigments (such as iron oxide) or organic (carbon-based) pigments. Thermochromic and photochromic pigments are also possible.



Pearlescent effects are due to materials such as titanium dioxide and mica. Some polishes also contain glitter. Thickeners (e.g. stearylalkonium hectorite) suspend these in the polish.



BENZOPHENONE-1

As some nail polishes can last for up to two weeks, stabilisers are added to prevent the polishes changing colour when exposed to sunlight. Benzophenone-1 is commonly used.

