

Surface Finishes

Wood Manufacturing

& Finishing

Phase 6

Timber Preparation

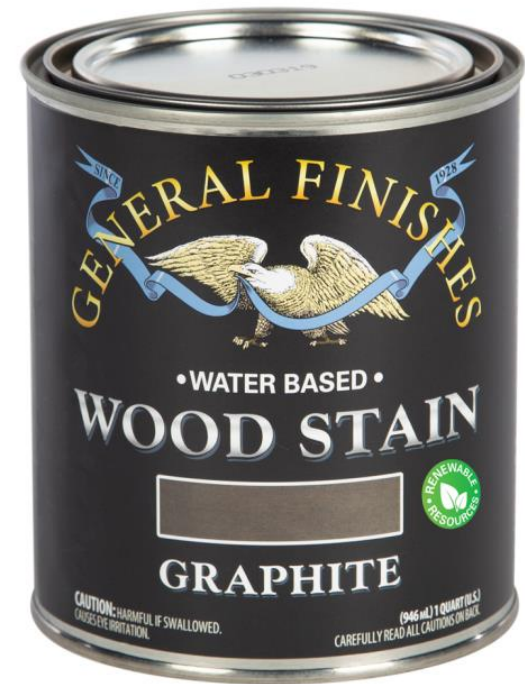
- A good surface preparation is essential to achieving a good finish.
- **Why?**
- Dents, scratches and blemishes in the surface will be enhanced, not hidden, so very careful preparation is needed.
- **Glue marks will be covered over true or false?**
- Surplus glue can also show up badly especially on stained work as orange or green staining depending on the glue and the type of wood. – Can you give any examples of this?
- **What can cause black or blue staining on wood especially Oaks and Mahogany ?**
- Reaction of the tannin acid in the timber to the water and metal.

Methods of Application

- **Name 4 methods of applying a finish.**
- **Ragging:** applying a finish with a rag but it must be a lint free cloth, not suitable for lacquers or varnishes. Mainly suitable for stains and oils.
- **Brushing:** finish penetrates deeper into timber, lots of different brushes to suit different finishes. Pure bristle to synthetic bristle. Longer bristle for varnishes. The high quality the bristle the less brush strokes will show.
- **Paint Pads:** various materials use mohair is best but expensive, synthetic fibre cheaper, short pile. Newer version is the sponge pads on sticks.
- **Roller:** mainly used for paint different sleeves available to suit different finishes.
- **Spraying:** faster than all of above, suction cup or gravity fed, airless system or High Volume Low Pressure (HVLP).

Wood Stains & Finishes

- Stains are available in:
 - Water based stains.
 - Chemical stains.
 - Spirit based stains.
 - Oil based stains.
 - Solvent based stains.
-
- Click on the images to bring you to the website selling them.



Water Based

- Water tends to raise the grain, so it is best to pre-treat area by dampening the surface and sanding when dry before applying a water-based stain or finish.
- **Why?**
 - Dry pigments that are mixed with water.
 - Wide range of shades.
 - Easy to use and resistant to fading.
 - Very cheap to buy.

Chemical Stains

- Chemicals that react to the tannic acid in timber to change the colour of the wood.
- **Bichromate of potash**: use this chemical with caution as it is poisonous.
- This will turn Mahogany a darker brown but leave the Boxwood Inlay yellow.



- Click link to bring you to webpage where more [data](#) can be obtained.

Chemical Stains



- **Copper sulphate:** is also known as Blue Vitriol. Dissolve 2 ounces in a pint of water and use this as a stock solution. Caution Very Poisonous.
- **Ammonia:** the fumes react chemically with tannins in the wood causing it to permanently change colour. The technique was popularized by Gustav Stickley and other Arts and Crafts furniture makers of his era.
- You cannot foresee what effect these chemical stains will have on the timber, so it is best to try them out on a sample first.
- For more information on chemicals visit [Wood Finishing Enterprises](#).

Spirit Based

- Dry pigment powder dissolved in methylated spirit and then add shellac polish.
- The shellac polish acts as a binder otherwise the meths. will evaporate leaving behind the pigment.
- Difficult to use on large surfaces.
- Also tends to fade.
- For range of colours click on the link below.
- [Restoration Materials](#)

Oil Based

- How do you think oil-based stains/varnishes compare to water based?
- They are slower to dry than water based.
- Do not penetrate as much as the rest.
- Less chance of overlap marks.
- Need plenty of drying time.
- Oil polish does not crack or blister or show heat or water marks ideal for garden furniture, tabletops, bar counters etc.
- Some are non-toxic. Can you give me an example of where non-toxic oils might be used?

Oil Based

- **Danish Oil**
- Excellent on pine, it is made from Tung Oil or Linseed oil, used for extra protection and durability. It gives a natural low lustre finish.
- **Lemon Oil**
- This provides a suitable finish for teak and matt finished woods where a wax finish is not desired. It has the aroma of fresh lemons.
- **Linseed Oil**
- A natural product available in natural (non-toxic) and boiled form. Moderate heat and water resistance.
- **Olive Oil**
- Used on salad bowls & utensils non-toxic.

Oil Based (Cont.)

- [Teak Oil](#)
- Based on Tung Oil and added resins, it gives a quick drying penetrating seal to teak and similar woods. It leaves a slight sheen when dry.
- [Tung Oil](#)
- This oil made from the pressed seed from the Tung nut tree gives a superior finish to that of linseed oil and is water-resistant. It can be easily applied using rag.
- [Rubio Monocoat](#)
- Only 1 layer
- Natural ingredients 0% VOC's
- No overlaps 40 colours

Boiled Linseed Oil Vs 100% Pure Tung Oil After 5 Years



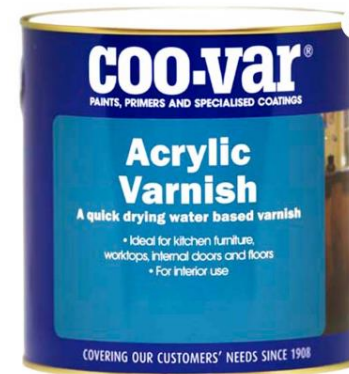
7.26Mins <https://youtu.be/aklfthQN-q8?si=wyltsSfVitX23EoJ>

Solvent based (varnish & stain)

- A **polyurethane varnish** combined with a wood stain, so the stain tends to sit on the surface of the timber rather than being absorbed into it.
- Each coat applied will darken the wood further. [Video link](#) Classic 1Min
- **Acrylic Varnish**
- Quick drying and non-toxic, brushes can be rinsed out in water. Available in gloss, satin and matt finishes.



[Crown Decorating Centres](#)



[Carbon Paint Centre](#)

French Polish

- French polishing is a technique used to seal and protect the surface of the wood while enhancing the natural beauty of the wood.
- Material used is shellac and methylated spirit.
- What is shellac?
- Shellac comes from the secretion from [female Lac Beetles](#).
- The art of [French Polishing](#) takes a long time to master.
- Produces a good finish on furniture.
- A high gloss can be achieved by applying numerous thin coats
- In addition to standard French Polish with shellac, other finishes are available like jappanning which is a black lacquer finish.
- Typically, the finish that would have been used on antique Furniture.



French Polish Full Version



How to French polish/ Priory Polishes 7.48Mins <https://youtu.be/RjA6JuWLEB8?si=m4IEsaUjWZD2owns>

French Polish just using the Fad/Rubber



How to French polish/ Priory Polishes 1.06 Mins https://www.youtube.com/watch?v=CB2_ulejYpc&t=23s

Types of Shellac Polish

- **White Polish** made from bleached white shellac.
- **Button Polish** made with button shellac, producing a more orange colour.
- **Ebony Polish**, gives a jet-black finish when applied.
- **Garnet Polish** gives an attractive deep rich brown cast to wood.
- Applied in numerous coats using a fad and sanding in between coats.
- Used for repairing antiques.



Garnet Shellac Flakes



Button Polish

Wax Polish

- A good quality wax polish with added beeswax will gently lift and remove grime.
- Wax gives a hard protective coating with a natural sheen, additives can be added to speed up drying time
- Traditional wax has no added oils, colour or perfume.
- Wax Polishes are available in a number of forms including liquid, paste, a special brushing wax, coloured waxes and staining waxes.
- **Beeswax** is a natural wax produced by honeybees of the genus *Apis*. The wax is formed into scales by eight wax-producing glands in the abdominal segments of worker bees, which discard it in or at the hive. In its natural form (without additives) can be used as a non-toxic finish.
- **Carnauba wax** is derived from Brazilian palm trees.

Lacquer

- Four basic types: What are they?
- **Nitrocellulose**
- **Polyurethane**
- **AC lacquer – Acid Catalysed**, sold separate, mix before spraying
- **Polyester**
- Nitrocellulose normally sold PC, Pre-Cat or pre catalysed already mixed.
- Lacquers and paints give a harder and more resistant finish than French polish, wax or oils.
- They are generally applied by brush or spray gun.
- Available in gloss, satin and matt finishes.

Lacquer

- Nitrocellulose
- Cheap
- Quick drying
- Produces a hard heat and moisture proof
- Used on kitchen doors, cabinets, chairs and other furniture.
- Polyurethane
- Expensive.
- Excellent hard surface.
- Good heat, moisture and wear resistant properties.
- As a water-based product often used as a floor sealer, leaves no brush marks, excellent resistance to wear and tear.



[Morrells suppliers](#)

Lacquer

- Acid-catalysed (AC lacquers)
- Expensive.
- Produces a very durable heat and moisture proof surface.
- Layers set by polymerization.
- Repairs to this surface are not easy to do.
- Tough finish used on furniture, kitchen doors etc.



Morrells Acid-Catalyst Lacquer
5Lts
€65.00



Morrells Pre-Catalyst Lacquer
5Lts
€48.55

[Fearons 2026](#)

Lacquer

- Polyester Lacquer
- Expensive.
- Hardest and most durable of all the lacquers.
- It dries fast so can only be applied with a spray gun.
- One coat is sufficient.



[Alibaba.com](https://www.alibaba.com)

- High gloss finish cannot be repaired if scratched the item will have to be stripped and refinished

Lacquer

- [Acrylic Lacquer](#)
- Water based and contains synthetic acrylic polymers which dry to a “water white” this reduces the yellowing problems associated with nitrocellulose lacquers.
- No smell and non-flammable.
- Reasonably priced.
- Produces an extremely hard-wearing and moisture proof surface.
- Tough finish used on furniture, floors etc.
- Floor lacquer tend to have other [additives](#)

Lacquer Health & Safety

- Some lacquers are toxic and inflammable so safety precautions should be taken.
- Wear proper respiratory mask to protect your eyes, nose and mouth.
- Spray in a well-ventilated room. No Naked flames.
- Always check pressure valves and clocks when you first turn on the compressor.
- Water based lacquers are now widely available and they offer the same properties but with fewer toxins.
- Volatile Organic Compounds (VOCs) are solvents that the lacquer is suspended in, and these are released as the lacquer is sprayed. VOCs are extremely harmful to the person spraying as well as the atmosphere. We are governed by the [European Union Directive 2012](#)

Spraying Lacquer

Finishes can be applied by many different methods such as:



Suction cup



Gravity Fed



High Volume Low Pressure

HVLP

- **High Volume, Low Pressure** in relation to spray painting. It is a spraying method that uses a large volume of air to atomize paint into a fine mist at a low pressure (typically below 10 PSI at the air cap), rather than using high pressure to blast the paint onto a surface.
- **Advantages of an HVLP system over conventional spray application?**
- **Significantly Reduced Overspray and Higher Transfer Efficiency:** HVLP systems have a much higher transfer efficiency (around 65% or more) compared to conventional guns (which are often 30-40% efficient). Because the air pressure is lower, less paint turns into airborne mist, meaning more material lands on the target surface, reducing waste.
- **Lower Material Costs and Environmental Impact:** Due to increased transfer efficiency and reduced overspray, HVLP uses less paint to cover the same area. This saves on material costs and makes it a more eco-friendly option that meets stricter environmental regulations regarding VOCs.
- [More on HVLP and HTE](#)

Faults with Spraying (Ph 6)

- What is this fault called?
- Orange peel. Image from Popularwoodworking.com



Faults with Spraying (Ph 6)

- What is Orange peel?
- Orange peel is simply the failure of a finish to level properly, and has a number of causes:
- The number one cause of orange peel is that the material is too thick. The wrong thinner, especially cheap ones, have the wrong blend of solvents (usually too fast, or hot) and won't let the finish level properly.
- The thicker the liquid, the more air required; the thinner, the less air needed. The obvious fix is to increase the air pressure or thin the material.
- Dirty air cap or fluid tip.

Faults with Spraying (Ph 6)

- What is this fault called?
- Blooming. Image from [Popularwoodworking.com](https://www.popularwoodworking.com)



Faults with Spraying (Ph 6)

- What is blooming?
- A milky white haze, cloud or mist can form on the surface of the lacquer when sprayed in humid or damp weather. Condensation droplets land on the surface and when drying out leaves white hazy spots or clouds.
- This fault is also called blushing although blushing tends to occur during the application and is noticeable straight away.
- Image from Woodweb.com



Revision

- To test your knowledge, click the link below or scan the QR code below.
- <https://forms.office.com/e/wREw6aFPDF>
- **Important**
- Short answer questions require a few sentences unless you are asked to list or name something.

