

# TRADE OF PAINTING & DECORATING

PHASE 2

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Module 3

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**Imitative and Decorative Arts**

UNIT: 2

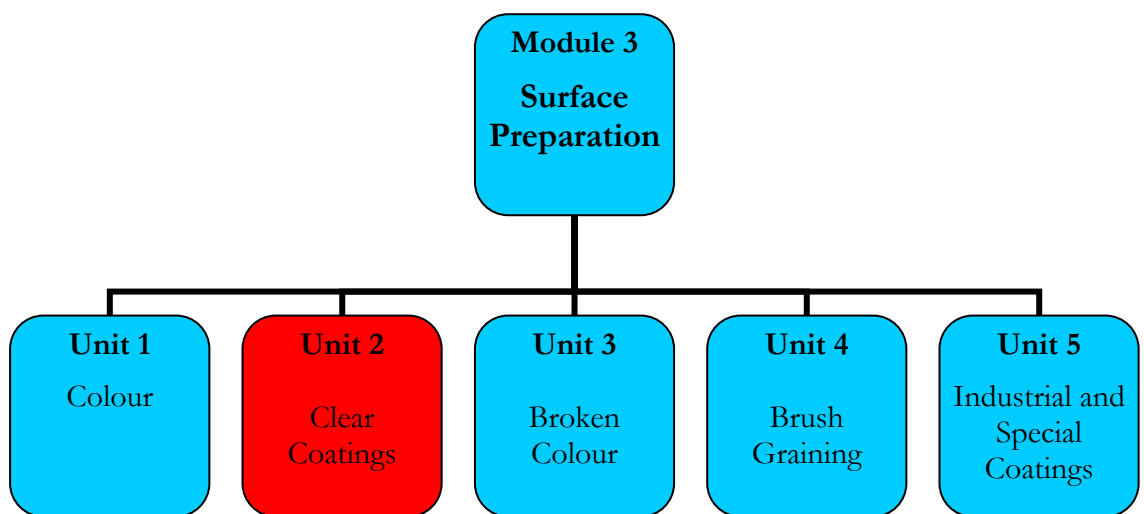
**Clear Coatings**

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## Introduction

Varnishes are one of the most applied finishes to day. Many new houses are fitted out with wooden floors and older houses have had them fitted. To match the flooring the doors, skirtings architraves and stairs are being varnished. There is a wide range of products available to the decorator a knowledge of them is very important. There is a variety of oil based varnishes, water based varnishes and two pack varnishes. A large range of wood colours and finishes for indoor and outdoor use are available. Coloured varnishes are also available and a visit to the manufacturer's websites is extremely important as new products are constantly being produced.



## Learning Outcomes

**By the end of this unit each apprentice will be able to:**

- Prepare a previously varnished surface for recoating
- Prepare a raw timber surface for the application of varnish
- State the difference in composition of solvent and water based varnish

## 1.0 Prepare previously varnished surface

### Key Learning Points

- Hazards associated with use and disposal of solvents
- Surface preparation
- Selection and function of clear preservatives

### 1.1 *Hazards associated with use and disposal of solvents*

#### Reference Module 1. Unit 3 1.1.

### 1.2 *Surface preparation*

The condition of the old varnished work will determine the treatment that will be required. If an exterior surface is very weathered or an interior one is very worn and marked then the quickest way to prepare the surface for varnishing is to remove the old one completely. Surfaces should be dry, clean and free from any surface contamination such as grease (caused by the handling of doors, handrails etc.) furniture polish or wax. Damaged areas, cracks etc should be repaired with a flexible stopper and sanded with a fine abrasive before painting. Extra care must be taken when abrading veneered wood cork flooring etc. as these are easily damaged. Avoid mechanical sanding with these surfaces. Surfaces after cleaning may look shabby in parts and an application of a suitable coloured wood dye helps revive wood before varnishing.

#### Preparation of varnished surface in poor condition for recoating

- Remove fittings and store carefully so that no item will be lost. Put up wet paint sign.
- Protect floor area under & near door with papers. Change these during removal as softened paint can be accidentally carried on shoes which can lead to damage to floor surfaces.
- Mask off surrounding areas of door.
- Ensure adequate ventilation if task is indoors. Apply paint remover carefully (avoid splashing). Use a cheap type brush. Allow time to soften.
- When softened scrape off using paint scraper into old paint tin, taking care to avoid scratching surface. Use steel wool on mouldings & for final removal of paint or varnish.
- Wash surface thoroughly with white spirit or water, leave to dry. (read manufacturers instructions), clean up. Remove all used papers.
- Cover floor area with clean paper or drop sheet.
- Apply 3 coats of varnish rubbing down in between coats.
- Clean & put back fittings.

### **Preparation of varnished surface in good condition for recoating**

It is a very common practice for painters to be asked to re-varnish doors, skirtings, architraves, wall panelling, church seats, furniture etc that are in good condition but its sheen has dulled and a general freshening is required.

The preparation is very important to produce a good key without scratching or damaging the surface in any way.

- Firstly wash well with clean soft cloth and white spirit
- Rub down dry with a fine abrasive or wet with grade 400 wet and dry paper
- If sanding cannot be carried out for any particular reason a material in liquid form can be purchased in any good decorators shop that can be rubbed on with a clean soft cloth to the surface and rubbed off with a clean cloth after 10 minutes. Leave for a minimum of 90 minutes before re-varnishing. This material can be applied to all shiny surfaces to assist adhesion without sanding.
- Generally two coats of varnish are applied rubbing down in between coats

### ***1.3 Selection and function of clear preservatives***

**Reference Module 2. Unit 2. 2.4.**

## 2.0 Preparation of raw timber surfaces

### Key learning points

- Identification and use of varnish and sealers
- Preparation of materials (varnish and sealers)
- Application techniques for oil and water based varnishes
- Application and suitability of varnish for use indoors and outdoors
- Care of brushes after using clear coatings

### 2.1 Identification and use of varnishes and sealers

#### Preparation of new timber surface for the application of varnish

New wood needs to be abraded to clean it and to reduce its roughness. It can be sanded manually or mechanically using selected abrasives. The selection of the abrasive must be carefully selected to suit the surface to be sanded. Very coarse grades can damage wood fibres and spoiling the appearance of the timber. The surface must be sanded with the direction of the grain. Sanding across the grain will leave permanent scratches which will show through the varnishes and will be more obvious if stained with coloured wood dyes.

Oily hardwoods such as teak should be thoroughly washed with clean cloths and white spirit before varnishing or painting and left to dry. Avoid damage to mouldings by over sanding. Remove sharp arris edges of new timber by rounding them very slightly.

#### Types of varnish

- Oil based,
- spirit based,
- two pack and
- water based,

#### Oil based:

**Long oil varnish:** Refers to varnishes that are very flexible, weather resistant and hard wearing. They can be used on exterior or interior work.

**Short oil varnishes:** Are varnishes that are not very flexible and brittle. Suitable for interior work only.

### **Gloss (long oil)**

This long lasting varnish will emphasise the natural beauty of your interior wood grain. It is a tough and durable varnish, contains polyurethane and will protect your wood from scratches, heat and alcohol. Available in gloss, satin and matt finishes

- Composition is drying oil/phenolic or alkyd resins.
- Available in wood colours (oak, mahogany, teak, etc.) to general colours.
- Drying method is oxidation. Drying time 4-6 hours. Recoating time is 16 hours. Thinned with white spirit or Turpentine.
- Suitable for interior and exterior work. Pigmented varnish is more suitable for exterior work as it has the capacity to deflect the ultra violet rays of the sun which are damaging to clear finishes.
- Exterior varnishes are generally marked UV resistant (ultra violet light resistant).
- They are made from natural and synthetic resins. They are hard wearing flexible non reversible

### **Eggshell Flat (short oil)**

Eggshell can be clear or pigmented. A popular finish on internal woodwork. Drying times the same as gloss varnish

- Flat is clear.
- Flat and eggshell are suitable for interior use only
- Yacht varnish:
- Is a tough and durable varnish that protects exterior wood in all weathers. Suitable for exterior wood exposed to seawater and tough exterior conditions. It's high build formula expands with the wood to resist cracking and peeling. Available in a clear gloss finish.

**Polyurethane varnish:**

A transparent coating. Film former - Polyurethane resin. Single or Two pack. Special thinner for two pack. White spirit for single pack.

**Single pack:**

Film former -Urethane oil. Flexible coating. Very hard wearing. Apply by brush roller or spray. Available in gloss, satin and matt finishes.

This long lasting tough and durable varnish will display the natural beauty of your interior wood. Contains polyurethane and will protect your wood from scratches, heat and alcohol. Available in gloss, satin and matt finishes

**N.B.** It is important to read manufacturer's instructions as drying and recoating times vary.

Drying method -Oxidation. Drying time 4-6 hours. Recoating time 16 hours.

**Two pack:**

A hard wearing, heat, chemical and abrasion resistant varnish. Non reversible. Drying method polymerisation.. Drying time 3-6 hours. Recoating time 24 hours. Complete hardness 7-10 days.

**Spirit varnishes:**

A quick drying varnish. Film former - Shellac.Manilla or damar resin. Thinner methylated spirit. Reversible coatings. Interior use only. Drying time 15-30 minutes. Drying method - Evaporation. Each coat softens and fuses with previously applied coats.

Most common types: Genuine shellac, Knotting, French polish and Button polish. Can be used to seal back stains e.g. Bituminous, ink etc.

**Knotting varnish:**

Used to seal the resin in knots in wood and to prevent it from bleeding through and staining the paint film.

**French polish:**

Orange shellac solution in methylated spirit. Used to give a deep polished finish furniture. Must be applied by pad to achieve a quality finish. Polish can be coloured by the addition of coloured spirit dyes.



**Water based varnish:**

Composition is water borne acrylic copolymer.

Low odour. Fast drying. Very good adhesion. Recoatable in 2-4 hours. Brush wash is water. Apply by synthetic brush or mohair roller. A very durable non yellowing protective coating for interior timber surfaces.

Clean rim of tin and cover before replacing as they can fuse together and the lid will become very difficult to remove later.

Much tougher than conventional floor varnish. This water-based, environmentally friendly varnish is suitable for floors, stairs, general woodwork table tops and furniture.

Resistant to hot water and alcohol. Available in gloss and satin finishes. Safer to use than oil based varnish for the painter and the environment. Available in a very wide variety of colours.

Ensure good ventilation when using.

**Stains & Varnishes all in one:**

Ideal for both interior and exterior smooth wood surfaces. They stain and varnish the wood at the same time. They expand with wood as stain does but forms a tough protective coating like a varnish. Available in a satin finish. Available in a wide variety of colours. They are rainproof in 30 minutes and recoatable in two hours. Brush wash water.

**Sanding sealers:**

They seal and protect the timber. They fill the pores and harden the fibres of the wood so that when you sand it, the wood sands smoothly. They provide an excellent base for finishes such as oil based, varnish, water based varnish and spray lacquer. If you do not use sanding sealer then the first coat of varnish will stiffen the fibres and then you have to sand down in some cases a material that may be a lot harder than sanding sealer. They are supplied ready for use

**Cellulose sanding sealer:**

Labelled as highly flammable and harmful. Wear gloves mask and goggles. A very quick drying material. Dries in 20 minutes. Use only in well ventilated areas. Brushed or sprayed on it produces an excellent base for oil based varnishes. Rub down in the direction of the grain with a fine abrasive. Clean up with cellulose thinners. The VOC's of this material are questionable. Keep tins covered and store safely outside of work area.

Not suitable as a sealer for water based varnish.

**White spirit based sanding sealer:**

Use only in well ventilated areas. Wear gloves mask and goggles. Brush on and rub down in the direction of the grain with a fine abrasive. Dries in 2 to 3 hours. Clean up with white spirit. Not suitable as a sealer for water based

**Water based sanding sealer:**

Designed for use under water based varnishes. Brush on and rub down in the direction of the grain with a fine abrasive. Dries in 2 hours. Clean up with water.

**Shellac based sanding sealer:**

Made from shellac and methylated spirit with special additives to assist sanding. Apply with brush or pad for French polishing. Sanding can begin after 1 hour.

**2.2 Preparation of materials (varnish, sealers etc)****Reference Module 3 Unit 2.2.1****2.3 Application techniques for oil and water based varnishes****Application of oil based varnish:**

A resinous material which when applied in a thin coat forms a hard transparent or semi-transparent coating. Used to protect and enhance the appearance of specialised paintwork, hardwood or softwood joinery and occasionally over hand painted signs. The varnish must be applied carefully to avoid runs sags or misses. To reach a high quality finish a thinned out coat should be applied first followed by a coat with less thinners finishing with a full bodied coat. Rubbing down between coats is essential for adhesion and removing nibs. It must never be applied in cold or damp conditions as blooming will occur. (Blooming: A milky white appearance that appears on oil based varnish or gloss paints, accompanied at times by a loss of gloss. This occurs if the varnish or paint is applied in cold or damp conditions)

Worn brushes are best for applying the varnish as new ones will not spread the material evenly and they also shed small hairs which are unsightly and must be removed. Synthetic brushes do not shed these small hairs.

While applying look into the finish from different angles to see if any misses are present.

Use small brush for mouldings to avoid applying too much varnish to a small area which will result in runs. The same procedure for painting woodwork should be followed. Oil based varnishes will darken the wood.

All varnishes should be stirred carefully and not shaken as this introduces air bubbles which break after the varnish has been applied leaving a pin holed finish and will have to be wet abraded and recoated when dry.

Wear recommended mask and ensure good ventilation.

### **Application of Water based varnish:**

These varnishes are increasing in popularity due to their low odour and quick drying properties. In many cases the job can be completed in one day where it would take two to three days with oil based materials.

Their application is straight forward after initial rubbing down and dusting off the work should proceed the same way as oil based varnishes. Synthetic brushes are recommended for their application.

If a door or a floor is to be varnished with a light oak varnish it is best to apply a coat of clear first as the quick drying nature of the material will be absorbed into the wood in an uneven way. The light oak can then be applied easily and evenly.

Wear recommended mask and ensure good ventilation.

## ***2.4 Application and suitability of varnish for indoors & outdoor use***

### **Reference Unit Module 3 Unit 2 1.1 for materials**

Application instructions:

- Always read the manufacturers instructions
- Prepare the wood thoroughly using correct abrasives
- Always sand the surface in the direction of the wood grain.
- Always sand down between coats and dust off before painting
- Follow manufacturers recoating times .
- Stir materials thoroughly before and during use.
- Use good quality brushes
- Clean brushes in white spirit when using solvent based products.
- Use warm or cold water (not hot) and household detergent when using water based varnishes.
- Apply even coats. Do not apply too thickly.
- Apply varnishes evenly and finish in the direction of the grain.
- On external wood work coat all end grain as water will penetrate this area easily if not protected
- Check that all exterior wood being worked on is clean and dry.

## *2.5 Care and storage of brushes after using clear coatings.*

### **Cleaning and maintaining brushes.**

The paint brush is the most important tool in the professional painters tool kit and proper use care and cleaning are very important. Brushes used in oil paint can be kept suspended in a water pot for a short period of time. The excess paint should be knocked out on a flat board before placing them in the water pot. It is better practice to rinse them out in white spirit so that paint does not accumulate around the stock.

Bristle brushes should be washed out in the thinners of the paint being used and the same applies to synthetic filaments. If the synthetic brush has been used in acrylic paint or any water paint wash out in warm water or warm soapy water. A brush comb is a useful tool to use regularly to help clean through the centre of the brush. It also helps with straightening the filling. After washing thoroughly again spin dry by hand or with brush spinner. Never tap or strike the brush on a hard surface to remove old paint etc. as this action can loosen the setting in the ferrule. Comb through again to help reshape brush, and hang up to dry. Do not store brush standing on its tip as it will distort the shape of the brush.

### **Brush keeper**

They can also be placed in a brush keeper which is designed to hang up the brush on hooks. The large keeper holds a number of brushes but small keepers can accommodate two brushes. A portable metal container fitted with hooks that brushes can be suspended from. They also have as a fixture a bottle and wick. The bottle is filled with a fluid which is transferred on to the wick and the strong fumes of the liquid are circulated in the container.

The fume laden atmosphere keeps the brushes soft without the need to be immersed in water. The keeper must be kept covered at all times for it to be effective. This is a very handy piece of equipment when transporting brushes

## 3.0 Composition of Solvent and water Based Varnish

### *3.1 Composition and properties of varnishes and preservatives*

#### **Reference Unit Module 3 Unit 2 1.1**

### *3.2 Clean and safe working*

Cleanliness cannot be emphasised enough for any stage of painting but varnishing takes a very special place as the enhancement of wood whether it is doors or floors or furniture they will always be examined more closely than painted work. The areas where the varnishing is to be carried out should be vacuumed rather than brushed to avoid raising dust which is both harmful to the painter and also attaches itself to the wet paint spoiling the finish. Straining of the materials should be carried out regularly to avoid gritty finishes which will need to be rubbed down and re coated.

Materials such as cellulose products should be very carefully treated due to their combustible properties and their strong fumes.

Ventilation is very important and where necessary proper masks should be used. White spirit has a very strong odour and it can raise difficulties for many people. Manufacturers are looking at ways of de-aromatizing it to make it more acceptable.

### *3.3 Importance of working as part of a team*

Reference module No.1734

Title: Teamwork

Project management and team communication

### 3.4 *Estimating quantities of varnish for a given surface*

#### **Sample:**

You are asked to tender for the varnishing of a floor of a community centre.

The floor measures 22m long x 16m wide. Three coats are required. The spreading rate is 15m<sup>2</sup> per litre. Give your answer in litres.

$$\text{Area of floor} = 22 \times 16 = 352\text{m}^2$$

$$\text{Spreading Rate of paint} = 15\text{m}^2 \text{ per litre}$$

$$\text{Paint Required for one coat} = 352 \div 15 = 23.46$$

$$\text{Paint Required for three coats coat} = 23.46 \times 3 = 70.38 \text{ litres}$$

$$\text{Rounded up to the nearest litre} = 71 \text{ litres}$$

**Answer = 71 litres**

***Summary:***

Surfaces that were once carpeted are now being sanded and varnished. New houses are fitted out with pre varnished timber floors and consequently the customer very often to have the rest of the woodwork varnished. There is a wide range available for interior and exterior use and the variety is constantly growing. This is evident when visiting decorating shops where they are on display. The catalogues accompanying them are beautifully produced and contain information that could not be accommodated in text books. Reading the fact sheets and the health and safety data sheets are very important and they should be kept for future reference. Collecting these and visiting manufacturer's websites are very worthwhile.

Always allow plenty of ventilation and use recommended PPE when sanding, using sanding sealers and varnishing. The recommended safe disposal of cloths and thinners must always be a priority as storing these items indoors can lead to accidental fire.

***Suggested exercises:***

1. Prepare and varnish given surface using water based varnish.
2. Prepare and varnish given surface using oil based varnish.

***Self test:***

- Q.1 How should an external teak door previously varnished with oil based gloss varnish and in good condition be re varnished.
- Q.2 Explain blooming and what causes it.
- Q.3 Name three types of sanding sealer
- Q.4 Explain PPE
- Q.5 Explain UV resistant varnish
- Q.6 What type of brush is best suited for applying water based varnish

***Recommended additional resources:***

Painting and decorating Author Roy Hughes

Paint manufacturers websites.

S O L A S

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