# MISCELLANEOUS MATERIAL

Lecture - 2

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# Content


1 Paint and Its Types

2 Material for Doors and Windows

3 Summary

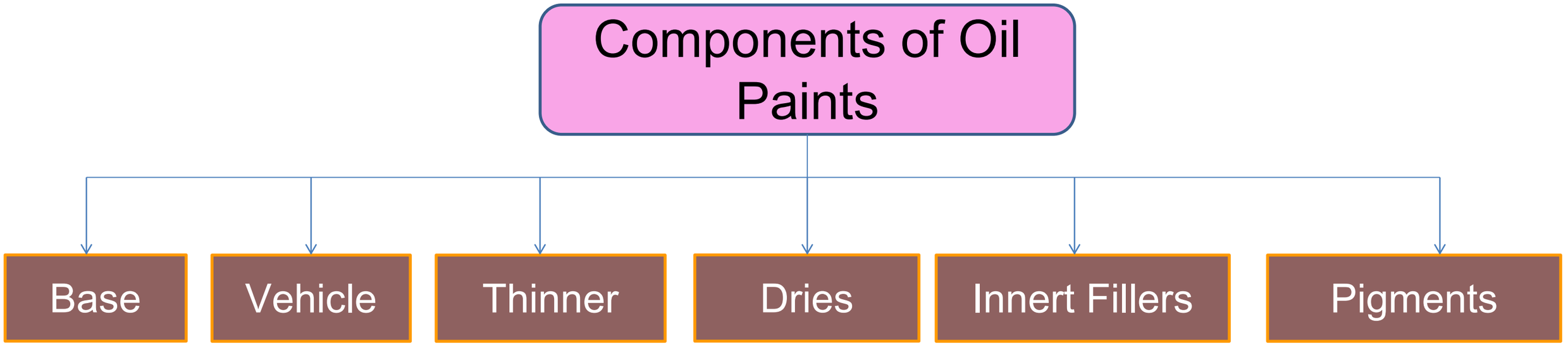
# Paint

Paint, a liquid surface coating , is mechanical dispersion mixture of pigment in a vehicle (liquid). On drying it forms a thin film (60-150 μm) on the painted surface. They are usually applied in layers as priming coat, first coat (also called under coat), and a second coat (also called final coat) to provide a good finish and durability. Paints are classified as;

- ❖ Oil paints,
- ❖ water paints,
- ❖ cement paints,
- ❖ Emulsions,
- ❖ Distempers,
- ❖ Enamel paints.

# Oil Paint

These paints are generally used for protective, decorative and aesthetic purpose.



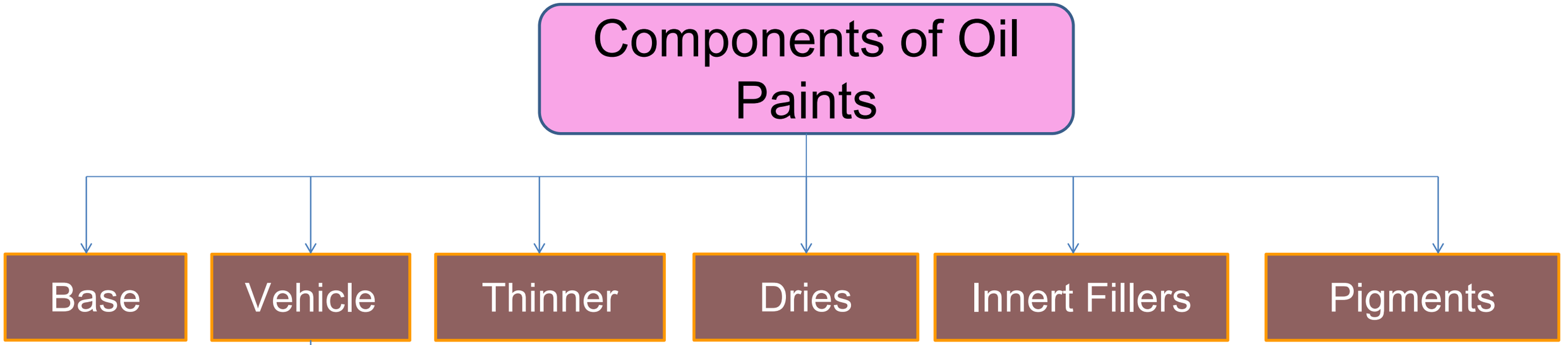
# Oil Paint

## Components of Oil Paints

- Base
- Vehicle
- Thinner
- Dries
- Innert Fillers
- Pigments

- It is a solid finely ground material which reinforces the film of the paint after it has dried
- It reduces the shrinkage cracks usually formed in drying
- It prevent the penetration of the paint to the lower surface
- The most commonly used materials for base of an oil paint are white lead, zinc white, red lead and oxide of iron. Powder of copper, aluminium and bronze are also sometime used as base materials.

# Oil Paint




It is a nonvolatile liquid which carries the solid material of the base. It essentially consists of 90% drying oil and the rest thinner and drier. It serve the following purpose:

- It helps the base material of base to be applied on the surface to be painted.
- It helps to spread the base and pigment over the surface to be painted
- It acts as a binder for base and pigment
- It oxidises while drying and form a tough elastic film

# Oil Paint

## Components of Oil Paints

- Base
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- The most commonly used vehicle is linseed oil. It is transparent and slightly pale cream in colour. The acid present  in it react with the oxygen of the atmosphere and form a thin and hard film of the paint on the surface to be painted.
- For exterior work, pale boiled linseed oil is preferred to raw linseed oil.

# Oil Paint

## Components of Oil Paints

- Base
- Vehicle
- Thinner
- Dries
- Innert Fillers
- Pigments

- Thinners are volatile substances added to vehicles in the paints for:
- Better flow of paints
- Better workability of paints
- Increasing fluditiy of paints

The most common solvent used in turpentine oil. It evaporated quickly and also facilitates the drying of the paint. It is not to be used in exposed work and in final coats because it reduce the gloss of the paint and is also affected by atmospheric agencies. When it is to be used, it should be added in small quantities. Petroleum, spirits are the example of thinner.

# Oil Paint

## Components of Oil Paints

- Base
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- Pigments

Dries are organic salts of various metals added to the paints in order to

- (a) Accelerate oxidation
- (b)Accelerate hardening

The most common used driers are salts of iron, zinc, cobalt, manganese and calcium in the form of lead oxide for lead based paints and zinc sulphate and mahganese oxide and zinc oxide base paints

# Oil Paint

## Components of Oil Paints

- Base
- Vehicle
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- Dries
- Innert Fillers
- Pigments

Innert fillers added to the paint body to increase the volume without increasing its cost without changing its basic properties.
Calcium carbonate,
ground silica,
aluminium silicate,
magnesium silicate

# Oil Paint

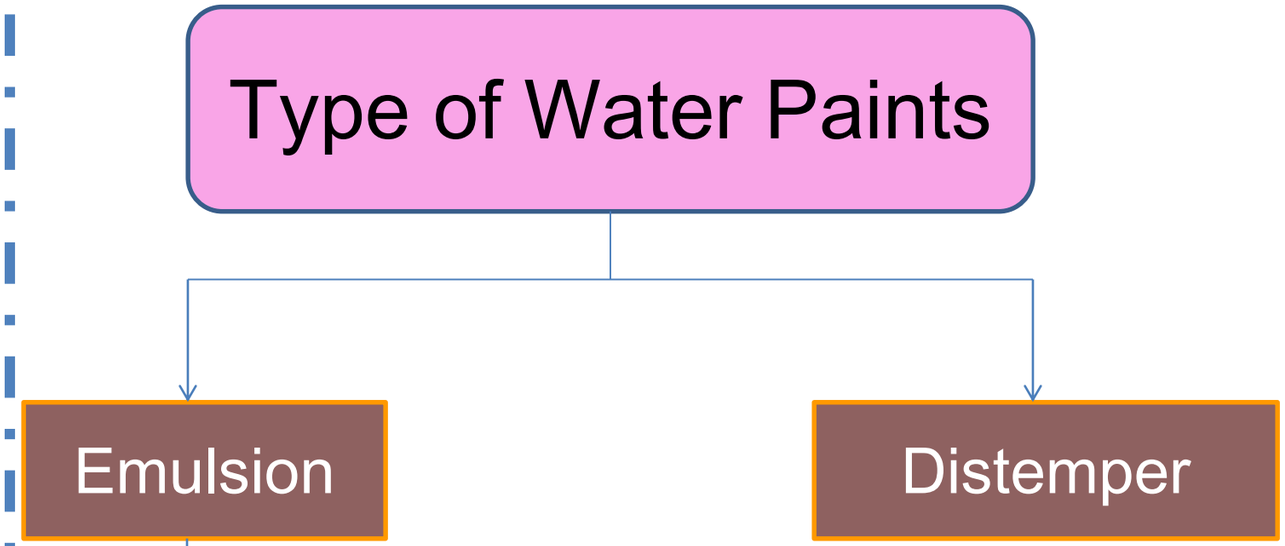
## Components of Oil Paints

- Base
- Vehicle
- Thinner
- Dries
- Innert Fillers
- Pigments

Pigments are materials which impart colour to the paint, and are added to the finely powdered state.
Pigments reduce the intensity of cracks which are likely to be develope when the vehicle present in the paint become dry.
Most of the pigments are derived from animal, vegetable, and mineral sources and are composed of natural mineral oxide.

# Water Paint

These are the paints which consist of mineral pigments that are carried in water in the presence of a drier. Water paints are also known as distempers. In water paints, the base is not white lead, but instead whiting or chalk is used to serve this purpose. The vehicle used in water paints is not an oil, but clear water as is clear form its very name "water paints".




- An emulsion comprises of two unmixable liquids, the one being dispersed in the other in the form of fine droplets. In emulsion paints, the pigments are finally dispersed in water so as to form an emulsion
- Emulsion paints are water thinned and are easy to apply with brushes and remove splashes. The most commonly used emulsion paint is polyvinyl acetate based (PVA), this substance being a synthetic resin. These paints show a mat like finish.

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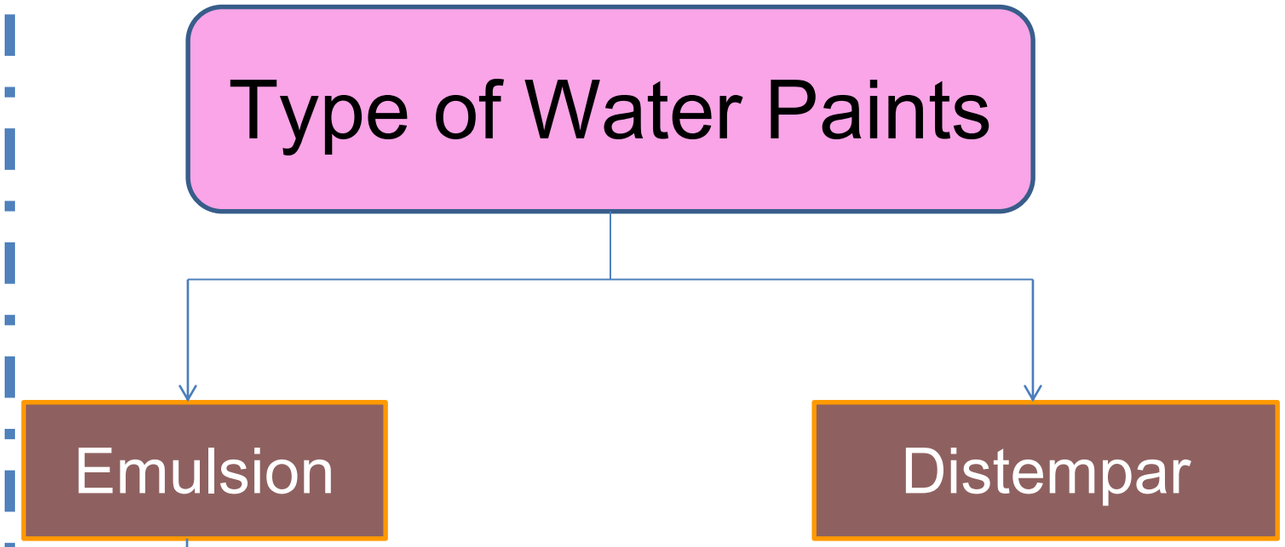


Acrylic or semi-gloss emulsion. These paints are based on acrylic emulsion and can be thinned with water. They are used for painting all interior surfaces.

- Properties of emulsion paints
- They are easy to apply with brushes or a roller and give a fine finish. The brushes are easy to clean.
- These are generally used for internal non absorbent surfaces.
- They can be washed 3 to 7 days after application
- They do not adhere to oily and greasy surface
- They are free from persistent swell while drying and dry rapidly.

# Water Paint

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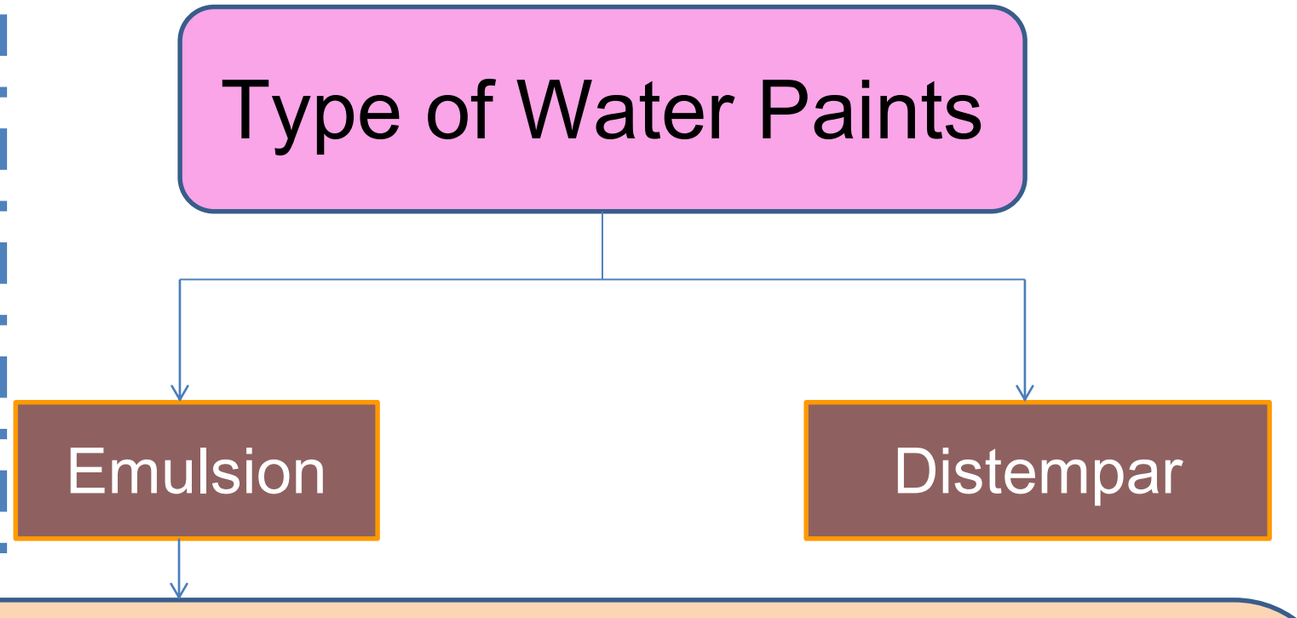


**Uses of emulsion paints**

Used for decorative interior walls and ceilings. These are not suitable for wood work, except as an undercoat.

- Emulsion paints are also known as plastic paints or latex paints.

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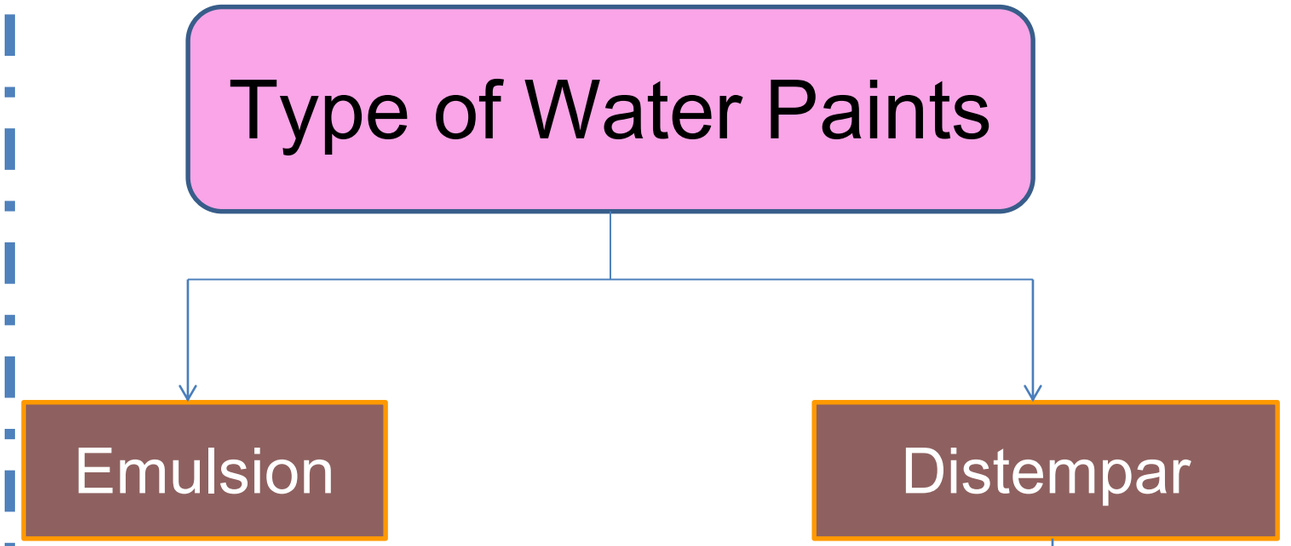


Distemper also termed as water paints. These are similar to oil paints with the difference that the base in this case is not *white lead* but instead *whiting or chalk* is used to serve this purpose. Similarly, the ***vehicle*** used is not an *oil* ***but clear water in its place***.

Distemper may be available in the form of a powder when they are known as dry distemper or in the form of paste are called oil bound distemper. The necessary pigments are added in the distemper depending upon the nature of colour desired. In order to increase the *durability* of distempers, a certain percentage of ***glue*** is added. Glue serves as an emulsifying agent and also prevents the distemper from being removed when rubbed..

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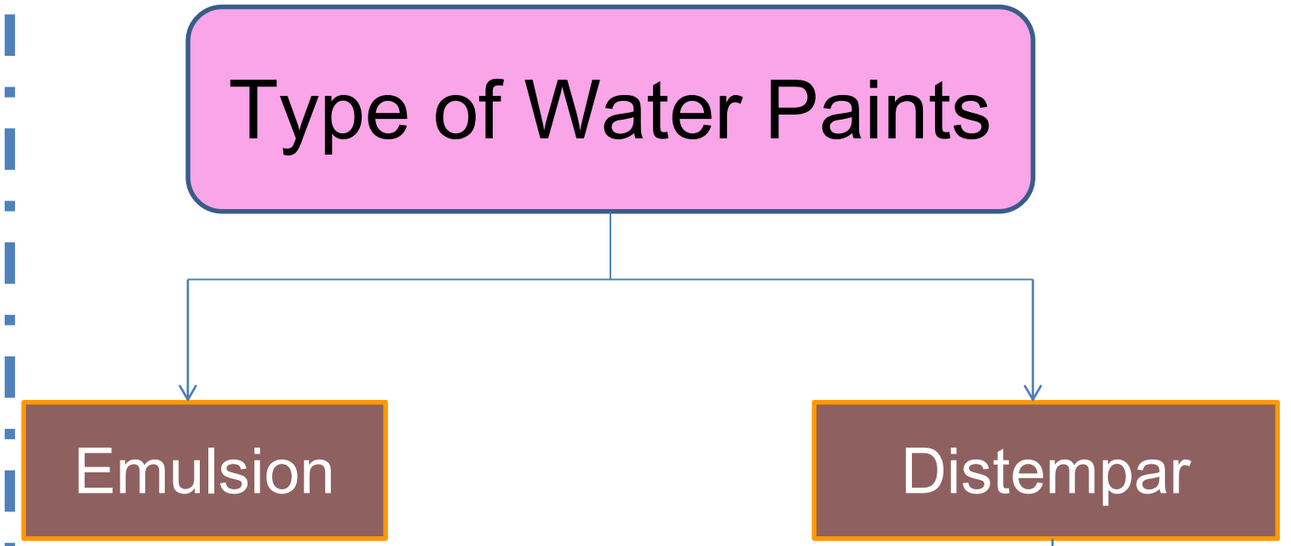


Distemper are usually applied for interior work for presenting the pleasing coloured appearance. These are not used for surfaces which remain wet for most of the time in the day such as bath rooms, kitchens etc., and also for surfaces which have been finished by painting.

**Application of distempers**

These may be applied on newely plasters walls or on walls which have previously been white washed or colour washed. The plastered walls should be left for about six to eight months before distempers are applied on them.

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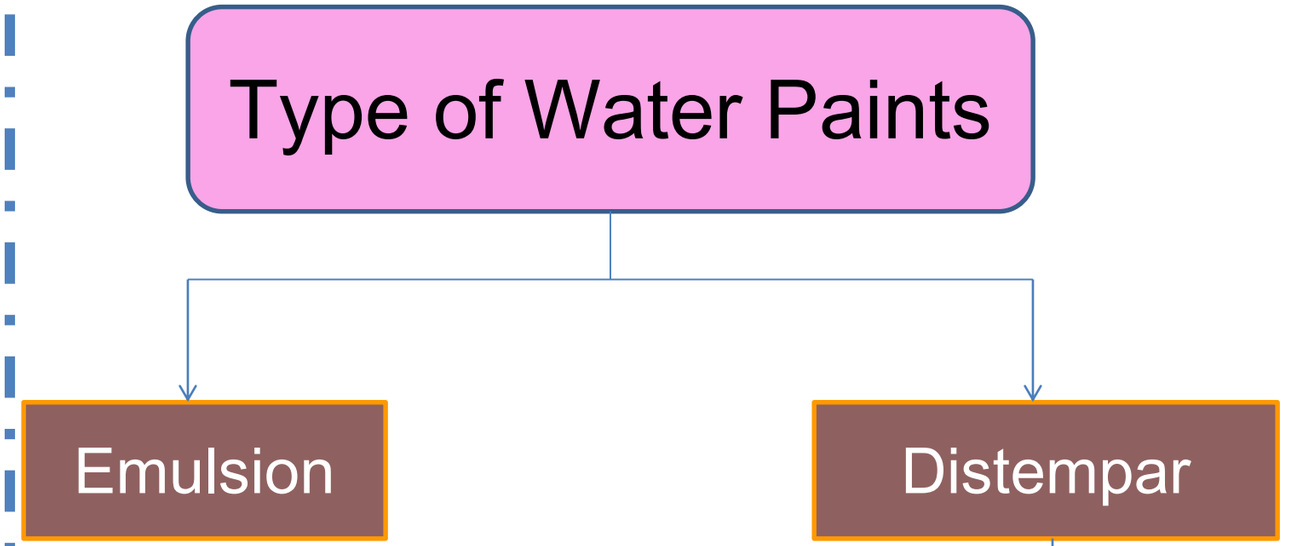



Before applying, the plastered surface should be perfectly dry and free from any surface defect. The old wash and colour if any, should be removed completely with sand papers. The distemper are then applied with a brush first cross-wire followed by up and down strikes.

# Cement Paint

These are very economical, durable and decorative paints which are made with the base of white Portland cement. These paints also contain varying proportion of hydrated lime, colouring pigments and hygroscopic salts. A small quantity of aluminium stearate is also added to act as water repellent. It can be used for exterior as well as interior purpose. They are available in powder form and requires mixing in water only.

It Can be used for durable and decorative product for cement plastered walls and outer surfaces of residential building as well public building etc.,

# Enamel Paint

These are oil based paints and contain white lead or zinc white, oil, petroleum spirit and resinous matter. Nowadays there paints are usually based on titanium white. They dry slowely and forms a hard and durable surface. Surface painted with enamel paints are not affected by acids, alkalies, hot and cold water and steam etc.

These paints are non-toxic. They can be thinned with white spirit. Enamel paints are usually available as readymade paints

# Enamel Paint

## Use of Enamel Paint

These paints are used for internal and external use.

These are used for protecting timber and other timber products

These are also used for painting doors and windows frames.

# Varnishes

Varnish is a type of paint in which resins are used instead of a base. It is prepared by mixing suitable resins in a particular solvent. It is usually use for painting wooden furniture and other wood works so as to give them a bright and ornamental look and to protect them from weather.

The wooden surface is thoroughly cleaned, made smooth and dried before varnish is applied. The solvent used in varnish may be oil, when it is known as an oil varnish. Spirit varnish is more commonly used and give better appearance then oil varnish.

# Varnishes

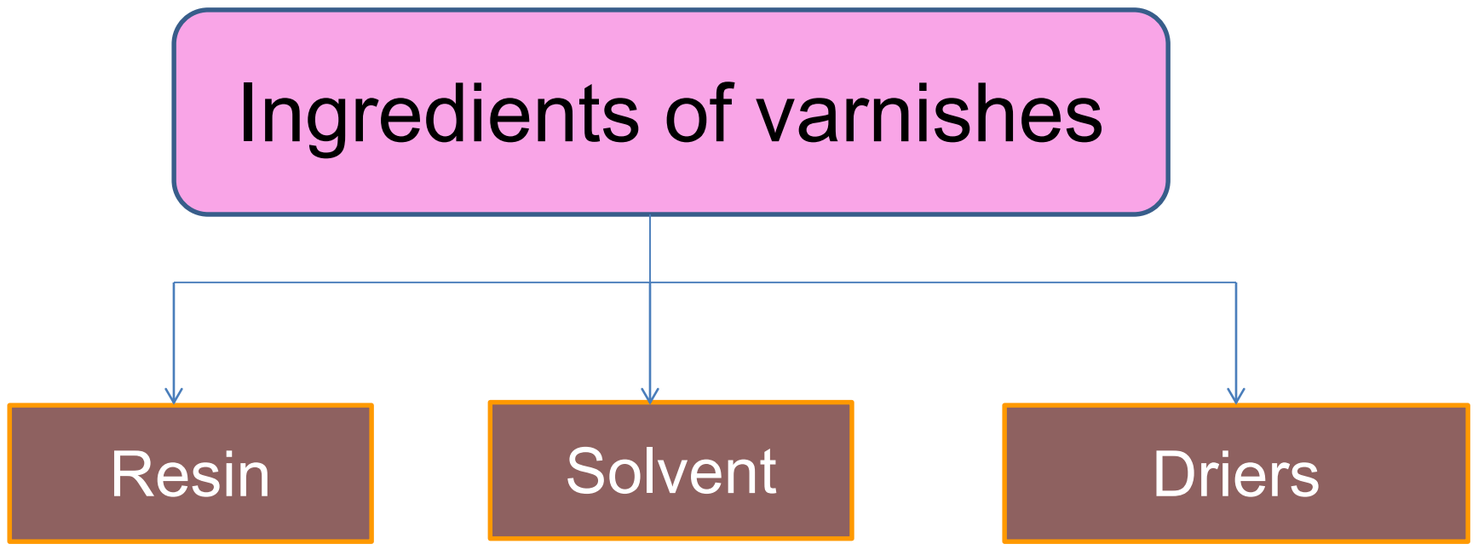
## Characteristics of varnishes

It provide a hard and tough film

It provides a brilliant and decorative covering on wooden materials.

It offers resistance to weathering effect.

It is more or less a transparent liquid.



# Varnishes

## Resin

The quality of varnish depends upon resin. Common resin are amber, copal and lac which are some of the principal resins. Resins serves the same function as is served by base in oil paint.

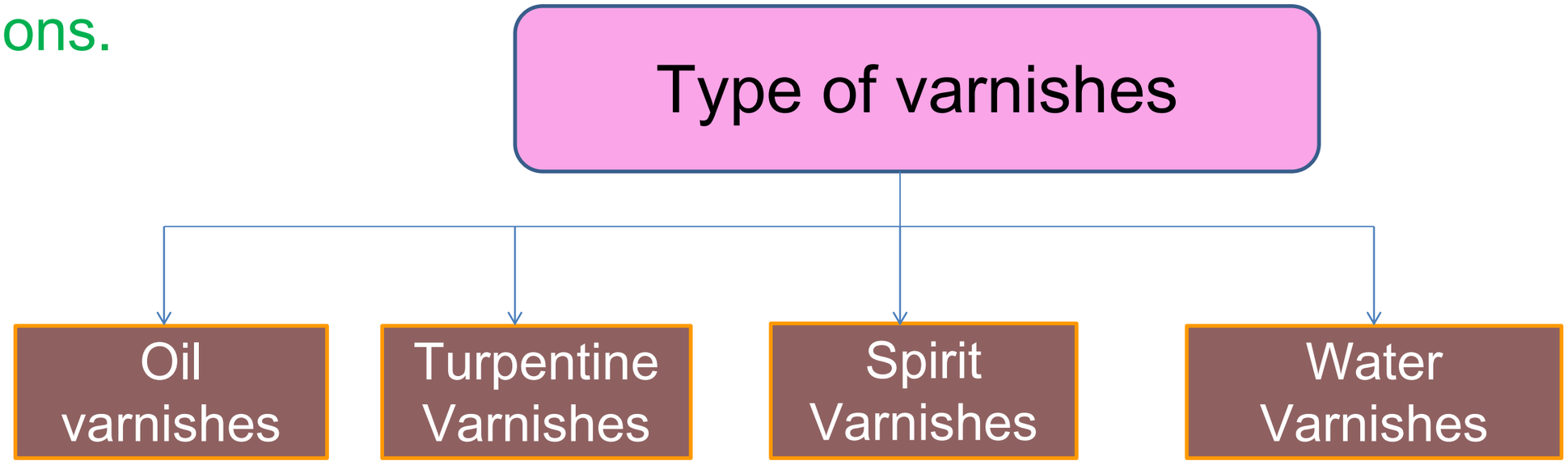
## Solvent

They help in spreading the resin over the surface to be varnished and act as vehicle. The commonly used vehicles are boiled linseed oil and turpentine.

# Varnishes

## Driers

This is added to help in quick drying of the varnish. Driers are generally added to varnish in the form of litharge. It should be added in large proportions.

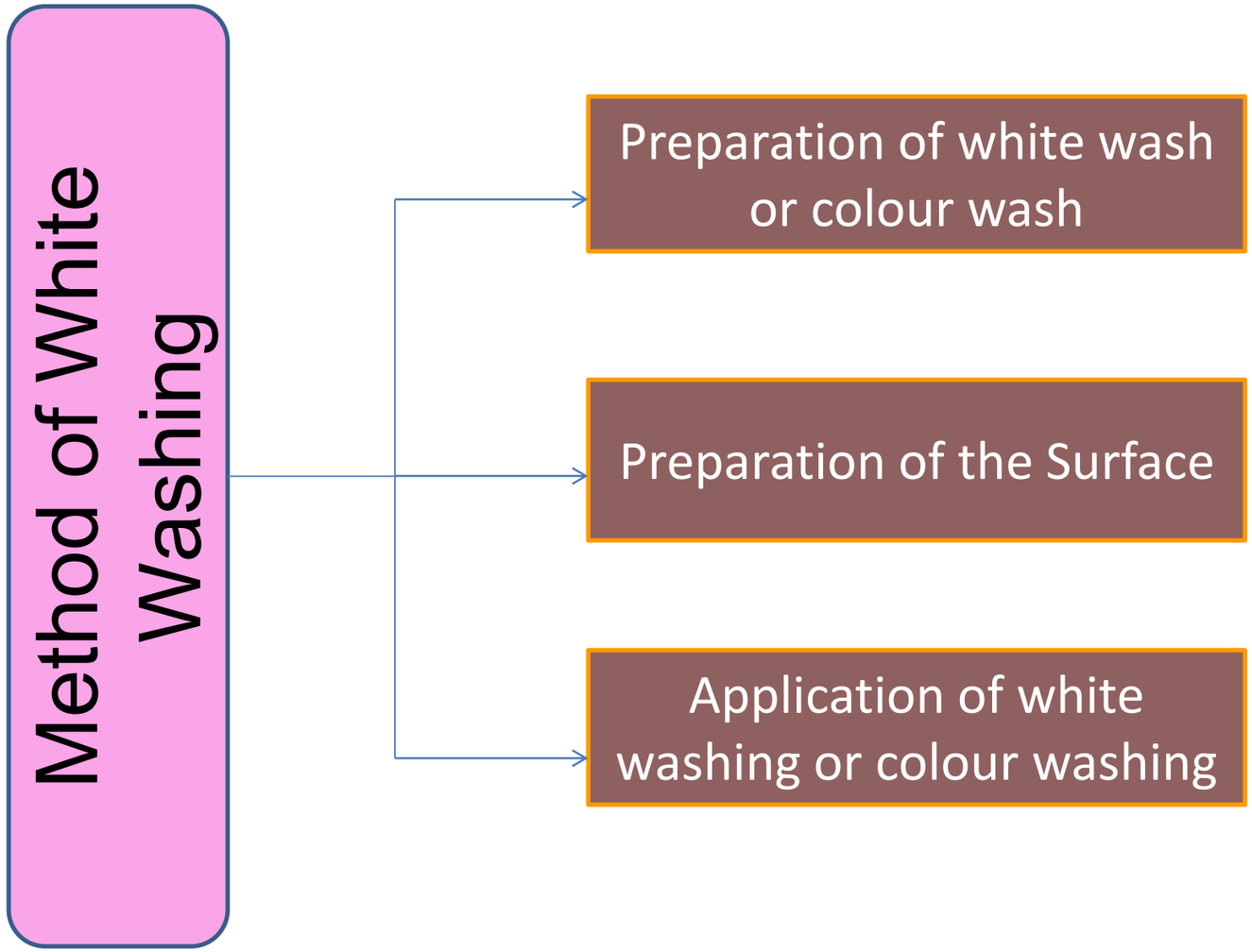


# White Washing

it is a low-cost type of paint made from slaked lime (calcium hydroxide, $Ca(OH)_2$) and chalk (calcium carbonate), ($CaCO_3$), sometimes known as "whiting". Various other additives are also used.it is coloured and used on structures such as the hallways of apartment buildings, but it is not popular for this as it can rub off onto clothing to a small degree.

The plastered surface of walls and cellings provide dull appearance and do not help in distribution of light properly inside the rooms of a building. They are, therefore, white washed or colour washed for providing pleasing appearance, better distribution of light and for sanitary reasons.

# White Washing




## Preparation of white wash or colour wash

Mix quick or fat lime in water. The quick lime is put in an iron tub with sufficient quantity of clean water. When slaked, it is stirred and thinned by adding more water to have the required consistency of the wash. The wash is then strained through coarse cloth or sieve in an other tub.

The color wash is usually prepared by adding the necessary colouring pigment in suitable proportion to the prepared white wash.

# White Washing

Method of White Washing

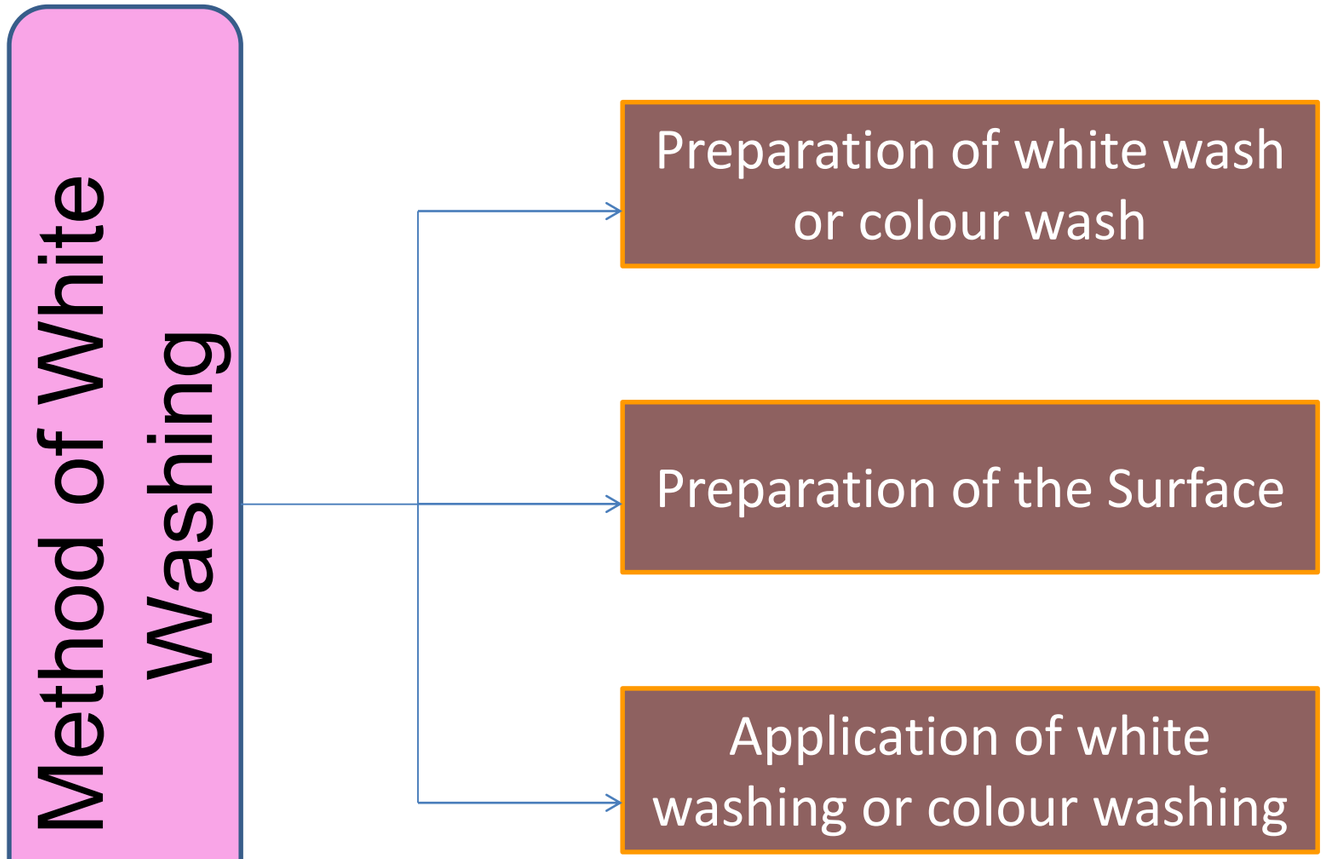
- Preparation of white wash or colour wash
- Preparation of the Surface
- Application of white washing or colour washing

## Preparation of Surface

Before applying the wash, the surface should be well cleaned, brushed and brought in dry condition. The surface should not be very smooth. It should be rubbed with sand paper otherwise the wash will not properly stick to the surface. The holes should be filled in with lime putty.

In case of re-white washing or re-color washing,surface should be cleaned off all loose old wash and rubbed with a sand paper.

# White Washing




## Application of white washing or colour washing

After preparing the surface, the white wash or colour wash should be applied with a brush. Three coats are generally required for a new wash and also in the case of scraped surface. The coats are applied alternately vertically and horizontally. The vertical stroke is given from the top downwards and from bottom upward and similarly, the horizontal stroke is applied from right to the left and then to the right. Each coat should be allowed to dry before applying the next coat.

# Materials for Doors and Windows

❖ FIBERGLASS

Fiberglass doors are built to withstand years of use without showing so much as a scratch. Fiberglass comes in the color of your choosing and can easily be repainted. Some doors even come with the option of wood cladding to match you home décor.

❖ ALUMINUM

Aluminum is the most popular, affordable and durable material in use for doors. Beyond being resistant to insects and the elements, the metal is able to handle the weight of a large piece of glass and still slide smoothly for years. It often present a sleek, modern feel, understated enough to slip into the background of a more traditional home. When painted for your aesthetic, aluminum doors or wall systems can match anything around them.

# Advantage of Aluminium

- Slim profile
- Durable
- low maintenance
- Anti corrosive
- Light yet strong
- Available in anodised and  baked with finishing long  lasting color

# Wood and Vinyle

❖ WOOD:

A great choice for your entry door, among other places. The manufacturers can create a wood door that will meet the specific requirements.

❖ VINYL

Vinyl does not show scratches, is very thermal resistant and will be easy on your budget. Commonly used for patio doors, vinyl doors can swing, slide or fold. The choice is yours.

# Summary

- ✓ Paint and its Type
- ✓ materials for Doors and Windows

# Thank You