

# Preservation of Wood

**Wood preservative is a protective chemical liquid which is available coloured or clear. It is applied to wood to:**

- 1. Lengthen the life span**
- 2. Protect attack by fungi and insects.**
- 3. Guard against weathering.**

## Health and Safety

- Most preservatives are flammable: Never apply near a naked flame
- Wear PVC gloves, overalls and a respirator at all times when applying or handling preservatives.
- Ensure good ventilation.
- Always follow the preservatives safety warnings.
- Store carefully away from children.
- Always wash hands or exposed skin after use



# Types of preservative

1. Tar oil

2. Organic solvent

3. Water- borne

## 1. Tar oils

Normally dark liquids  
(from coal mineral) and  
used outdoors.

Use: ESB poles, railway  
sleepers, peirs



## 1. Tar oils

### Advantages

- Cheap
- Long lasting
- Easily applied
- Highly toxic to fungi and insects

### Disadvantages

- Strong smelling
- Stain the wood
- Cannot be painted over



## 2. Water- borne

- Consists of salts of copper, zinc etc. dissolved in water
- Water carries the salts into the wood and then the water slowly evaporates.
- The salts are left in the wood to preserve it.



## 2. Water bourne

### Advantages

- Colourless
- Timber can be painted over
- Environmentally friendly
- High durability

### Disadvantages

- Can cause warping and swelling of wood i.e. water (%MC)
- Timber needs to be dried out after treatment
- Does not protect against weathering



### 3.Organic Solvent

- Chemical mixed with white spirits (not water) which evaporates after the preservative is applied.
- Usually coloured brown, green or red.
- Used on softwood doors/windows, shop fronts, garden furniture, building construction timber.
- Applied using brush or spray.

### 3. Organic Solvents

#### Advantages

- Applied using brush or spray
- Protects seasoned timber against fungi and insects
- Not harmful to wild life
- Non-corrosive to metals

#### Disadvantages

- Most expensive
- Timber will not survive in buried ground

# Use of Preservatives

| <u>PRESERVATIVE</u> | <u>OUTSIDE USE</u> | <u>INSIDE USE</u> |
|---------------------|--------------------|-------------------|
| Tar Oils            | Yes                | No                |
| Water- Borne        | Yes                | Yes               |
| Organic Solvents    | Yes                | Yes               |



# Applying preservatives

Before applying preservatives it is important to carry out all sawing, planing, cutting, boring, drilling and sanding before treatment.

- It is important that no untreated wood will be exposed.

Where this is not practical, the exposed surfaces, especially end grain, should be dealt with as a separate operation.

Wood should be bone dry and free from anything that would prevent penetration of the fluid.

# Applying Preservatives

## Three methods of applying preservatives

1. Brush & Spray
2. Immersion
3. Pressure impregnation.

# Brush and Spray

Preservative is either brushed or sprayed onto the wood.

The liquid (preservative) should be flooded over surfaces so they absorb as much as possible.

When spraying ensure you apply a coat, let it soak for a few minutes and then apply another coat.

Spraying is mainly used for treating timbers already in place in buildings.





# Brush and Spray

## Advantages

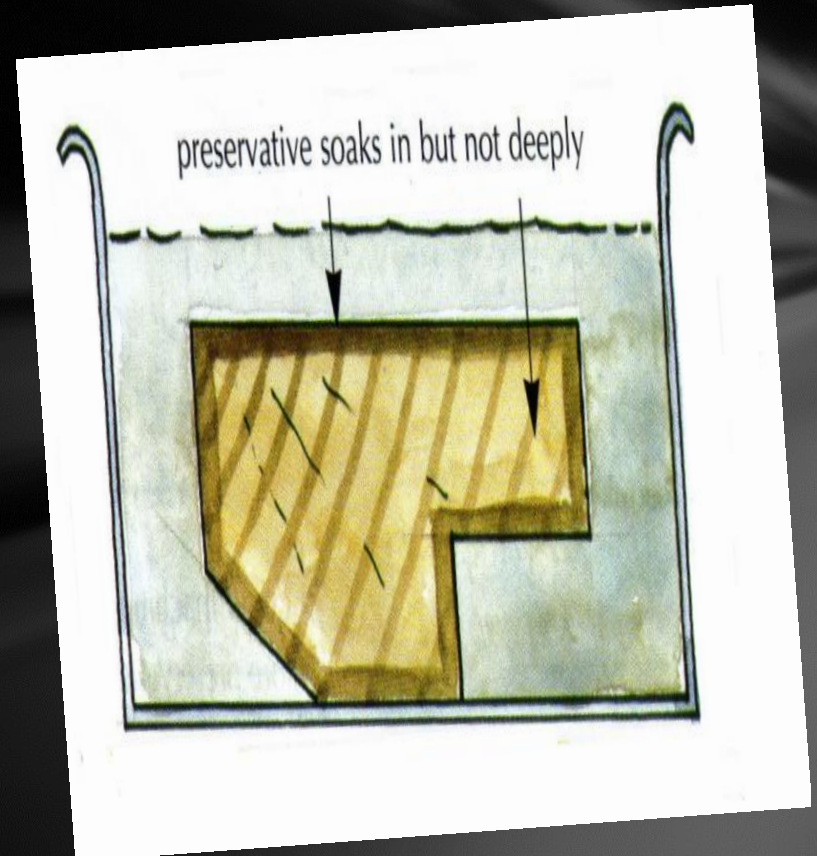
- Simple to use
- Can be used for all types of preservatives
- Used for repair work

## Disadvantages

- Very little penetration
- Several coats may be required for maximum protection
- Externally, the treatment must be repeated every two or three years.
- Not a suitable method for timber in contact with the ground.

# Immersion

- Wood is immersed in a container or open tank full of preservative for up to ten minutes.
- The wood absorbs the preservative over this time.
- Heating the preservative in the container will improve the depth of penetration.
- If timber to be in contact with the ground should be immersed for several days to give deep penetration.



# Immersion

## Advantages

- Greater penetration than brush or spray
- It will protect timber in contact with the ground (l.e. fence posts)

## Disadvantages

- Time consuming
- A lot of preservative is needed to fill the tank
- Extra equipment needed



# Pressure Impregnation

- Most effective and widely used method of applying wood preservative.
- Use in marine work, docks, piers, sheds, doors, windows, shop fronts, garden fences etc.
- Can be used with any three classes of preservative.



# Stages in Pressure Impregnation

## **1. First vacuum**

Timber is placed in a sealed pressure vessel and a vacuum applied to remove air from the wood cells

## **2. Impregnation**

Vessel is flooded (filled) with preservative and the vacuum and atmospheric pressure force the preservative into the wood cells

## **3. Second Vacuum**

Vessel is emptied and a second vacuum applied. This vacuum removes excess preservative and leaves the timber dry.

**Water will not go into the wood cells because they are full with preservative. Fungi/ insects need moisture above 20%**

# Immersion

## Advantages

- Deepest penetration of the three methods
- It will protect timber in contact with the ground (I.e. fence posts)

## Disadvantages

- Costly
- Time consuming
- A lot of preservative is needed
- Extra equipment needed