Very little penetration or retention is achieved making this the least effective treatment method.

Dipping and Soaking involves totally immersing freshly sawn or dry timber in a bath of preservative. Organic solvents and water borne preservatives are used. Penetration and retention depends on immersion time and type of wood.

Diffusion Treatment involves immersion of dry or freshly sawn timber into a water-borne preservative. The preservative must have a higher concentration than salts in the timber in order to be absorbed. The timber is left in moist, saturated conditions for about one month to ensure maximum penetration and distribution. This method is used for timber species, which are resistant to pressure treatment.

Sap Displacement is applied to freshly felled fencing posts and poles. It involves forcing water borne preservatives into sapwood by pushing out sap. The posts are placed upright in a container with preservative. Sap is displaced while the chemical is absorbed into the wood.

Hot and Cold Tank Process. Wood is heated with creosote to a temperature of 80 - 90°C. During heating, air is expelled from the wood cells. On cooling the remaining air contracts, creating a partial vacuum which draws in surrounding preservative. This method is used for treating fencing posts and transmission poles. It competes favourably with pressure treatment.

Vacuum-Pressure Treatment

External pressure is used to force the liquid preservative into the wood. An initial vacuum is used to draw air out of the wood cells, allowing the preservative to be pulled into the cylinder by the vacuum. The preservative is driven into the wood by applying pressure to the cylinder. Excess preservative is removed by applying a final vacuum. This is a highly effective and efficient treatment method but it is limited by the cost of equipment required.

Additional information on wood preservation can be obtained from:

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NATIONAL AGRICULTURAL RESEARCH ORGANISATION

FORESTRY RESEARCH INSTITUTE



Preserving Wood for Longer Life

Forest Products Programme

Introduction

Wood for construction, fencing, transmission poles, furniture, decorations, flooring and panelling has desirable characteristics. It is strong, easy to work with, relatively light, comparatively inexpensive, pleasing to the eye and an environmentally sound product. The major disadvantage is its vulnerability to decay and pest attack.

Preserving wood with chemicals can increase the life of wood products by reducing or eliminating the activities of insects and fungi.

Biological Deterioration

Insects and fungi either feed on the wood or build their dwellings in the wood thus destroying the timber. The most notorious agents of wood destruction in Uganda are termites and boring insects. Insects normally turn the wood into powder form as they bore through it. Fungi cause wood to rot.

Non- Biological Deterioration

Fire is a major wood-destroying agent. A fire retardant is used to decrease the combustibility of timber and increases its fire resistance.

Repeated wetting and drying of timber results in deterioration. Timber swells and shrinks as a result of changes in relative humidity. This eventually brings about checks, splits, warping and cupping. Water repellent wood preservers e.g. Nevarot are used to reduce effects of wetting and drying.

Timber Treatment

Fungi and insect attack can be minimized or prevented by treating the timber with chemicals, referred to as preservatives. Preservatives extend the service life of timber by killing or repelling insects and fungi.

Preservatives

A good preservative:

* Is chemically stable;
* Should not be leached;
* Must be harmless to human beings and animals;
* Is non-corrosive to metals;
* Has no effect on wood properties.

Types of Preservatives

Oil-borne or tar oils are by products of oil or preservatives, prepared by dissolving toxic chemicals in low cost solvent oils. Creosote and wood tar are oil borne preservatives.

Water borne preservatives are salts that dissolve in water, such as copper chrome arsenate (CCA), Tanalith, Clecure, Rentokil and DragnetFT.

Organic solvent preservatives are substances which, dissolve in organic solvents (kerosene, diesel and oil). Pentachlorophenols, Nevarot and TRC water repellent wood preservers are organic solvent preservatives.

The success of wood preservation can be judged by the service life of the treated timber. The service life depends on how much preservative is absorbed and the depth of penetration. Penetration and retention of preservatives depend on the nature and moisture content of wood; and, the treatment method used.

Timber Preparation before Treatment

Timber, needs to be seasoned (dried) planed and cut to the required length before treatment. However, some treatment methods deal with freshly felled timber or posts. Posts have to be debarked before treatment.

Non-Pressure Treatment Methods

Brushing and Spraying involve brushing or spraying preservative on dry timber. Organic solvents and oil borne preservatives are used.