

UNDERSTANDING Wood Preservation

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Bruec Breedt, executive director of the South African Wood Preservers Association, discusses the basics of wood preservation.

There are two types of wood preservation; primary (industrial) and secondary (DIY). Primary wood preservation involves a process whereby wood is impregnated with an industrial chemical wood preservative (biocide) to increase its durability and resistance to biological attack, i.e. fungi, wood borers and termites. High pressure processes, involving waterborne chemicals and Creosote are predominantly used and other approved methods of primary wood preservation are hot and cold open tank, using Creosote, diffusion, using Borates and low pressure or double vacuum processes using light organic solvent preservatives (LOSP) such as TBTN-P or Azole Permethrin.

Visit <http://youtu.be/aCF0kYD6ruY>

for an animation of the pressure process used. Primary wood preservation is a pre-treatment where the timber is impregnated with a wood preservative prior to end use application, and therefore acts as preventative measure. It is not

supplemental or remedial (after the fact). Chemical retention, penetration and processes used are prescribed in SANS standards and mandatory compliance is regulated through regulations and compulsory specifications. Third party product certification is thus required.

Secondary wood preservation includes supplemental or remedial preservatives that contain biocides as active ingredients which can also be included in protective wood finishes, i.e. wood sealers as the carrier. Supplemental or remedial preservatives are mainly applied by hand e.g. brush, paint or sprayed on in a DIY setting and are mainly corrective to stop further attack but can also be preventative, i.e. treating exposed ends of pre-treated timber that has been modified or cut. Bandages, pastes and rods (sticks) with diffusible borate as the active ingredient also fall under the remedial preservatives. Supplemental or remedial preservatives normally require an ongoing maintenance program to remain effective.

Protective wood finishes come in the form of sealers and varnishes, contain no biocides and are also applied by brush, paint, and spray in a DIY setting. These types of wood finishes protect against weathering factors, such as water ingress

temperature changes and UV rays, but not against fungal and insect attack.

Why preserve timber?

The natural durability of our commercially grown and used plantation species like Pinus and Eucalyptus, is low, rendering it susceptible to insect and fungal attack; therefore it is imperative to preserve the timber. Timber preservation also enhances durability and confidence in using timber and extends the life of timber, as well as providing the added benefit of increasing the carbon sink.

Preservation of timber and the use of preservative treated timber is regulated by building regulations, such as regulation A13, as well as in the NHBRC manual, which specifies the use of preservative treated timber when used in a permanent structures in specific areas of South Africa. Compulsory specifications for timber preservations can be found in the VC 9092 (NRCS) specification which regulates the sale of preservative treated timber. Both these regulations refer to SANS10005, The preservative treatment of timber, which in turn refers to the relevant product standards mentioned below.

Choosing the correct treated timber

The following SANS standards apply to treated timber:

- SANS 457 parts 1 and 2 - wooden poles, droppers and guardrail posts for building, fencing and agricultural purposes.
- SANS 753 and 754 - wooden poles for transmission and telephone lines.
- SANS 1288 - All other preservative treated timber, e.g. sawn structural, flooring, etc.

These standards specify a Hazard Class system (H Classes), which categorises treated timber into different end-use applications based on the following:

- Different exposure conditions
- Potential risk of biological attack
- Preservative retention /chemical loading

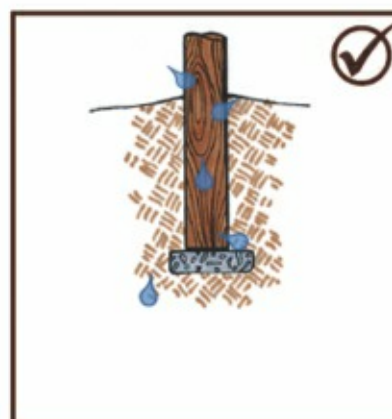
H CLASSES	PRESERVATIVE TYPES	TYPICAL END-USE APPLICATIONS	PROTECTION	RISK FACTOR
H2 – Dry interior above ground	• Class W – CCA, CuAz, ACQ and Boron • Class O – TBTN-P and ZP	Roof trusses and frame wall construction, interior doors and joinery	Insect attack	Low Risk
H3 – Exterior above ground	• Class W – CCA, CuAz & ACQ • Class C – Creosote & Coal tar	Decking, cladding, outdoor furniture, and exposed structural, fencing and landscaping timber products not in direct ground contact.	Fungal attack and insects	Moderate risk
H4 – Exterior in-ground	• CCA, CuAz & ACQ • Creosote & Coal tar	Normal in ground timber/ poles used structures, fencing, landscaping and garden features, etc.	Fungal decay and insect attack	High Risk
H5 – Fresh water & heavy wet soil contact	• CCA, CuAz & ACQ • Creosote and Coal tar	Used in contact with fresh water and heavy wet soils, e.g. structures in fresh water, such as jetties, walkways, piling, etc.	Fungal decay and insect attack	High Risk
H6 – Marine	Dual treatment of firstly CCA and then Creosote	Used in direct contact with sea water, e.g. jetties, quays, marine walkways, retaining walls and barriers	Fungal decay and marine borers	High Risk

HAZARD CLASS	APPLICATION AND RISK	PRESERVATIVE TYPE	RETENTION KG/M3
H2	Dry indoors, above ground - Low	CCA Creosote	6 80
H3	Outside above ground - Moderate	CCA Creosote	8 80
H4	In ground contact - High	CCA Creosote	12 100
H5	Fresh water & heavy wet soil - High	CCA Creosote	16 130
H6	Marine (sea) water	CCA & Creosote	24 + 200

Product use information

Be sure to choose the correct H class timber for your intended application and apply remedial preservative to all cross-cut and exposed areas (except when in contact with the ground, fresh water or marine applications). Apply a suitable brush, paint, or spray-on wood sealer when the natural look of the timber is desired. Do not plant poles inside an encapsulated concrete base. Instead, use a 'collar' or compacted stone and soil with or without a solid (cured) concrete base.

How to plant a pole



* The detail in this diagram assists proper drainage of any moisture that may be absorbed by a wooden pole. A structural engineer must be consulted for detailed structural requirements.

Safety Precautions and Warnings

When machining (e.g. sanding and sawing) CCA treated wood, be sure to wear a dust mask. It is also important to wear safety glasses to protect your eyes from flying particles. Work in a well-ventilated area to avoid prolonged inhalation of sawdust from CCA treated wood and wear gloves when working with freshly treated wood. Always wash work clothes separately.

Do not make baby toys or furniture from CCA treated wood that may be chewed on by infants, or make any food utensils from CCA treated wood. Do not use CCA treated wood for firewood, to prepare any foods and do not store food in direct contact with CCA treated wood containers.

Do not make containers for storing drinking water from CCA treated wood. CCA treated wood should also not be used in beehives where it may come into contact with the honey, nor should treated wood shavings or sawdust be used for animal litter or where it can become a component of animal feed.

Disposal

Treated timber waste is not regarded as hazardous waste material; however, treated wood off-cuts and waste should not be allowed to accumulate, but should be disposed of at a registered disposal or landfill site.

It is important not to burn treated wood off-cuts and waste or use it firewood for food prepa-

ration, as this will allow the release of chemicals, which are tightly bound to the wood, into the smoke. The ashes may also contain residual chemicals.

The primary wood preservation industry currently boasts 116 certified treatment plants in South Africa, consisting predominantly of CCA treatment plants and Creosote plants. In 2013, the total estimated preservative treated timber volume treated in South Africa was 1 065 580m³.

For more information on wood preservation in South Africa, please contact SAWPA at 0119741061 or sawpa@global.co.za or visit www.sawpa.co.za