

Exploring the discussion around solution uptake values for timber treatment



Much has been said in the South African industry regarding the correct solution strength that is required to treat timber. Currently retention is measured in kilograms per cubic meter, which is based on the SABS standards for timber treatment. The core of the discussion revolves around how relevant standardised solution strengths are when one takes into consideration the changes in timber density over the past three decades. For this purpose, the original formula, used to determine the kilogram per cubic meter amount, needs to be re-examined. It is time that the current sapwood ratio be taken into consideration in relation to the standardized value of solution strength.

Navi Moodley, Chemical Laboratory Manager at Dolphin Bay has spent some time looking at the factors that can affect the accuracy of solution uptake and how the problems resulting from using incorrect or inaccurate solution uptake values, can be addressed.

Three important aspects must be controlled and monitored during the treatment process:

Retention which is defined as the distribution of concentrate preservative in each cubic metre of treated wood (measured in kilograms per cubic meter).

Solution strength which refers to the potency of the mixture used at a specific plant (measured in grams per litre).
Thirdly – the primary starting point - solution uptake, also known as the wood absorption capacity. This is defined as the volume of solution which can be absorbed by the timber being treated (measured in litres per cubic meter).

“By knowing the solution strength and the desired retention, the volume of solution needed to be pressure impregnated into the wood, can be calculated – if you have the solution uptake,” says Navi.

Navi says that in most instances, all the quantities can be controlled and measured satisfactorily, except for the solution uptake.

“Since this is the primary starting point, it seems very strange that this is often the value we are the least certain about,” says Navi.

Factors that affect uptake include the species of timber, the sapwood ratio, changing climate over time, moisture content and age of the wood, and the quality of the site where it originated from.

Navi says the combination of all these factors means that using one standardised value for a specific timber species, might not necessarily represent its actual solution uptake.

Braam Rust, Dolphin Bay sales executive and former forester, says it is not practical to apply one value for all the timber being treated in South Africa as timber densities vary from province to province.

“You can even get different timber densities in one province depending on growth site. The difference in densities should be seriously considered because one value cannot be used to treat all timber,” says Braam.

Generally these values have been developed through treatment and have been assumed to stay the same.

“Using incorrect solution uptake values means that the strength of the treatment used by a treater could be too high or too low, resulting in either a poor quality product or a loss of profit,” says Navi.

“In reality though, it is likely that timber undergoing pressure treatment could potentially hold much more solution than we assume and lower solution strengths may be sufficient to achieve the same retention,” he adds.

He believes more research is necessary into the actual densities of timber used in South Africa in order to judge the effects, not only of climate change on density in the last 30 years, but also the other factors that have been mentioned.

“In addition to research, the development of a system of determine density prior to treatment could make the determination of solution uptake more accurate, which would result in greater reliability, better quality and an increase in the profitability of timber treatment,” says Navi.

Source : [Dolphin Bay Chemicals](#)