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The Definitive Guide to Quality Timber Treatment

Jacksons

www.jacksons-fencing.co.uk

“This guide is not a sales tool!”

The much-debated topic of timber treatment has become rife with myths and misconceptions, resulting in an increasing number of end users finding it difficult to make an informed choice in relation to the purchase of timber fencing and gates.

Jacksons has been involved in the timber fencing market since its inception in 1947 and the company has a deep-rooted understanding of the required protocol to ensure a long-term timber fencing solution.

This guide is NOT a sales tool. The reason for developing this reference source is simply to put the record straight once and for all, and to share Jacksons' knowledge in relation to the factors that contribute to a lasting, quality timber fencing / gates installation. Our intention is also to simplify what is a fairly complex subject and to provide easy to follow guidance that is not over complicated by taxing technical references.



A handwritten signature in blue ink that reads "Richard Jackson".

Richard Jackson, Chairman and C.E.O.

Jacksons remains at the forefront of timber treatment technologies and has staked its reputation on the quality and durability of its timber products. For any queries please contact Jacksons on 01233 750 393 / email info@jacksons-fencing.co.uk

Timber Types

Timber is the generic name for wood, naturally grown wood can be divided into two categories: hardwood and softwood.

According to the Nordic Wood Council, "hardwood and softwood are broad biological terms used to describe the species of wood. The terms have nothing to do with the physical hardness of the wood. Hardwoods come from broadleaved trees and softwoods species from coniferous, evergreen trees".

Examples of hardwoods are ash; beech; birch; cherry; elm; iroko; mahogany and oak.

Examples of softwoods are scotts pine, douglas fir and cedar.

Timber Physiology

Heartwood is wood that as a result of a naturally occurring chemical transformation process, has become more resistant to decay. Sapwood is the younger, outermost wood on the tree which is essential for carrying water and sugars from the roots to the leaves. When a rigorous timber treatment process is carried out, the procedure involves the delivery of preservative through the sapwood of the timber, (which as the 'living' outermost section of the wood, is most likely to become adversely affected by the challenges of the outdoor environment) right through and into the heartwood, which although technically dead, is still susceptible to rot and damage caused by wood-boring pests. Although more durable than the sapwood, the heartwood in some tree species may deliver a reduced resilience, (particularly those that feature sapwood conducive to absorbing the preservative).



The cross section of an untreated timber post shown above shows the lighter sapwood surrounding the darker heartwood.



Timber - to treat or not to treat?

Wood is a hugely important organic material which is employed in a variety of applications. Timber which is to be used outdoors and especially timber that is destined to come into contact with the ground, freshwater or which is simply exposed to the elements, will require some form of preservation treatment to protect it from the challenges presented by an outside installation. Regardless of where the timber is to be sited, any softwood timber will enjoy an extended life span as a result of a timber preservation treatment.

Factors influencing successful treatment of timber

There are a number of critical factors which will impact upon the efficacy of the preservation treatment, and as a result, the long-term performance and durability of the treated timber.

Species

Not all species of tree feature the right biological physiology to render them suitable candidates for timber treatment. Corsican pine, radiata pine, southern yellow pine and scots pine are all ideal softwoods which possess the appropriate physical make-up to achieve a successful and consistent penetration of timber preservative through the sapwood and into the heartwood.

Spruce (or whitewood) is not suitable for applications where the timber is required to come into contact with the ground, due to its inability to offer a consistent response to treatment. The spruce's cell structure makes it difficult for the preservative to permeate evenly throughout the sapwood which can affect the degree of protection and therefore ultimately the performance of the timber.



The two pictures above show posts cross cut - in both photos, the two posts on the right are manufactured from spruce - you can clearly see that the treatment has only really coated the outside surface of the spruce posts. In contrast the posts on the left in both pictures are Jackson's posts, manufactured from pine and have been through the Jakure process - the difference is obvious, the preservative has penetrated deep into the sapwood right through to the heartwood in the Jakcured pine posts.

Timber selection

The intended end use of the timber must be taken into consideration when reviewing the correct amount of preservative that will be required to deliver optimum protection. Some applications dictate that the timber selected should feature a minimal amount of heartwood presence to ensure the preservative penetrates sufficiently to allow the right degree of protection.

Moisture content

Preservative can either be applied to the wood by dipping or brushing which will only treat the surface, or via a pressure system which enables a deep penetration of the preservative right through the outer sapwood to the heartwood – treating the whole timber.

For pressure treatment to be successful and for the preservative to be effectively absorbed, the timber must first be thoroughly dry. It is all too easy to believe that timber is dry if you only check the moisture content of the wood on the outside.

The problem with air-drying is that there will be inconsistencies with the drying and the outside of the timber may be drier than the inside.

The only way to dry the wood effectively and consistently is to place it into a kiln, force hot air through the timber at controlled temperature and humidity conditions, to achieve a moisture content of less than 28%. It is at this point, that the timber is able to absorb the required levels of preservative.

See the difference - the effect of timber drying on treatment penetration

Eight raw timber posts are selected as samples. Timber is a natural material and takes up water as it grows. So when it arrives from the sawmill it will be very wet, sometimes with a moisture content in excess of 100%

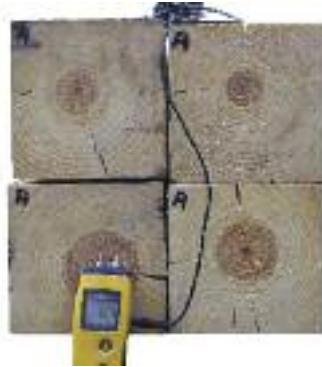


Raw timber stacked and ready to go into the kiln



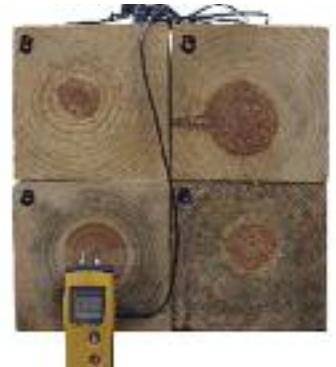
The eight samples are then split into two: Samples 'A' and 'B'

Sample 'A'



Sample 'A' is then kiln dried to below 28% moisture content

Sample 'B'



Sample 'B' is left untouched

Both samples 'A' and 'B' are then vacuum pressure treated.

After treatment samples 'A' and 'B' are cross cut at more than 300mm from the ends to see the actual penetration level. Please note both samples superficially look the same on the outside. However if you look at the cut ends you can see that the treatment has penetrated much deeper on sample 'A' compared to sample 'B' that was not kiln dried.

Sample 'A'
close up



Sample 'A'



Sample 'B'



Sample 'B'
close up



Pressure Treatment

Once the timber has come out of the kiln the moisture content is checked. It has to have attained less than 28% moisture content - this is sufficiently dry enough to effectively absorb the preservative.

It is then important to ensure that the correct amount of preservative is actually forced into the timber - this is why we refer to our process as 'pressure treatment'.

By creating a vacuum, and then flooding the chamber with the preservative chemical, the kiln dried timber takes up the chemical more readily.



Kiln dried timber stacked prior to going into the treatment chamber



Pressure gauge showing 12.4 bar reading

The chamber is then pressurised. To put this into context mains water pressure is typically 3-4 bar, in the chamber we increase the pressure to at least 12.4 bar, approximately four times more than mains water pressure.

The treatment cycle can last in excess of four and a half hours, with the pressure period taking up to three hours of that time.

This ensures the preservative penetrates deeply into the cell structure of the timber.

Loading of chemicals

According to the choice of preservative system and chemical used, the amount of treatment per cubic metre might vary, so for example, Jacksons Jakcure process uses over 22kg of chemical, to every cubic metre of treated timber intended for contact with the ground. Some companies may only use a small fraction per cubic metre of this, and other systems may actually require as much as 36kg of chemicals to attain the same degree of efficacy as Jacksons.

The higher the amount of chemical required to realise optimum protection, the more difficult it is to achieve permeation - and the environmental cost of such high volumes of chemical should also be considered.



The treatment chamber with timber that has been through the pressure treatment process

Whilst more labour intensive, in the interest of adopting a responsible approach to sustainability, it is advisable to adapt the loading of chemicals according to the desired usage of the timber.

Whilst Jacksons uses over 22kg per cubic metre of timber intended for ground contact, only about 11kg per cubic metre is required for timber that will be installed off the ground.

Only when all of the above processes have been followed, is it possible to reach a consistently successful timber treatment outcome.

At Jacksons, we are so confident in our unique Jakcure treatment process that we guarantee all Jakcured timber for 25 years.



Traceability

Whether for a commercial or residential application, any treated timber should offer traceability along the supply chain. In many situations it is difficult to trace a wooden stake back to its point of origin since numerous saw mills choose not to undertake the treatment process themselves, preferring to outsource the function to a third party. Once treated, many posts look identical and few feature any branding to distinguish them from their competitors.

For Jacksons, the issue of quality control is a top priority and as such, the company is not prepared to jeopardize its long-standing reputation by placing any aspect of the manufacturing process in the hands of a third party. Therefore, all timber treatment is conducted in-house and every order is traceable. Each timber panel or gate features a brass plaque carrying a date code to confirm when the product was made.



Responsible sourcing

Of course traceability also relates to the responsible sourcing of timber.

Jacksons has achieved certification under the environmental chain-of-custody schemes of both the FSC® (Forest Stewardship Council®) and the PEFC (Programme for the Endorsement of Forest Certification).

The majority of our timber product range can be offered certified under one of these two schemes. The environmental chain-of-custody which is monitored from forest source, to primary producer sawmills, through to Jacksons, allows us to ensure that all timber used in certified Jacksons products has been sourced from well managed forests. However, despite the enormous added environmental and social value that this brings, there is no increased price to the customer. (Ask for FSC® or PEFC certified products).



The mark of
responsible forestry



Frequently asked questions and answers on Timber Treatment

Is it true that a Jacksons half round post may not carry the same level of protection as a whole round post?

All Jacksons Jakcured posts are treated as a finished product. Therefore it is irrelevant if the post is a whole round or a half round – both will be entirely fit for purpose and deliver against the 25-year lifetime guarantee.

If products are guaranteed for 25 years, surely they must be more expensive?

The simple answer is no, if you adopt a long-term view, the cost of Jakcured timber represents a low lifetime cost. Although the initial investment might be slightly higher, over a 25 year period if you factor in the cost of having to replace rotted timber and possibly the wires as well, in addition to the cost of the labour involved in a new install, Jacksons represents excellent value for money.

Does the geographical source of timber have any bearing on its durability capabilities?

The geographical source of timber is irrelevant. What is entirely relevant is the species of tree and its suitability to accept the required levels of preservative to deliver adequate protection.

Will it void my guarantee if I cut or drill the posts for hinges etc?

No if you have to cut or drill a post or rail this will not invalidate the guarantee as long as the cut ends have been treated with end grain preservative. It is however important not to cut or drill the part of the post that will be in the ground, as the environment here is far more aggressive so the full treated envelope is essential.

Will the guarantee be void if I nail or staple the post?

No stapling and nailing will not void the guarantee and do not require end grain preservative.

What is meant by the incising term that is currently being debated in relation to timber treatment?

Incising is a process that is currently being developed to try to improve the ability to treat Spruce and refers to the practice of putting fine cuts into the surface of the timber in an attempt to improve the penetration of chemicals.

How effective is the system of incising?

There is very little performance data available which relates to when incising is used in conjunction with the newer generation of treatment chemicals, so we would say that the practice is still in its infancy. Selective incising of timber sections may well increase the durability of the area treated, but the natural resistance of Spruce to treatment prevents deep penetration and hence it is unlikely to provide a long and predictable service life for a Spruce fence post. There are also concerns that this system can reduce the strength of the timber as well as affecting the aesthetic appeal of the end product. Incising also represents a more expensive treatment method which would be reflected in the final cost to the customer.

Can chestnut be used to produce timber posts?

Chestnut is a good choice of timber for rails but the sapwood, which carries water, minerals, and plant sugars between the roots and the leaves and which is able to absorb the preservative treatment, represents only a thin layer. The result is that it is impossible to treat the sapwood to achieve the necessary protection for applications where the timber is likely to be exposed to conditions which can trigger rotting.

Does the time of year when chestnut is felled affect its suitability for external usage?

Trees should always be felled in the winter when the sugar content in the sapwood is at its lowest thus reducing its appeal to pests and its propensity to rot quickly.

The timber that I am buying is green in colour is this an indication that it has been properly treated?

No the green colour is only an indication that the post or rail has a high or low level of chemical in it. The only way to be sure that the timber has been treated properly is to buy it from a reputable supplier that offers a trusted extended guarantee.

My horse has a habit of chewing fencing and gates, can a Jakcured gate/ fence harm my horse in any way? Similarly, if I need to apply a product to deter my horse from chewing, will this interfere with the preservative that has already been applied?

Jakcure is harmless to man, animal and plant life. If you need to apply a deterrent to stop your horse from chewing, this will not affect the efficacy of the treatment as the Jakcure process ensures the preservative is pumped right through the sapwood and into the heartwood - as opposed to simply sitting on the surface of the timber.

Do I need to restrain or seal my fence regularly to maintain its condition?

No, the Jakcure timber treatment will deliver a 25-year service life and the timber will require no additional treatment to maintain its condition.

Jacksons remains at the forefront of timber treatment technologies and has staked its reputation on the quality and durability of its timber products.

For any queries on timber treatment or any other information on our products please contact Jacksons on 01233 750 393 / email info@jacksons-fencing.co.uk

Just call us on 0800 414343 if you would like a copy of our Good Fencing Guide, Fencing and Access Solutions, Acoustic Fencing and Barriers or Equestrian Solutions brochures...



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Fine Fencing, Gates & More