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Accoya wood information guide V1.0

accoya®

Accoya wood properties

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Accoya wood has been produced commercially since 2007, initially in small volumes, then growing as manufacturers and architects gained an appreciation for its characteristics. Adoption has accelerated to the extent that almost 350,000m^3 has been used around the world for a range of exterior applications. Accoya represents a major development in wood technology that has made the consistent supply of durable, dimensionally stable and reliable wood from a sustainable source possible.

Accoya wood's performance credentials have been extensively researched and repeatedly demonstrated. Accoya wood has properties that exceed those of the world's best woods yet it is manufactured by modifying wood sourced from well-managed sustainable forests through acetylation without the introduction of toxins. Accoya performance testing is reviewed in detail in the Performance Testing Summary Brochure.

KEY PROPERTIES AND BENEFITS

- HIGHLY STABLE
- HIGHLY DURABLE
- IDEAL FOR COATING
- EXCELLENT MACHINABILITY
- NON TOXIC
- BAREFOOT FRIENDLY
- STRUCTURALLY CERTIFIED
- SUSTAINABLY SOURCED
- LOW CO_2 EMISSIONS
- INSECT RESISTANT
- 100% RECYCLABLE
- LOW ENVIRONMENTAL IMPACT

What is class 1 durability?

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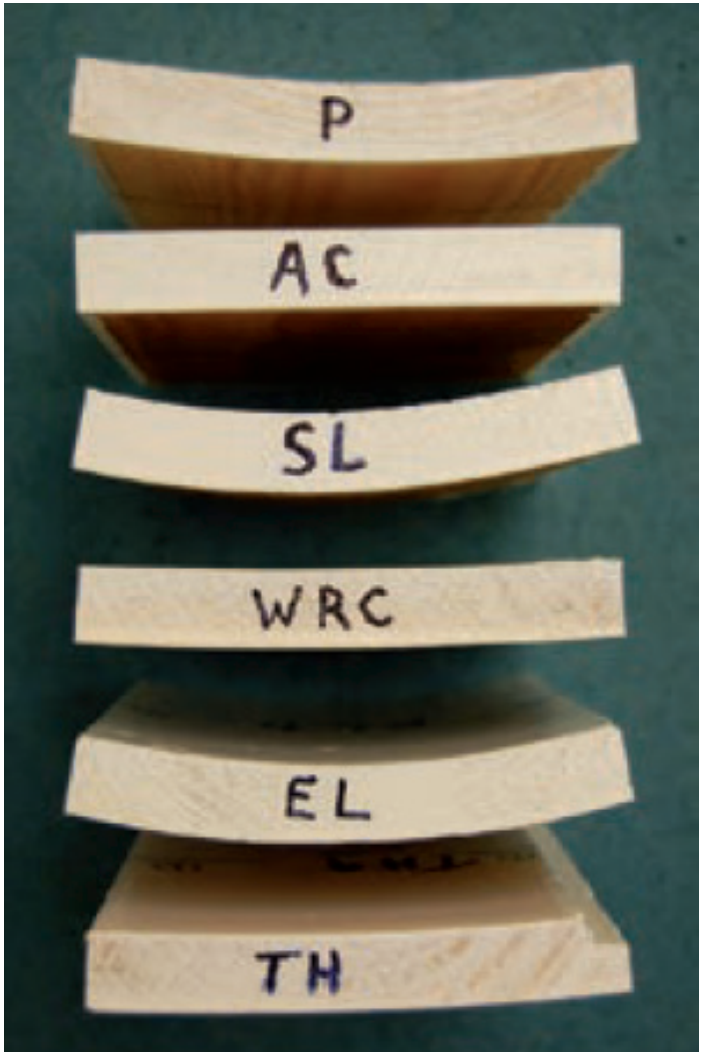
Wood resistance to rot and decay is measured on a scale of 1 to 5 with 1 being the most durable. Provisional durability class can be determined in a 16 week petri dish test (EN113). Official durability class can only be determined from long term, real life durability testing (EN252). Results show many wood types can under perform in EN252. Accoya achieves durability class 1 in both EN113 and EN252. As there is no durability class system in the USA, Accoya has been tested alongside other durable woods including FEQ Burmese teak, sapele mahogany and western red cedar. This five year ground contact test in accordance with AWPA E9 standards was run by an independent lab at their Gainesville Florida test site. Accoya outperformed all tested durable woods. Please see the Accoya Performance Testing Summary brochure available at www.accoya.com for more details.

Results after 10 Years in fresh water: AC Modified Wood (on left) vs Unmodified Wood (on right)



This AC modified timber (accoya) was the only wood that did not cup in this TRADA trial on wooden cladding.

WEATHERING

From a technical performance perspective, in respect of attributes such as durability and dimensional stability, there is no need to finish Accoya wood for cladding and decking applications. Joinery applications are more complex so it is recommended that you seek expert advice before using Accoya for uncoated windows and doors.

Like any natural wood species, Accoya wood is susceptible to weathering in outdoor circumstances. All materials exposed to exterior conditions are degraded by a series of chemical, biological and physical processes. The surface of any wood will be blemished by a combination of UV, moulds, algae, mildew, yeasts and pollution. Accoya is no exception and the initial light colour of uncoated Accoya may cause early moulds and blemishes to stand out more than on other wood types, prior to it weathering further to grey.

GREYING

Because Accoya wood has a very high resistance against wood destroying fungi, a popular choice is to use it in various applications uncoated. It will weather naturally to a silvery-grey colour, due to physical and biological processes that take place within the board surfaces:

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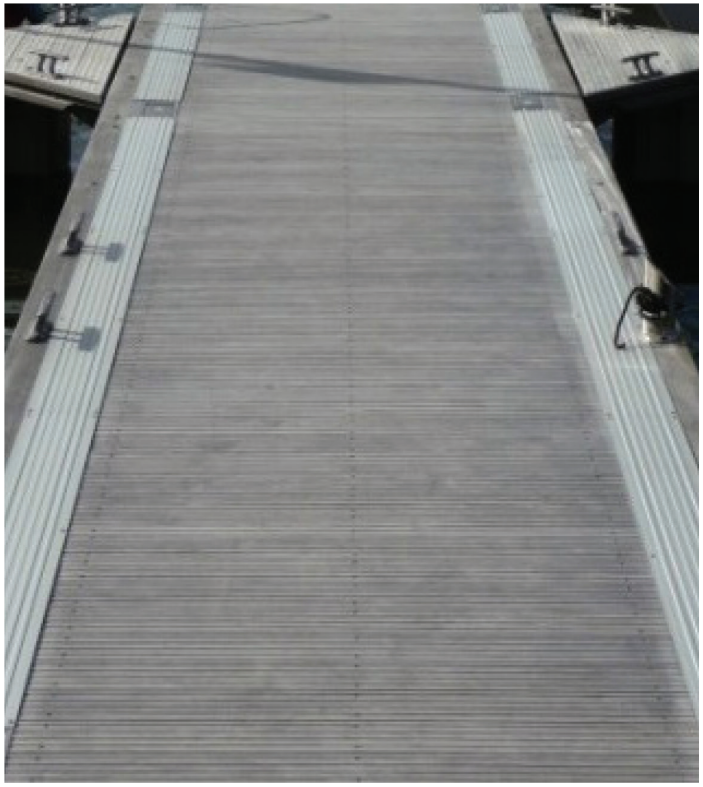

WEATHERING

- UV light partly degrades the surface lignin. As this lignin holds the wood cells together, this degradation will lead to a rougher and more open surface.
- This opened surface structure will both cause a change in colour and also allow surface moulds, yeasts, mosses and algae to penetrate and develop faster.
- These types of growths can use many sources of nutrients, including extractives in the wood, free sugars, starch, dirt, pollution and other available organic compounds, but do not degrade the Accoya structure itself. However, pigment produced by these moulds and yeasts may discolour the surface.

The rate of weathering, eventual colour and level of surface growth will vary according to the amount of UV, the installation details (particularly those related to ventilation) and the surface texture of the boards. Accoya wood will generally grey at a similar rate as most other wood species, but partial shading of a surface will lead to uneven greying and some visible mould stains, particularly as the initial Accoya colour is relatively light and does not camouflage these occurrences in early stages of weathering. See examples right.

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Weathered uncoated Accoya

WEATHERING

However, prior to turning grey, uncoated Accoya wood will go through a phase of bleaching where it turns a lighter shade of its normal colour. Surface growths are particularly apparent in this intervening period and can vary in level from board to board. This will become less distinguishable after full (even) greying, but in this transition period the Accoya wood surface may look blotchy.

APPEARANCE

A wet and a dry board may vary in appearance, generally darker and less attractive when wet and brighter in dry weather. Due to the installation details, the presence of a shaded area and the natural differences in the wood between boards, as for instance density variation or grain orientation, some may dry quicker than others. Not only does this reflect on the appearance of a surface while drying, it will also have an influence on the development of moulds, algae and other surface growths.

Cladding project, North America

WEATHERING

SURFACE GROWTHS

Acetylation of wood as such – a non toxic process – does not seem to have an influence on the resistance against surface mould and yeast growth. Independent review by BM Trada finds that Accoya is similar or less prone to mould and yeast growth than unmodified pine. However, in damp and/or shaded areas there is a high risk that surface growths will develop on Accoya wood, as they would on other (soft) wood species.

Levels of mould or yeast developing on the surface during weathering of the Accoya wood will highly depend on (macro) climatic factors such as moisture, temperature and sunlight. Other influences are location specific, such as proximity to vegetation, pollution, dirt accumulation and the naturally occurring differences in the wood.

SURFACE FIBRES

Uncoated Accoya wood may show a degree of surface fibres after being exposed for some time, due to the natural degradation of lignin in wood surfaces by UV light. As this lignin holds the wood cells together, this degradation will lead to a rougher and more open surface. This may be evident as fine fibres on the surface, which will eventually erode.

OTHER STAINING

Other occurrences of disfiguring stains on Accoya wood have been identified as:

- Resins; in rare cases individual uncoated boards may exhibit a reddish brown staining after installation. This is the result of natural extractives being transported to the surface or condensing around (even corrosion resistant) metal fixings as moisture in the boards evaporates. These discolourations will tend to fade and wash out over time.
- Aggressive cleaning agents can cause discolouration and may even affect the Accoya wood itself (section 7) if left to soak.

Naturally occurring surface fibres on decking

Reddish brown staining

WEATHERING

CLEANING

In normal situations a wooden deck should be cleaned once a year, preferably in spring. More frequent cleaning may be necessary in case permanently shaded areas can't be avoided, e.g. on the north side of a house or in the immediate vicinity of bush or tree cover.

Polluted surfaces can be cleaned with a nylon brush and clean water (refresh the water regularly until it stays clear); planed surfaces are easier to clean than sawn surfaces. Pressure washers can be used but only with a suitable control device as a direct high pressure water spray can damage all wood – including Accoya. If using a pressure washer it should be carried out with some experience and due care.

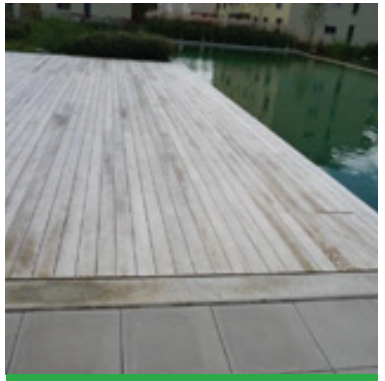
Persistent stains may be taken care of by using deck cleaners, which may also cause the surface of the wood to bleach to some extent. It is important to adhere to the instructions of the supplier. Make sure to wet the boards thoroughly before using such cleaning products, and after cleaning to rinse with plenty of clean water.

WARNING

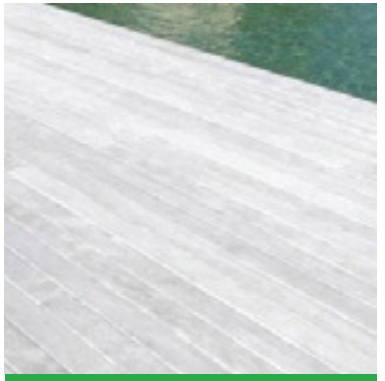
Inappropriate use of pressure washers can increase occurrence of surface fibres. Using such cleaning devices with too high a pressure will lead to the damage of the uppermost surface layer of wood. Accoya wood being softwood in nature, it is therefore important to limit the pressure used.

POOL DECKING IN OESINGEN, SWITZERLAND

Newly installed

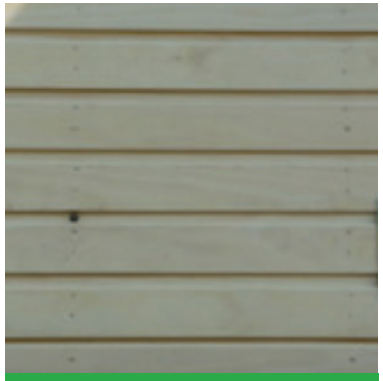


10 months of weathering

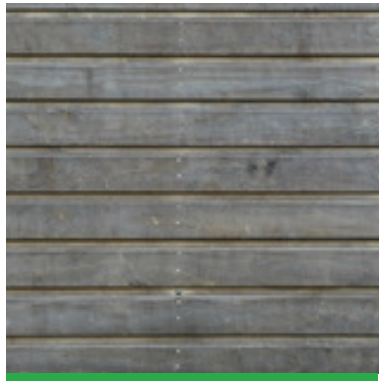


30 months of weathering

OFFICE CLADDING, VROOMSHOOP, THE NETHERLANDS



2 months of weathering



2 years of weathering

4 years of weathering