Wood Information Guide

accoya®

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Accoya Wood Information Guide
Version Number 4.0
Language: ENGLISH
Release date: January 2026

ABOUT THIS GUIDE

Welcome to the Accoya Wood Information Guide. This document has been written for professionals wishing to use Accoya wood to create beautiful, reliable and highly durable end products and has been compiled to offer best practices and recommendations for the handling and use of Accoya wood.

The guide is composed from current good practice, without aiming to be exhaustive and is produced as part of the supporting information portfolio to the “Accoya wood – Certificate of Warranty”.

In addition, Accsys runs an approved Manufacturer Training Programme, and we would encourage all manufacturers planning to use Accoya to participate in this training programme.

Should you require any further information or guidance, please contact your local sales representative or send an email.

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WHAT IS ACCOYA WOOD?

Accoya wood sets the industry benchmark for stability, staying true to form, through every season and repelling whatever weather comes its way.

Accoya's patented manufacturing process owned by Accsys targets and changes the cells that cause wood to move, resulting in a material with exceptional resistance to distortion. This stability and its durability provide a consistent, reliable wood solution across all applications, empowering manufacturers, homeowners, architects, and designers to achieve their visions without compromise.

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THE ACETYLATION PROCESS

Accoya is a high-performance wood product made by acetylation, a chemical modification process that improves the wood's durability, stability, and resistance to biological decay. Made at our plants in Arnhem, the Netherlands and Kingsport, USA.

Acetylation is a process that alters the chemical structure of wood by introducing acetyl groups into the wood's cell wall. Normally, wood contains many free hydroxyl groups, which attract and hold water. When these are replaced with acetyl groups, the wood becomes much less hygroscopic.

The liquid left over from the process is collected rather than disregarded and reprocessed into new acetic acid, closing the chemical loop.

WATCH OUR VIDEO ON ACETYLATION

HOW IT WORKS

1. Hydroxyl Groups
Hydroxyls are hydrophilic (attract water), causing cellulose to swell (and shrink when subsequently dried) and become more susceptible to attach by organisms

2. Acetyl Groups
Wood cellulose contains a small number of naturally occurring acetyl groups which are hydrophobic (repel water). There are an insufficient number of acetyls in natural wood to provide durable, stable performance.

3. Acetylation
Reaction of wood with acetic anhydride at high temperature to precisely increase the level of moisture resistant acetyl groups.

4. Accoya Acetylated Wood
Contains the same constituents as natural wood, just at enhanced levels. There are now more of the moisture resistant groups and less of the moisture binding groups. This delivers high performance through increasing dimensional stability and enhanced biological durability.

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WORKING WITH ACCOYA WOOD – KEY POINTS TO CONSIDER

GENERAL ADVICE

— Always follow good practice, national standards and building regulations as well as system supplier's instructions.

— When in doubt, contact your local Accoya sales rep or consult your system supplier.

ACCOYA IN SERVICE

— Always store raw Accoya wood well ventilated under cover.

— Accoya wood is extremely dimensionally stable, but not completely inert.

— Accoya wood is non-toxic and can be disposed of like untreated wood.

REACH COMPLIANCE

Accoya wood is not subject to chemical registration under REACH. Although it is acetylated, it remains a natural wood product with a modified structure and does not contain isolated chemical substances. Safety Data Sheets confirm that it contains no hazardous substances requiring registration and is not classified as hazardous under EU regulations.

SECONDARY PROCESSING OF ACCOYA

— No special tools are needed for working with Accoya wood.

— Best gluing results are obtained with PU, EPI and PRF adhesives; avoid MUF resins.

— For most coated applications end-grain must be sufficiently sealed to prevent water absorption.

— In areas exposed to moisture or condensation only use high quality stainless steel (A2 & A4 quality), corrosion resistant aluminium or naval brass products.

— Accoya wood is susceptible to weathering outdoors, like all wood species.

— Avoid using high-pressure washers when cleaning Accoya wood, as they can damage the wood's surface.

— **Avoid opaque coatings with calcium carbonate (chalk) fillers, as they can cause coating blistering on Accoya.**

— When using an opaque base coat, preferably an effective and well applied stain blocking primer is included.

— Avoid clear coatings.

— Additional points to consider in specific applications, for instance when laminating, are contained within this guide.

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3.1 APPEARANCE

Accoya wood is supplied as rough sawn and finger jointed timber in various sizes and grades. Details of end-product manufacturers and Accoya stocking distributors can be found at: www.accoya.com/where-to-buy

3.2 MATERIAL PROPERTIES

This table shows the average properties of Accoya wood made from radiata pine and has been compiled using data from official test reports from independent institutes in Europe, USA, Australia and New Zealand.

3.3 RESIDUAL ACID

Accoya wood contains a small amount of residual acetic acid from the acetylation process. Since acids can create compatibility issues with coatings, glues and fixtures, the acetic acid content is measured as part of the quality control procedures of Accoya wood and within our KOMO® approved Quality System.

Accoya wood material properties

PROPERTY	TEST METHOD	VALUE
Durability	EN 113 (EN84, ENV 807 and EN 252 AS5604	Class 1* Class 1
Density	65% RH, 20°C (70°F)	515 ± 80 kg/m³ 32 lb/ft³ ± 5 lb/ft³
Shrinkage (avg)	ISO 4469	
— Wet to 65% RH, 20°C	Radial Tangential	0.4% 0.8%
— Wet to Oven Dry	Radial Tangential	0.7% 1.5%
Equilibrium moisture content	65% RH, 20°C (70°F)	3 – 5%
Thermal conductivity	EN 12667 ASTM C-177	0.12 W/m K 0.10 W/m K
Janka hardness	ASTM D143	Side 4,100 N End 6,600 N
Brinell hardness	EN 1534	2.4 kgf/mm² 24.0 N/mm²

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Individual batches are only released for sale if the residual acetic acid level is within specification:

— Average residual acetyl compounds content of samples ≤ 1.0% (mass/mass oven dry wood).

— Maximum residual acetyl compounds content of individual samples ≤ 1.8%.

Although levels are controlled, freshly cut or planed Accoya wood within these specified limits may have a slight vinegar-like odour. Some of the residual acetic acid will dissolve in water absorbed by Accoya wood. In wet circumstances, the Accoya wood will therefore have a **pH in the range of 4 – 5.5**. At these levels, a wide range of coatings, glues, fixings and other products can be used with Accoya.

3.4 MECHANICAL PROPERTIES

The Accoya acetylation process significantly enhances hardness and compression strength. Approved for general building use by the German Institute for Building Technology (DIBt), Accoya timber is classified as C22 (A1 quality) and C16 (A2 quality) under the European strength class system (EN 338). This approval applies to wood widths of 100mm to 250mm and thicknesses of 25mm to 100mm.

Property characteristic values

PROPERTY STRENGTH (N/MM²)		CHARACTERISTIC VALUES FOR STRENGTH CLASS	
		C16 (A2 GRADE)	C22 (A1 GRADE)
Bending	$f_{m,k}$	16	22
Tension			
— Parallel to grain	$f_{t,0,k}$	10	13
— Perpendicular	$f_{t,90,k}$	0,5	0,5
Compression			
— Parallel to grain	$f_{c,0,k}$	17	20
— Perpendicular	$f_{c,90,k}$	2,2	2,4
Shear	$f_{v,k}$	1,8	2,4

STIFFNESS (KN/MM²)		CHARACTERISTIC VALUES FOR STRENGTH CLASS	
		C16 (A2 GRADE)	C22 (A1 GRADE)
Mean MOE parallel	$E_{0,mean}$	8	10
5% MOE parallel	$E_{0,05}$	5,4	6,7
Mean MOE perpendicular	$E_{90,mean}$	0,27	0,33
Mean shear modulus	G_{mean}	0,5	0,63

DENSITY (KG/M³)		CHARACTERISTIC VALUES FOR STRENGTH CLASS	
		C16 (A2 GRADE)	C22 (A1 GRADE)
Density	0_k	310	340
Mean density	P_{mean}	370	410

NB: Characteristic values are used in structural grade classification and stated as the average result minus two standard deviations.

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These classifications are common for structural timbers like spruce and pine. Standard wood design safety factors (kdef, kmod) from EN 1995-1 are appropriate for Accoya. It can be fastened with nails, clamps, wood screws, dowels, and bolts. For non-pre-drilled holes, follow spacing and clearance guidelines for wood with a density between 420 and 500kg/m³

3.5 PROPERTY CHARACTERISTIC VALUES FOR STRENGTH CLASS

Strength class determining properties for timber include strength, stiffness, and density. EN 338 provides characteristic values, which are threshold values meeting at least 95% of timber pieces, and these are lower than average mechanical property values. For structural calculations, do not use average mechanical values. Design values are obtained by dividing characteristic values by a material factor and multiplying by climate, load duration, and beam height modification factors (EN 1995-1-1).

3.6 DURABILITY & USE CLASSES

Accoya Wood is categorized in durability class (DC) 1.

The EN 335 gives general definitions of use classes for different service situations and is relevant to solid timber and wood-based products.

Accoya wood is suitable for use classes 1-4 defined in this standard. The AWPA standard U-1 describes use category designations and typical applications. Accoya wood is suitable for Use Classes UC1 – UC4A in this standard.

3.7 SALTWATER CONTACT

Accoya wood is resistant to salt and can be used around saltwater (for instance, as marina decking and boardwalks). Accoya is used in permanent saltwater immersion but is not warranted for resistance against attack from marine organisms.

However, Accoya wood has been tested in the waters of Northern Europe for more than a decade without attack and a 10-year service life position has been established for that region. Testing on the US Pacific coast is ongoing with no attack after 4 years.

DURABILITY DESCRIPTION	
DC1	Very durable
DC2	Durable
DC3	Moderately durable
DC4	Slightly durable
DC5	Not durable

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USE CLASS	CONDITIONS OF USE	WETTING	WOOD MOISTURE CONTENT
1	No contact with the ground, sheltered and dry	Permanently dry	<20% — Permanently dry
2	No contact with the ground, sheltered with little chance of becoming wet	Occasionally exposed to moisture	>20% — Incidental short term wood
3	No contact with the ground, not sheltered in all weather conditions	Regularly exposed to moisture	>20% — Regular, short-term exposure
4	In contact with the ground	Permanently exposed or in contact with freshwater	>20% — Permanent exposure to freshwater
5	In contact with salt or saltwater spalsh zones[1]	Permanently exposed to brackish water	>20% — Permanent exposure to saltwater

1: The Accoya warranty covers use in saltwater splash zones, e.g. marina decking. Accoya is suitable in full saltwater immersion though the warranty does not cover attack by marine organisms.

USE CATEGORY	SERVICE CONDITIONS	USE ENVIRONMENT	TYPICAL APPLICATION
UC 1 Interior, Dry	Interior construction – Above ground, Dry	Continously protected from weather or other sources of moisture	Interior construction and furnishings
UC 2 Interior, Damp	Interior construction – Above ground, Damp	Protected from weather, but may be subject to sources of moisture	Interior construction, sill plates
UC 3A Above ground, Protected	Exterior construction – Above ground, Coated & rapid water run-off	Exposed to all weather cycles, including intermittent wetting	Coated Joinery/Millwork, Cladding/Siding, Trim
UC 3B Above ground, Exposed	Exterior construction – Above ground, Uncoated or poor water run-off. Excludes above ground applications with ground contact type hazards.	Exposed to all weather cycles including intermittent wetting but with sufficient air circulation so wood can really dry	Decking, railings, joists and beams for decks and freshwater docks, fence pickets, uncoated millwork
UC 4A Ground contact	Ground contact or freshwater non-critical components (includes above ground applications with ground contact type hazards or that are critical or hard to replace)	Exposed to all weather cycles including prolonged wetting	Sawn fence, deck and guardrail posts, joints and beams for decks and freshwater docks

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3.8 DIMENSIONAL STABILITY COMPARISON

Accoya wood exhibits superior dimensional stability compared to other naturally durable species, in both radial as well as tangential direction.

Accoya wood always remains dimensionally stable both during processing and in subsequent use, so that products made of Accoya wood are highly resistant to warping and deforming.

This causes less stress on coatings leading to less maintenance requirements.

3.9 EXPANSION AND CONTRACTION

The bottom right table shows average movement from green (soaked) to oven dry boards of 5 3/4" or 145mm width. Accoya wood's enhanced dimensional stability often allows for:

— Greater widths on cladding and decking without excessive cupping
— Narrower gaps between deck boards
— Gaps between deck boards not completely closing up when soaked in winter months

SPECIES	CHARACTERISTIC VALUES (inch/mm)		WARRANTY MAXIMUM (inch/mm)
	Radial Sawn	Tangential Sawn	
Accoya	0.04 / 1.0	0.09 / 2.2	0.14 / 3.6
Douglas Fir	0.27 / 7.0	0.43 / 11.0	–
Ipe	0.38 / 9.6	0.46 / 11.6	–
Furfurylated Wood	0.08 / 2.0	0.14 / 3.6	–
Meranti	0.17 / 4.4	0.38 / 9.6	–
Merbau	0.15 / 3.9	0.26 / 6.7	–
Radiata Pine	0.19 / 4.9	0.45 / 11.5	–
Sapele	0.25 / 6.4	0.42 / 10.7	–
Siberian Larch	0.23 / 5.8	0.51 / 13.1	–
Teak (Burmese FEQ)	0.14 / 3.6	0.33 / 8.4	–
Thermally Modified Ash	0.13 / 3.3	0.23 / 5.8	–
Western Red Cedar	0.14 / 3.5	0.29 / 7.3	–

SPECIES	TYPICAL CHARACTERISTIC VALUES		WARRANTY MAXIMUM [5]
	Radial	Tangential	
Accoya[4]	0.8%	1.6%	2.5%
Douglas Fir[1]	4.8%	7.6%	–
Ipe[1]	6.6%	8.0%	–
Furfurylated Wood[3]	1.4%	2.5%	–
Meranti[1]	3.0%	6.6%	–
Merbau[1]	2.7%	4.6%	–
Radiata Pine[4]	3.4%	7.9%	–
Sapele[1]	4.6%	7.4%	–
Siberian Larch[2]	4.0%	9.0%	–
Teak (Burmese FEQ)[1]	2.5%	5.8%	–
Thermally Modified Ash[3]	2.3%	4.0%	–
Western Red Cedar[1]	2.4%	5.0%	–

1 Wood handbook, USDA Forest Products Laboratory. Green to Oven Dry measurements
2 Rosenfeld Kidson – Species Fact Sheet Larix sibirica
3 Internal testing Accsys
4 Dimensional stability of Accoya wood under different moisture conditions, SHR Report 6.322
5 Accoya wood – Certificate of Warranty

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3.10 DESIGN AND ALLOWANCE FOR EXPANSION

For product design and installation it needs to be considered that Accoya wood is not completely inert. Installation guides that cover dimensional stability considerations for common wood products are more than sufficient for Accoya wood, e.g. installing Accoya cladding boards with a mutual distance of at least 1mm / 0.04".

For allowable shape tolerance, see the Accoya Lumber grading guide.

While Accoya resists distortion in most cases, engineered component development can enhance the performance in severe applications, e.g. oversized, black coated doors.

3.11 SLIP RESISTANCE

The slip resistance of wooden (decking) boards and other materials depends on different factors such as degree of weathering, surface profiling, coating, wetness of the boards and maintenance (e.g. biofilm presence).

Test methods vary greatly across the world (even throughout Europe) and some countries have official requirements covering the slip resistance of flooring surfaces. Common slip resistance measures evaluate new boards in wet and dry condition:

— Most dry timber decking boards can be considered as sufficiently slip resistant

— Slip resistance of wet boards is decreased by approximately 35%. Designing for easy water runoff and ventilation beneath the boards are therefore important. A shaded location will also affect the time for the boards to dry out.

— If decking boards are coated, stains are more suitable in terms of slip resistance than oils, although that is heavily dependent on the particular coating system and the cleaning maintenance.

— Smooth surfaces have a higher coefficient of sliding friction compared to grooved surfaces, and are often less slippery

Accoya wood is classified C according to EN 16165:2021-10 (Barefoot ramp test) which is a similar rating as traditional wood types.

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ACCOYA WOOD PROPERTIES – WOOD MOISTURE CONTENT

While Accoya wood in any condition will have minimal bound water, which is what accounts for many of its superior properties, it can still contain free water. Free water can have a negative impact on the product quality during manufacturing and coating. It is therefore essential that the moisture content of the wood is determined prior to further processing such as gluing and coating.

Buildings that introduce high levels of water via the building materials during the construction phase require careful management to maintain a suitable climatic environment and equilibrium.

3.12 ACCOYA WOOD MOISTURE CONTENT

Accoya wood is dispatched in dry condition (**<4% MC on average**). This allows Accoya wood to be processed into products for application directly after being delivered.

Accoya wood moisture content increases to between 7 and 9% in a sustained climate of 95% relative humidity/20°C (70°F).

3.13 MEASURING FOR EXCESS WATER

Standard moisture meters can't measure Accoya wood's typical moisture content because it is below their range. However, they can detect "free water." For pin-type meters, use a radiata pine setting, and for capacitive meters, set the density to around 510 kg/m³.

If moisture content is 8% or more, it can indicate free water.

Allow the wood to dry before further processing, gluing or coating.

Note: Accoya will generally take longer to dry than traditional timber types.

3.14 WATER ABSORPTION PROPERTIES

End grain water absorption of Accoya is particularly high due to the cell structure and the drying is slow.

Check for excess water at the core of boards, especially after sustained wetting.

Store carefully and seal end grain of coated wood.

Use good design practices to prevent water ingress, like avoiding horizontal surfaces, ensuring ventilation for cladding and decking, and using protective coatings for windows and doors.

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ACCOYA WOOD PROPERTIES – 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. To address tolerance to moisture ingress, the acceptability of surface splits on the exterior face, and long-term material performance of hardware, glazing, gaskets and other ancillary products, it is recommended that Accoya windows & doors are coated.

Like all wood species, Accoya wood is susceptible to weathering outdoors. The initial light colour of uncoated Accoya may develop early moulds and blemishes to stand out more than on other wood types, prior to it weathering further to grey. Weathering to grey will take longer on shaded elevations and soffits.

3.15 GREYING

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

UV light degrades the surface lignin, leading to a rougher, more open surface that changes in colour allowing faster penetration and growth of moulds, yeasts, mosses and algae. **This does not degrade the wood structure** but may discolour the surface.

The weathering rate, final colour, and surface growth vary by UV exposure, building elevation, surroundings, ventilation, and board surface texture. It greys at a similar rate to other wood species, but partial shading causes uneven greying and visible mould stains due to its light initial color.

Before turning grey, uncoated Accoya will bleach to a lighter shade. Surface growths are noticeable during this intervening period and can vary between boards. This blotchy look will be less distinct after full greying.

Newly installed

10 months of weathering

30 months of weathering

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ACCOYA WOOD PROPERTIES – WEATHERING

3.16 APPEARANCE OF WET BOARDS

Wet boards will appear darker and less attractive. Some boards will dry quicker than others depending on installation details, location, surface quality and natural wood variations. This also has an influence on the development of moulds, algae and other surface growths.

3.17 SURFACE GROWTHS

Acetylation does have an influence on the resistance against surface mold/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, damp and shaded areas can increase the risk of surface growth development, influenced by climatic factors like moisture, temperature, and sunlight, as well as local factors like vegetation, pollution, and dirt accumulation.

Different stages of Accoya greying

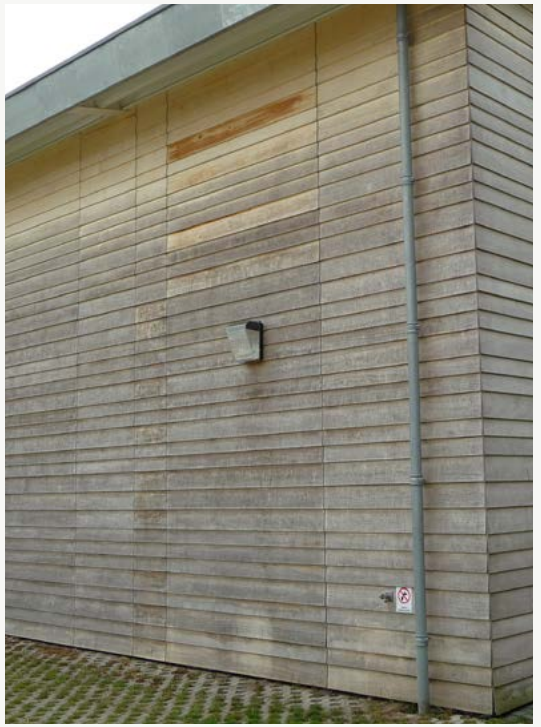
May 2019

January 2020

April 2020

Aug 2024

Rough sawn surfaces are more conducive to build-up



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3.18 SURFACE FIBRES

Uncoated Accoya wood can develop surface fibers over time due to UV light degrading the lignin, which holds wood cells together, making the surface rougher. Under intense UV exposure and on flat surfaces like decking, this effect is more pronounced. Ribbed profiles make fibres more noticeable. Rarely, harsh conditions such as prolonged snow cover and freeze-thaw cycles can cause severe surface fiber formation.

The Holzforschung institute of Austria has indicated that Robinia, thermally modified woods, larch, teak, and sapele are prone to such behaviour. **The durability of Accoya wood remains unaffected**. Periodically washing off loose fibers is recommended to prevent organism settlement and disfigurements.

Avoid using high- pressure washers, as they can damage the wood's surface.

Fibres may get trapped in ribbed surface profiling

Natural occurring surface fibres on decking

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3.19 OTHER STAINING

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

— **Resins;** In rare cases, uncoated boards may show reddish-brown staining after installation due to natural extractives moving to the surface or around metal fixings as moisture evaporates. These stains typically fade and wash out over time.

— **Aggressive cleaning** agents can cause discolouration and may even affect the Accoya wood if left to soak.

— **Fixings/Fasteners;** staining around fixings or fasteners may occur when non-corrosion resistant steel is used. Also, fasteners may transport water to and from the subframe, which can contain natural extractives/extractables.

— **Sub Frame silhouette;** in some projects, a distinct pattern reflecting the sub-frame caused by heat transfer from the building to Accoya boards has been observed. This heat decreases the moisture content at the interface, reducing mould growth and leaving the interfaces clear. Inadequate ventilation can cause prolonged wetting, encouraging surface mould growth on the cladding in line with battens, which may be visible as darker bands.

— **Pressure treated wood** used as a sub-frame may contain metal salts. Copper leaching from this treatment may result in green staining on the surface.

Wicking of pressure treated softwood framing chemicals through Accoya

A New Zealand housing project with a distinct batten (sub-frame) silhouette, showing on the cladding surface

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ACCOYA WOOD PROPERTIES – WEATHERING

3.20 PREVENTIVE MEASURES

Good design and maintenance is critical in minimising the incidence of surface moulds, for example by creating effective ventilation, avoiding water traps and shedding water naturally.

Subframe silhouette can be avoided using decking tape on bearers/battens and pre-greying with a non film-forming stain will help camouflage surface moulds.

3.21 CLEANING

Exterior horizontal surfaces can develop a biofilm that holds water and slows drying. To prevent buildup, regular cleaning is advised. Wooden decks should be cleaned **annually, preferably in spring,** with more frequent cleaning in permanently shaded areas. Always lift flowerpots from the ground, for example by using spacer strips.

Use a nylon brush and clean water.
Planed surfaces are easier to clean than sawn surfaces. Persistent stains may require a careful use of deck cleaners, following supplier instructions.

Make sure to wet the boards thoroughly before applying any detergents and to rinse with plenty of clean water after cleaning.

Before and after cleaning Accoya wood using a nylon brush and water

WATCH OUR VIDEO ON
HOW TO CLEAN YOUR ACCOYA

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ACCOYA WOOD PROPERTIES – FIRE BEHAVIOUR

Fire classification methods and standards for determining fire performance of wood vary by region around the world. Performance in fire is a key characteristic for the design of wood cladding on buildings. This section details classification in Europe, the USA, Australia and New Zealand.

Ultimately the cladding manufacturer is responsible for fire classification of a timber cladding system. The wider building design team is responsible for building code review.

3.22 EUROPEAN CLASSIFICATION

Most wood types with closed jointed cladding design systems have been deemed as Class D through the 'classification without further testing' guidelines in EN14915.

Since August 2024 testing using the SBI test (EN13823) and the Single-flame source test (EN11925-2) methods is required for classification of any modified wood, preservative treated wood and coated wood cladding.

Accoya can achieve a Class D but not in all test set ups. Accoya boards (of a standard density spread around average) were rated as Class E when tested in a common tongue and groove profile, with 19mm thickness, installed over a ventilated 40mm cavity.

The test of Accoya results were however only 5% from the Class D threshold, which means there are opportunities to reach Class D where necessary, for example through one of the following approaches:

— Use of 22mm or thicker boards with squared edges*.

— Charred finish on 21mm boards*.

— Intumescent and other types of fire retardant (FR) coating application.

— Profiling to 15 or 19mm and treatment with an FR impregnation product*.

The required classification for cladding varies by country specific building code across Europe. Class E is suitable for a wide range of applications. Consult the local building code.

* classification reports available from your Accsys sales manager

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3.22.1 IMPROVED FIRE PERFORMANCE

Building codes require enhanced fire classification for use of cladding on buildings with higher risk classification. The highest achievable classification for wood is B, which may be achieved with an FR treatment as classified by EN13501-1. To comply with the Accoya warranty, FR treatments used with Accoya need to be examined for their compatibility with Accoya. In general FR treatments used on wood may have an impact on compatibility of coatings, adhesives and other products. Compatibility testing with ancillary products must be conducted prior to use.

3.23 USA CLASSIFICATION

Southwest Research Institute (SwRI) performed Flame Spread Tests and Smoke Developed Tests in accordance with the standard test method for surface burning characteristics of building materials NFPA 255 (ASTM E84, ANSI, UL 723 & UBC 8-1). The conclusion of the Flame Spread Test results is that Accoya wood can be classified within the range of standard timber species and achieves Class C in this US rating system.

ASTM E84 Classification Tables

FLAME SPREAD CLASSIFICATION	FLAME SPREAD RATING OR INDEX
Class I (or A)	0-25
Class II (or B)	26-75
Class III (or C)	76-200

SPECIES	FLAME SPREAD INDEX*	SMOKE DEVELOPED INDEX*
Accoya**	95	155
Douglas Fir	70	80
Eastern White Pine	85	122
Lodgepole Pine	93	210
Oak	100	100
Sitka Spruce	74	74
Southern Pines	103-195	NA
Western Red Cedar	70	213

* Data source – USDA – United States Dept of Agriculture Wood Handbook. Lower numbers equal a lower flame spread or less smoke.

** Note that the classifications presented on this page are valid for untreated Accoya wood. Higher ratings can be achieved when using fire retardants.

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ACCOYA WOOD PROPERTIES – FIRE BEHAVIOUR

3.23.1 ACCOYA SIDING WUI COMPLIANCE

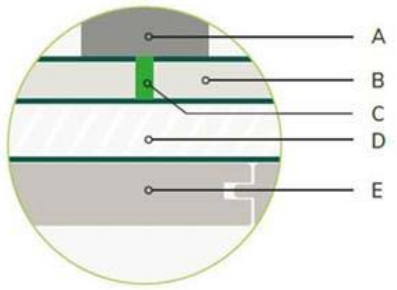
The fire performance of exterior siding materials is especially critical in Wildland-Urban Interface (WUI) zones, where wildfires pose a significant risk to homes and other structures.

The California Building Code (CBC), established by the State of California, outlines general requirements for building design and construction related to fire and life safety, structural safety, and accessibility. It specifically regulates materials, systems, and assemblies used for structural fire resistance and fire-rated construction separations to prevent the spread of fire and smoke within buildings and between structures.

Chapter 707A applies to building materials, systems, and assemblies used in the exterior design and construction of new buildings located within WildlandUrban Interface (WUI) areas or in any Fire Hazard Severity Zone within State Responsibility Areas. The goal is to set minimum standards to resist the penetration of flames or embers from wildfires.

This section requires that exterior wall assemblies of permitted buildings be tested using the 10-minute direct flame contact exposure test outlined in ASTM E2707. ICC NTA tested Accoya wood siding at its Bryan Test Lab in Bryan, TX and verified that it met the acceptance criteria for wall or ceiling finishes under ASTM E2707, which assesses fire penetration of exterior wall assemblies using direct flame exposure. The construction summary of the assembly is shown in the illustration below.

A Wall construction, 2x4” lumber studs
B 5/8” DensGlass Gold sheathing or equivalent
C All DensGlass butt joints filled with fire resistant caulk
D Cavity depth is to be a minimum 3/8” for WUI compliance. A ventilated cavity is required to maintain the Accoya Warranty. Warranty required cavity depth ranges from ¼” to ¾” dependent on climate zone.
E 3/4” or 1” Accoya, T&G



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ACCOYA WOOD PROPERTIES – FIRE BEHAVIOUR

3.24 AUSTRALIAN CLASSIFICATION

Bush fire risk-based zoning is a consideration in Australian building regulations. These have been adjusted to include requirements on resistance to bush fire for building constructions on a zonal system from low to high categories, described in the standard AS 3959.

Some species of timber are listed in Appendix E of this standard:

— Bushfire Resistant Timber.

— E1: density 750 kg/m³ or greater.

— E2: density 650 kg/m³ or greater.

With an average density of 515 kg/m³, Accoya wood (radiata pine) is classified, as other softwoods, outside of these lists.

3.25 NEW ZEALAND CLASSIFICATION

New Zealand uses the same fire testing principles as Europe (the so-called room corner test or SBI), but has different limits for the classification: the Time To Flashover [s] instead of heat release and fire growth. Based on indicative cone testing, Accoya wood is likely to be a group number 4 material, comparable to other softwoods.

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TRANSPORT AND STORAGE

4.1 ACCOYA WOOD PACKAGES

Accoya wood is strapped into standard labelled packages and ready to use. It must be ensured that packages are unloaded carefully and any damage at the point of unloading is recorded.

4.2 TRANSPORT

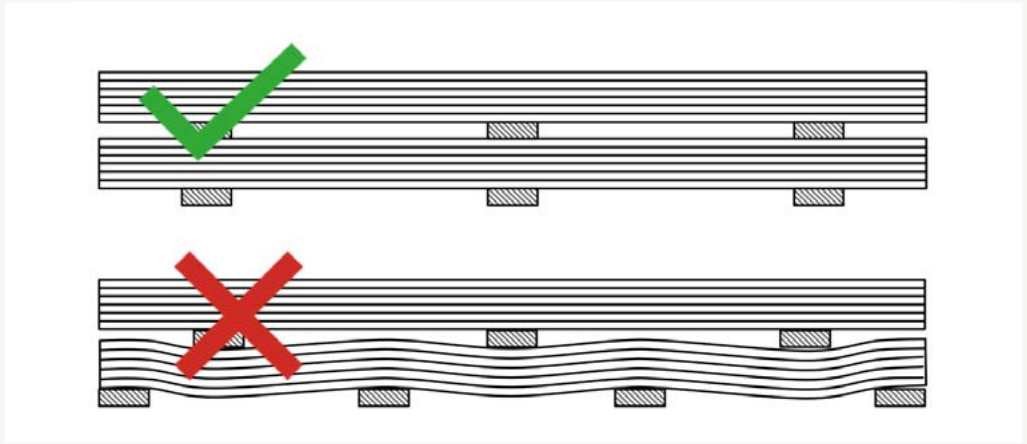
During transportation joints, frame corners, projecting profiles and hardware need to be especially well protected. Accoya wood needs to be stored and transported under cover or covered in suitable, breathable and weatherproof material to prevent water uptake.

4.3 STORAGE

Always store Accoya wood that needs further processing in closed, well ventilated sheds. Due to its high dimensional stability, Accoya wood can be manufactured into parts with longer intervals before assembly: Exposure to water or changing climate should nevertheless be avoided. Freshly machined surfaces give the best coating and bonding results.

Packaging

Bundles stored on top of each other; bearers aligned



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On site storage should be at a minimum height of 10cm / 4" above concrete and min. 30cm / 12" above unpaved ground: sufficient ventilation of the boards is required to prevent surface molds. Additional water protection is recommended. When storing bundles of Accoya, bearers must be at least every 1.2m / 47"; horizontally on bearers every 800mm / 30" and in line with stickers in the bundle.

Storing bundles of processed products (e.g. cladding boards) should be horizontally on bearers at least every 800mm, with a minimum of 3 bearers. For all bundles that are stored on top of each other, the bearers of the bundles must be aligned

4.4 TRACEABILITY & INFORMATION TRANSFER

Accoya wood can be identified by the packaging label. Batch number and grade are printed on one end of the boards sawn surface. It is highly recommended to keep the packaging number to be able to trace

Accoya wood when needed, e.g. for offers where wood certification such as FSC® is required, for any queries or warranty claims.

The owner and third parties performing installation must be informed that Accoya has been used in the manufacture of the (end) product. Sections of this guide, such as proper storage at the building site, appropriate fasteners and change to fixings to use for final installation and related considerations, need to be communicated.

Accoya bundle label

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PROCESSING

Accoya is easy to process and similar, in general, to a softer hardwood species such as yellow poplar (tulip wood). Accoya typically runs better through machines than softwoods such as Douglas fir, cedar and larch and much better than most durable tropical hardwoods.

Special tools are not required for standard operations such as cross cutting, ripping, planing, routing or drilling. Depending on the required coating, sanding before finishing is often not required, due to the particularly smooth surfaces of Accoya after machining and subsequent resistance to grain raising from moisture pick up.

NOTE

A light vinegar-like odour may become apparent when Accoya wood is processed. With proper suction / ventilation this can be reduced to a minimum.

Accoya wood is non-toxic. It has been awarded Platinum status for Material Health by the Cradle to Cradle Products Innovation Institute and is Gold certified overall.

Avoid long-term exposure of machinery and exhaust systems to high moisture, dust, and shavings to prevent possible corrosion. Check wood moisture content before machining; it should be below 8% for processing suitability. Record the tracking number on Accoya sawn boards against the job sheet before processing.

5.1 VISUAL GRADES

Accoya is available in a range of different qualities. Consistent with the grade purchased, the timber may show certain visual defects after being processed, which are not visible on the sawn boards' surfaces as graded.

The boards are sold on the basis of defects visible on the sawn boards. Defects arising after processing might include internal cracks, internal resin pockets and movement.

For more information see the Lumber Grading Guide, available on www.accoya.com.

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5.2 DISCOLOURATION

Due to the unique modification process, unprocessed Accoya boards have a discoloured zone around the perimeter, which can vary in depth (generally up to 6mm / 0.24") and level of discolouration. Individual boards are spaced with small battens, typically leaving a lighter mark where they meet the board – known as sticker marks.

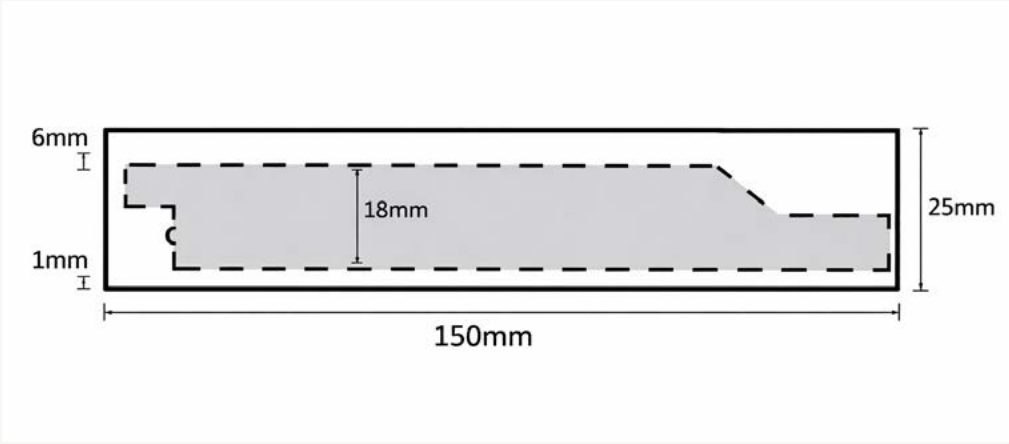
Removal of this surface discolouration is not required when using opaque coatings or for parts that will not be visible.

Discolouration and sticker marks visible on surfaced, non coated product applications or translucent stain coated applications will fade over the course of days and months proportionate to the level of UV exposure.

Discolouration can be more apparent once the wood is wet or translucent coated.

Discolouration of rough board, after surfacing 3mm / 0.12" and after surfacing 6mm / 0.24" from rough

18 mm thick cladding produced from 25mm Accoya



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PROCESSING

5.3 CHANGED PROPERTIES

The following wood properties have been altered by the modification process which are of importance for machining of Accoya wood:

— The Janka and Brinell hardness increases making it more comparable in machining to species like yellow poplar/tulip wood.

— Moisture content generally is below 5%, this can make some of the material a little more brittle than unacetylated wood.

— Density increase: avg. 515 kg/m³.

— Reduced internal stress: this eases the process of ‘working’ the timber.

5.4 SAWING, PLANING AND PROFILING

Accoya wood is easily cut and planed resulting in a smooth surface using standard techniques. Special tools are not required. It is important to avoid machining marks and contaminations of the surface (e.g. oil, lubricant, rust) as this can affect appearance and compatibility. Due to the low moisture content, fine shavings can become electrostatically loaded, which might require increasing the blade RPM, improving the exhaust/extraction system or using antifriction lubricants to reduce static energy at the rotaryblades.

Despite Accoya wood’s improved properties, boards may harbour tension and flaws internally, similar to other comparable wood species.

These typical wood guidelines also apply to Accoya wood:

— Re-sawing, ripping or heavily planing can reveal stresses. Ripping boards with an original thicknesses of more than 38mm / 1 1/2" is not recommended and must be approached cautiously.

— Although the Accoya wood process relieves a lot of the stresses that can cause distortion, normal selection processes still apply for reducing the chances of change beyond acceptable limits. Pieces with pronounced grain slopes or irregular growth rings should be avoided for critical parts.

— Ensure that knives are aligned correctly and are sharp when planing. If working with multiple species and knives that are rapidly dulled, machine Accoya wood first.

— The planed smooth surface may show cutter marks. Feed speeds need to be adjusted accordingly. A feed speed comparable to durable hardwoods is recommended.

— For the best surface finish, contact your machine and tooling provider for optimal settings advice. If needed, run test pieces.

— Preferably use rubber out-feed rollers to prevent surface damage.

5.5 DRILLING

Accoya wood drills like most softwoods, but it produces fine shavings requiring careful debris removal during deep drilling.

For dowel connections the drill diameter should match the plug to prevent splitting.

For door wedges, ensure sufficiently large rebate and wedge dimensions, use flattened wedges, and install with a series of taps to avoid splitting.

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PROCESSING

5.6 SANDING

Sanding Accoya wood presents no challenges. Typically, it is not necessary to sand between coats of water based coatings. Nevertheless, advice should be taken from your coatings partner for best practice and to avoid reduced surface aesthetics.

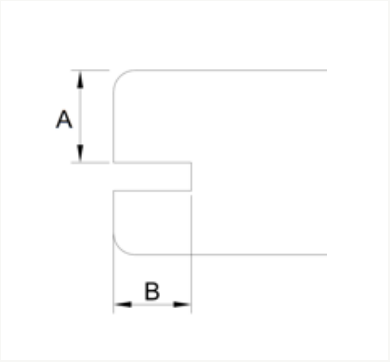
When sanding is required, a belt sander with a high-quality pad will give good coating quality results. Avoid orbit palm sanders, as they can create a “washboard” effect, or make sure the sander has a hard and rigid base (no Velcro type fixing of the pad).

5.7 FIXINGS & FASTERNERS

Accoya wood can be fixed in the same way as other common softwoods. The same general rules apply regarding pre-drilling, countersinking and keeping sufficient distance from the edge. Like most durable woods, Accoya contains a small amount of acid. Use corrosion resistant fixings, such as high-quality stainless steel in humid areas.

5.8 GROOVED DECK BOARDS

If deck boards are to be installed using clips for hidden fastening, the upper lip (A) must be ≥ the groove depth (B).



5.9 WASTE WOOD AND END-OF-LIFE CONSIDERATIONS

Accoya wood is non-toxic and can be disposed of like untreated wood. Its durability and versatility make it ideal for reuse and recycling.

Since Accoya wood has a long service life, proper selection and maintenance of other components to ensure optimal product service life is required.

It is recommended to integrate Accoya wood’s performance into the overall design strategy of a product and apply appropriate maintenance intervals for coatings and other components.

It is advised to design products for re-use as Accoya wood might be exceeding the (economical) service life of the product.

If re-use is not feasible, Accoya wood can be incinerated for energy production like untreated wood, as confirmed by the Wilhelm-Klaudiz-Institut (WKI).

As a last resort, Accoya wood can be composted. Due to its resistance to biological degradation, the decomposition process will be longer than for untreated wood.

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GLUING

Accoya wood can be glued using common wood adhesive systems, obtaining excellent results with polyurethane (**PU**), emulsified poly isocyanate (**EPI**), epoxy and phenol resorcinol formaldehyde (**PRF**) adhesives.

Polyvinyl acetate (PVAc) improves with longer clamp times, but it is not ideal for strong joints. **Avoid melamine urea formaldehyde** (**MUF**).

When gluing Accoya, test first and if needed contact your adhesive supplier for advice. This is also covered in our **Approved Manufacturer training programme**.

6.1 CHANGED PROPERTIES

Common wood adhesives (PVAc, EPI, PU, PRF) either harden on contact with moisture or part of the water content of the adhesive needs to be absorbed by the wood.

The acetylation process has an impact on the absorption properties of Accoya wood. Adhesives that require water as a catalyst and those consisting of two or more components that could migrate differently may have weaker bonds.

The presence of a low amount of acetic acid in Accoya wood, can affect the adhesive, especially acid catalysed adhesives and adhesives with a large amount of alkaline additives.

6.2 OPTIMISING THE ADHESION PROCESS

Always consider the following points:

— Follow the adhesive manufacturer's instructions for the adhesive quantity needed (see list of Accoya adhesive system partners in the download section on Accoya.com)

— With water-based adhesives, increase the clamp time or press time to bond the Accoya wood pieces

— Adapt the applied pressure during gluing to the strength of Accoya wood, as well as the temperature if heat is applied. Treat Accoya wood as moderately hard softwood in this context

— Curing time and the best curing conditions

— The properties of glued and finished product must be fit for purpose

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6.3 JOINTS

Any exposed end-grain must be sufficiently sealed using a suitable product. This is particularly critical forjoinery. It is important to make the frame corner joint connection watertight to avoid possible paint performance problems and other damage.

Dowels, biscuits and similar devices, if not made from Accoya wood, may swell (much) more than Accoya wood. Plastic dowels graded to the application may be used as an alternative to wooden dowels. Ensure that the diameter of the drill is the same as the diameter of the plug to prevent splitting of the ends.

6.4 FINGER JOINTING

Sharp, damage free knives need to be used to ensure high quality fingers as blunt knives can result in “broken” fingers.

Due to the short-term hydrophobicity of the Accoya wood surface and dimensional stability of the Accoya fingers (reducing the self clamping benefit after adhesive application), it might be necessary to increase pressing and curing time. Adjust press pressures to softwoods or to the specific settings recommended by the adhesive supplier.

6.5 LAMINATING

Best gluing results are obtained with structural PU and PRF adhesives. Only use these types in accordance with their manufacturers guidance for the use on Accoya when uncoated use or applications which will be subject to regular wetting.

Work on a flat surface and avoid excessive pressure to prevent expelling the adhesives. Consult your adhesive supplier for best practice for surface preparation. Adhesives may also require more time to penetrate the surface of the Accoya wood.

NOTE

Due to the high dimensional stability of Accoya wood, the annual ring orientation and the amount of balancing of layers is of less importance.

RECOMMENDATION FOR GLUES BY APPLICATION			
Glue Type	Finger Jointing	Laminating	Laminating Harsh Conditions*
PU	✓	✓	✓
EPI	✓	✓	
PRF	✓	✓	✓
PVAc			

* Uncoated Accoya wood and applications exposed to regular wetting: **only use structural PU & PRF glues**

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GLUING

6.6 ESSENTIAL STEPS FOR DESIGN OF STRUCTURAL LAMINATE

The acetylation process of Accoya affects the curing process of the glue line. Testing by Dynea and Henkel, in accordance with EN301 and EN 302-1 (PRF adhesives) or EN 15425 (PU adhesives)has confirmed that their adhesives are suitable for structural bonding of Accoya. Other adhesives may be used if confirmed by the manufacturers and Accsys.

Whilst EN14080:2013 suggests that the durability of glued laminated products shall be taken as the natural durability according to EN 350-2 of the timber from which they are made, professional bodies such as the Structural Timber Association (STA) in the UK consider the use of well-maintained water-repellent stain finishes together with rain screening and other protection measures as essential when used in Glulam applications.

Therefore the Accoya Warranty will only apply to Glulam applications where the guidance in this section is followed and moisture exclusion is achieved and maintained.

Best practice in designing for moisture management in glulam beams includes:

— Protecting end grain.

— Orienting lamella to achieve vertical grain on surfaces to mimimise checking and water ingress points.

— A robust adhesive to prevent delamination and moisture ingress.

— Regular inspection for identification and repair of splits or delamination.

— A maintained, film forming coating (optional).

— Drainage, particularly on horizontal surfaces and ventilation.

Top lamella from glulam showing vertical grain. Endgrain must be protected.

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CONTACT WITH OTHER MATERIALS – METALS

All wood contains organic acids, which can cause corrosion of metal fasteners in moist conditions. Accoya wood has comparable acid levels to many other durable species such as oak and western red cedar. In wet circumstances, the Accoya wood will have a pH in the range of 4 – 5.5.

Use high quality stainless steel, corrosion resistant aluminium or naval brass products in areas exposed to moisture or condensation. When these are not available, take precautions using lesser grade metals by coating or otherwise avoiding direct contact between the wood and these metals. It is advised to adopt good practice used for Western Red Cedar or Oak.

High humidity areas with risk of condensation require the use of high-quality hardware and corrosion avoiding techniques. Avoid galvanic corrosion by using fasteners that are compatible with the metals used in hinges, locks and other hardware. Consult your fixings supplier to avoid any issues.

Stainless Steel Grade Specifications

USA	UNS No.	Old British BS	EN	Euronorm No.	Name	ISO 3506	French AFNOR	Swedish SS	Japanese JIS
304	S30400	304S31	58E	1.4301	X5CrNi 18-10	A2	Z 6 CN 18 09	2332	SUS 304
304L	S30403	304S11	–	1.4306	X2CrNi 19-11	–	Z 2 CN 18 10	2352	SUS 304L
316	S31600	316S31	58H, 58J	1.4401	X5CrNiMo 17-12-2	A4	Z 6 CND 17.11	2347	SUS 316
316L	S31603	316S11	–	1.4404	X2CrNiMo 17-13-2	–	Z 2 CND 18.13	2348	SUS 316L

Commonly available highly corrosion resistant stainless steel fasteners known to work well with Accoya

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CONTACT WITH OTHER MATERIALS – METALS

7.1 STAINLESS STEEL

Use corrosion-resistant stainless-steel fasteners and fixtures conforming to EN 10088-1, such as widely used A2 or A4 quality stainless steel. In coastal regions or near highly polluted industrial zones, always use A4 quality. Other grades of stainless may also work with Accoya. If needed, consult your supplier for compatibility.

7.2 NAVAL BRASS AND ALUMINIUM

Naval brass and higher quality aluminium products are highly corrosion resistant in direct contact with Accoya and may be considered as well.

The following aluminium grades performed well in internal testing: 3003, 6005, 6060 and 6063. Grades 6061, 5154, 5052, 3052 and 1100 are expected to perform well, since they are commonly used in industrial manufacture and transport of acetic acid.

7.3 COATED HARDWARE

When stainless steel fixtures or other corrosion resistant metals are not available, coated fixtures (such as with epoxy, lacquer, polyurethane or powder coating) can be used in low moisture and condensation exposure risk, such as the dry side of windows and doors. Prevent damage to the coating during installation to reduce risk of corrosion, for example, by predrilling for fasteners.

Note that performance of coated fixtures varies, and no specific standards exist.

7.4 OTHER METALS

Galvanized metals or zinc alloys are not corrosion-proof when used with Accoya wood. The surface of certain aluminium alloys, copper, lead and other metals may also oxidise. Experience to date on the use of solid brass has been positive, especially on brass that is factory clear coated to retain brightness. Chrome plated steel performed very well in testing but if the protective layer is damaged this product will be susceptible to local accelerated corrosion.

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CONTACT WITH OTHER MATERIALS – METALS

7.5 COATED STEEL FASTENERS APPROVED FOR PRESSURE TREATED WOOD

Although stainless steel decking screws are commonplace and the best option, proprietary coated steel fasteners such as the coated deck screws approved for use in pressure treated wood, may be used as a lesser alternative. Predrill, and avoid damage of the screw coating.

Use of Accoya Wood

FASTENER QUALITY	DRY INTERNAL ENVIRONMENT	OUTDOOR USE (FIXINGS EXPOSED TO MOISTURE)	OUTDOOR USE COASTAL AREAS
Stainless Steel A4	✓	✓	✓
Stainless Steel A2	✓	✓	
Naval Brass	✓	✓	
Aluminium*	✓	✓	
Coated Metals**	✓		

* Approved grades: 3003, 6005, 6060, 6063

** epoxy, lacquer, polyurethane or powder coating

Recommendation for fixings by application

FASTENER QUALITY	DRY INTERNAL ENVIRONMENT[1]	OUTDOOR USE WINDOWS/DOORS	DECKING	CLADDING	OUTDOOR FURNITURE & STRUCTURES
Stainless Steel A4	✓	✓	✓	✓	✓
Stainless Steel A2	✓	✓	✓	✓	✓
Naval Brass	✓	✓			✓
Aluminium*	✓	✓			✓
Coated Metals**	✓				

* Approved grades: 3003, 6005, 6060, 6063

** epoxy, lacquer, polyurethane or powder coating

1 E.G Dry side of windows and doors

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CONTACT WITH OTHER MATERIALS – METALS

7.6 AVOIDING CORROSION

Corrosion of lesser grade metals can be substantially reduced when direct contact with Accoya wood is avoided, by:

— Coating the wood or the metal component with an effective sealer to provide a protective barrier

— Physically isolating hardware from direct contact such as the use of plastic (or stainless steel) spacers, providing enough space for sufficient water drainage and fresh airflow is allowed for

— The concentration of acetic acid in confined spaces, such as door lock houses, can rise and increase the risk of accelerated corrosion. Seal metals in these areas (for example with a vapour-proof epoxy or end grain sealer) even if there is no direct contact between metal and Accoya wood.

— Avoiding condensation of moisture on metal components will help reduce potential corrosion issues, for example by effective ventilation around those components, as will avoiding high humidity non-ventilated areas.

— Avoiding moisture build up, specifically in engineered wood such as large size laminated sections through good design and with effective coatings. Cracks and fissures should be repaired. Regular inspections and proper maintenance is recommended to avoid problems occurring.

— Avoiding damage to metal hardware during storage and transport

For additional protection, spray metal hardware with a water-repellent (PTFE or silicon based spray) or rust inhibitor. This is also useful when the coating layer has been compromised. Take care not to spray onto bare wood surface as these products may influence coating adhesion and/ or maintenance of metal hardware. Pre-drill for screws and other larger diameter fasteners. When installing smaller pieces of Accoya, the use of staples, such as those made of 18 gauge A2 stainless steel, is recommended to reduce split risk. For further information, consult your supplier.

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CONTACT WITH OTHER MATERIALS – NON-METAL PRODUCTS

Accoya wood has been tested for compatibility with a wide variety of products commonly used in a wide range of applications and regions. The information below is a summary of these findings, partly based on internal research and partly on extensive testing by system suppliers experienced with Accoya.

7.7 SEALANTS, GASKETS AND RELATED PARTS

Rare examples are known where the small amount of residual acetic acid in Accoya wood has influenced the curing process or the long-term performance of sealants. Sealant suppliers should perform a compatibility check for glazing sealants (silicon, polyurethane, MS-polymer) and sealants used in double-pane glass (e.g., polysulphide, silicone, polyvinyl butyral). When installing unfinished Accoya wood, adhesion can be improved by applying a primer before applying the sealant.

7.8 CLEANING AGENTS ON UNCOATED WOOD

Cleaning agents vary tremendously in chemical composition and use. In general, cleaning agents are quite aggressive chemicals that need to be handled carefully.

Firstly, after using a cleaner, wash Accoya extensively with clean water. Some of these products contain chemicals that can impact the (long term) performance and/ or aesthetics of Accoya wood. Chemicals which degrade wood in general (such as strong acids and bases) can also degrade Accoya, avoid these chemicals.
An exposure to products above a pH value of 9 can invalidate* the Accoya warranty.

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CONTACT WITH OTHER MATERIALS – NON-METAL PRODUCTS

7.9 FIRE RETARDANTS

Fire retardant chemicals can affect the compatibility and/or performance of coatings, adhesives and other products.

Note that certain fire retardant chemicals products might invalidate the Accoya warranty.

7.10 WOOD REPAIR PRODUCTS

For Accoya wood with an opaque film-forming coating, repair any damage and unsound knots before finishing to prevent water ingress. Follow supplier instructions and ensure the repair system is compatible with other components. Use tested repair systems for paint adhesion, shrinkage behaviour, practical workability and resistance against moisture, UV light and high temperature. Two component systems (e.g. epoxy or polyurethane) are strongly preferred. Avoid one component systems that tend to be hydrophilic or shrink after drying (creating capillaries).

7.11 END-GRAIN SEALERS

Seal all exposed end-grain for Accoya wood products that will be finished with a film-forming coating system effectively. Use a product that has been tested for its ability to reduce liquid water uptake by the wood, adhesion and UV resistance.

Coating manufacturers often produce their own end grain sealers. In all cases, the end grain sealer must be approved as compatible with Accoya by the coating manufacturer.

7.12 PRESSURE TREATED WOOD PRODUCTS

Pressure-treated lumber containing metal salts like CCA, ACQ, and MCQ can leach copper compounds, causing green staining on Accoya wood. To prevent this staining risk, use isolation techniques such as plastic (or stainless steel) strips or spacers and barrier coatings. Design of the structure to allow quick drying of the pressure treated wood also reduces this staining risk. Alternatively, Accoya can be considered as a higher performing alternative to pressure treated lumber in these applications and will also eliminate green staining showing through.

For more details, consult barrier product suppliers.

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COATINGS

Despite Accoya wood's excellent compatibility with a wide range of coating types, it is highly recommended having the coating manufacturer involved in the process, as they have in-depth knowledge of their products, suitable application techniques and how to assess the performance of the finished product.

Coating formulations vary per manufacturer (and possibly by region) and processes vary depending on the application equipment used and the end product design.

For more details on coating see our essential coatings guide in the download section on Accoya.com

8.1 PREPARATION

— Ensure Accoya wood is clean, dry (below 8% mc) and free of dust, grease and other pollution.

— Where possible, finish the wooden parts on all sides before mounting or assembling them.

— Use high quality products that contain resin-bleed blockers and fungicides especially for white paint finishes, when using primers.

— **Seal end grain to prevent water absorption.**

— Accoya's superior dimensional stability prolongs the life of coatings. To prolong the overall and cosmetic appearance, maintain properly.

— Pre-coat surface preparation improves finish and performance. Planed surfaces that are left for a period of time before coating benefit from surface preparation (sanding / fladding or textured brushing) to remove any surface contamination, particularly when applying translucent coatings.

8.2 NON-FILM FORMING AND SEMI-FILM FORMING SYSTEMS

Accoya wood can be finished with semi and non-film forming paint systems such as stains and oils. Apply multiple coats and follow maintenance intervals. The wetting of Accoya wood is different due to the hydrophobic nature of the wood surface in its first minutes of exposure. As a result of this trait, water-based stains may not penetrate as deeply or form as thickly on Accoya wood.

Non-film forming coatings typically last as long on Accoya as they do on other wood types but semi film forming coating typically shows longer maintenance intervals on Accoya.

Do not use clear or very light pigmented coatings.

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COATINGS

8.3 PENETRATING OILS

Oils like tung, linseed, and walnut oil, whether pure or oil/ varnish mixtures, may be used with pleasing aesthetic results but have a similar longevity like traditional woods.

Note that oils can be a food source for fungi. Use oils containing a mouldicide. Accoya wood can absorb a great deal of oil. To minimize absorption, let the first coat of oil dry before applying additional coats.

8.4 OPAQUE AND TRANSLUCENT COATING (FILM FORMING)

Before applying film forming coating repair all mechanical damage or wood defects with a suitable product. Apply opaque and translucent coating systems on all sides. The rate of drying and/or curing of each individual coating layer might be different with Accoya wood than with other wood types.

Coating performance on Accoya wood in joinery and cladding is improved and maintenance intervals are often prolonged. The use of film forming coatings further extends the maintenance intervals.

Do not over apply the coating wet film thicknesses as this extends the drying process without adding to or enhancing performance.

8.5 BEST PRACTICES FOR JOINERY

Note the following guidance when coating Accoya wood. These guidelines are supplemental to advice from coating manufacturers, please consult your coating supplier at all times.

— A fully factory applied joinery coating is strongly recommended. If site finishing is required, apply a primer and mid coat in the factory and the top coat must be applied before the joinery can get wet on site.

— Accoya wood must be dry, clean and free from dust when coated. This is critical when brush applying top coats on site.

— **Avoid opaque coatings with calcium carbonate (chalk) fillers, as they can cause coating blistering on Accoya.**

— When using an opaque base coat, preferably an effective and well applied stain blocking primer is included and this is critical for white coatings.

— Translucent coating systems should contain an effective mouldicidal component to protect the wood from unattractive moulds and mildew. The porosity of Accoya may vary. When applying translucent stains, test a sample area first.

— Avoid clear or very lightly pigmented coatings, as they break down more rapidly in UV exposure and are particularly susceptible to disfiguring stains on or under the coating. As an alternative to retain the original Accoya look, consider a translucent stain with a pigment colour similar to the original Accoya wood.

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— Dip, flood, and flow coat applications are effective for the first coating layer on wood joinery. Monitor Accoya wood's wetting level during these processes. Avoid excessive wetting to prevent extended drying times.

— Follow coating manufacturer's application methods and guidance with focus on avoiding aeration in the coating film when spraying, avoiding cold coatings (typically above 15°C (60°F) at application), applying correct film thickness and appropriate drying techniques/conditions.

— Do not coat Accoya with impermeable coatings such as epoxy as this can lead to water entrapment.

— Sealers must be effectively used on all end grain throughout the joinery, with a product that is compatible with the paint system and approved by the coating manufacturer.

— Coatings must be thoroughly cured in a humidity and temperature controlled environment and in line with coating manufacturers guidelines. This often involves overnight drying between layers. Control is particularly important in colder months.

— Store coated joinery on site as per coating manufacturers guidelines.

— Use corrosion proof hardware with Accoya joinery. However, applying three layers of paint behind hardware that may be prone to corrosion helps create an isolation barrier between it and the wood. It is also good joinery practice to spray inside any lock housings and apply end grain sealer.

— If Accoya Color Grey is used for joinery it is recommended to apply a coating to reduce water ingress to the joinery and reduce propensity for surface checks.

Accoya wood contains a small amount of acetic acid. This can disturb the factory coating processes that have re-circulation of the coating (as in flow coating). By adding a buffer in the coating, potential problems can be prevented.

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8.6 DECK COATINGS

For a “natural appearance” of an Accoya wood deck with reduced potential discolouration issues, a translucent non filmforming coating, an oil-based stain or some other type of hydrophobic agent can be used. Darker or more highly pigmented coatings typically have longer maintenance intervals.

Do not use film-forming systems for decking boards, as they can foster possible slip risk and a risk of moisture accumulation when the coating is compromised by mechanical damage.

— If a coating is preferred, a fully factory applied coating system is strongly recommended. Apply coating on all surfaces, with a minimum dry film thickness to prevent risk of water absorption prior to coating and other in field complications.

— Moulds can grow on and through coating layers. To reduce risk of growth on and beneath the coating, at least the first layer of a stain should contain an effective mouldicidal component to help protect the wood from possible disfigurement.

— Do not use clear or lightly pigmented coatings, as they will provide little protection to weathering and greying and can make cleaning of the surface more difficult.

— Pigmented coating systems will camouflage mould/yeast disfigurement. However, it is advisable to test a sample area first with pigmented stains.

— Using somewhat thicker and/or multiple coating layers will help reduce moisture absorption and therefore the risk of mould and/or yeast growth on and through coatings. This will also lead to a more resilient coating in the sense of wear and tear, and may lead to a longer life expectancy of the coating.

— If so required, slip resistant coatings or applied strips can be used on Accoya wood in the same way as on other timber decking.

The service life of a decking coating depends on coating quality, thickness, colour, UV intensity, moisture level, and use intensity. Generally, a maintenance interval of more than one year is rare, as with other deck wood species.

Seasonal maintenance, including cleaning and re-coating, is recommended and good practice.

— The machining (including planning and/or sanding) of the Accoya wood may have an influence on the performance of the coating applied.

— For optimum life expectancy follow the recommendations of the coating manufacturer on the optimum coating film thickness.

— Generally speaking, regular localised remedial work in areas with high use intensity will prolong the interval for a complete renovation of the coating.

— Regular cleaning (preferably with a soft brush and clear water) will help reduce the risk of moulds growing through the coating.

— The ease of cleaning of non-film forming deck coatings generally improves when the coating is weathered.

— Avoid using a high-pressure washer.

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GET IN TOUCH

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Accsys run an Approved Manufacturer Training Programme and we would encourage all manufacturers planning to use Accoya to contact their distributor or Accsys directly to arrange for this training programme. The Approved Manufacturer status also brings a number of benefits which support market activity.