



## BIOMIMICRY ANSWERS HARDWOOD SCARCITY

**Accoya is a result** of years of visionary work that we at Accsys Technologies were fortunate enough to acquire and to bring to fruition. Our Accoya brand high-technology wood is sustainably sourced and matches or exceeds the beauty, stability and durability of tropical hardwood species.

Many wood manufacturers in the Netherlands have recognized that the durable tropical hardwoods they had long relied upon to hold up to the harsh Dutch weather are becoming endangered and increasingly scarce. This group has leveraged decades of research and forward-thinking work to improve the quality of more common, but lower performance wood species. One technique of

wood modification—called acetylation—is known to provide the performance needed but after decades of work, no one could figure out how to successfully do it on a commercial scale. This was Accsys Technologies' breakthrough. By assembling a unique team of wood and chemistry experts, the vision of these Dutch wood manufacturers and several other groups was realized.

Although acetylation is perceived as the 'gold standard' for high technology wood modification, the Accoya process is a remarkably simple concept. Acetylation merely takes the part of wood that readily wants to bond with water, free hydroxyls, and transforms them into naturally occurring

stable molecules called acetyl groups. Wood that is naturally high in acetyl groups, like the best performing tropical hardwoods, does not decay nearly as fast because rot and damaging insects do not have the food and water sources required at the molecular level for damage to begin. The acetylation process merely mimics nature and, without adding any toxic substances, ensures performance and material health. In addition, Accoya products are produced in a low-energy, low-water use process using only certified sustainable wood.

Besides durability, Accoya also has many other benefits that are indirectly linked to sustainability. For example, Accoya is far more dimensionally stable than any other wood, enabling less replacement and maintenance and improved coatings life. Accoya also has retained strength, increased hardness, increased thermal insulation properties and enhanced carbon sequestration, allowing wood to be used in exciting new ways on a scale for profound global impact.

Material reutilization, in several senses of its meaning, is one of the best features of Accoya. Firstly, the process mimics nature and the products contains only natural, compostable elements. Second, Accoya is typically made from rapidly renewable softwood species such as Radiata pine, with high yields even better than typical rapidly renewable crops (bamboo, flax, etc). Third, the

wood certification schemes we utilize, such as FSC and PEFC, guarantee that the wood is sourced from sustainably managed forests, ensuring that new trees are planted after harvest and biodiversity is maintained. Reutilization also comes into play during production and end of application life. Acetylated wood that does not meet our quality requirements, or that our customers can no longer use, can be ground up and used as input for Tricoya®, our exterior grade wood composite panel product. Ultimately Accoya can be used as wood mulch or a fuel source for utilities. But what makes Accoya a perfect fit with Cradle to Cradle is the fact that even if just discarded, it is 100% biodegradable. However, we actively promote the reuse of Accoya over its typical 50 year life, with biodegradation as a last resort.

In summary, Accoya enables abundantly available wood species to substitute tropical hardwood, and even high performance manmade materials in many demanding applications. Therefore, the potential positive impact on a global level is huge. Accoya can help further reduce greenhouse gas emissions directly through lengthening of carbon sequestration periods in products, but more importantly by replacing carbon intensive materials.

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