



Have we reached peak teak?

TEAK DECKING HAS LONG BEEN REGARDED A SUPERYACHT'S CROWNING GLORY, BUT THE CONTROVERSY AROUND "CONFLICT WOOD" FROM MYANMAR FORCED THE INDUSTRY TO COME UP WITH ETHICAL AND SUSTAINABLE ALTERNATIVES. [REDACTED] SPEAKS TO THE PIONEERS LEADING A NEW WAVE OF DECK INNOVATION



An elephant carries a log on its tusks in Myanmar. The wood, and the country it hails from, have become contentious subjects in recent years





We've known for decades that teak decking, the golden crown of a fine private yacht, has become problematic. Particularly contentious is old-growth Myanmar (Burmese) teak, or *Tectona Grandis*. It may be the highest-quality, most durable teak in the world, known for its warm colour and superior water resistance, but it is also clouded in environmental and humanitarian controversy.

Rumours of mass destruction of forest and exploitation of the Burmese people began filtering west in the 1960s, about the time the country dissolved into a military dictatorship. Tumultuous years followed, then, in 2021, after a brief period of stability, things took a turn for the worse when a regime with a brutal ethnic-cleansing programme took control (it still holds a grip over the country today). Bent on financing itself, it instilled a state-controlled timber monopoly, allowing traders to indiscriminately log as long as the government got a share of the profit. At the current rate of logging, the Environmental Investigation Agency (EIA) warns that the country will lose its forests by 2035.

Over the years the US and EU have implemented various bans and regulations to prevent illegally harvested Myanmar teak from entering their markets. In June this year, the EU Timber Regulation, which sought to curb imports based on a somewhat voluntary due-diligence, was replaced by a new broader and stricter methodology. Now any operator or trader who places these commodities on the EU market, or who exports from it, must prove that the products do not originate from recently deforested land or have contributed to forest degradation.

All these interruptions in sales of Burmese teak led to scarcity and rarity, resulting in a hike in prices, which simply heightened the demand for it. It also created an explosion of new teak plantations in other countries where it has always grown naturally but in smaller quantities.

Plantation teak has been touted as a solution, but it's not quick-growing. Plant a teak tree today and it will be 30 to 50 years until it can be harvested. Even then, compared to the lumber from an 80- or 100-year-old forest tree, there are differences. While hardly noticeable in furniture, when it comes to decks, boards milled from young trees are shorter and narrower and the grain is not as tightly packed. The other issue is that expansion of teak plantations – when not

responsibly managed – can contribute to deforestation as well as the elimination of naturally biodiverse rainforest habitat and the people and animals that depend on it.

While the superyacht industry is a bit player in the global teak market, it is a high-visibility target for those who could criticise its environmental footprint. One company making a stance is UK design firm Harrison Eidsgaard, which says that teak as a deck material makes them “uncomfortable”. “While durability is paramount for all the obvious reasons, we feel owners should be involved in the thought process and discussion [of] alternatives,” says co-founder Ewa Eidsgaard.

Alternatives include ethically sourced teak, exotic woods, farmed hardwoods chemically treated to stop rot and imitation teak (man-made “composite” wood, often made up of wood fibres blended with plastic or glue) but, Eidsgaard points out, each of them has an environmental impact.

“Ethically sourced teak is scarce,” she says. The problem is that there are not enough officially

“EVERY TREE CAN BE TRACED BACK TO THE SOURCE AND THE PERSON WHO CUT IT. IT IS THE FUTURE OF DECKING”

audited forests to supply all the teak needed to meet demand. As Eidsgaard says, “The next batch of lots of teak trees is not going to come up any time soon.” Exotic woods or chemically treated hardwoods also trigger questions about future recycling and imitation teak is PVC based, “and that opens a different can of worms”.

Marnix Hoekstra, co-creative director of Vripack, notes that he's surprised how “addicted” people – including himself – are to the look of teak decks on a yacht and how difficult it is proving to step away from them. “I think [decks are] one of the largest surfaces on a yacht and are very undeveloped from a design perspective. At the same time, we do have to acknowledge that it is a working surface for the crew, so it is not only aesthetics, but durability and non-skid qualities are very important,” he says. “Alternatives with those qualities are scarce. At the same time, it's up to us as designers to make the world see how it could be different.” Farmed hardwood, for example, is perfectly usable from a technical perspective, but “global demand is so high that it is impossible for the foreseeable years that we will

have enough forests to meet demand”.

For Vripack, it isn't sufficient to just use less teak in a design proposal. Instead, they suggest a different solution. “From day one, I am not forcing the client to make a choice; I am giving them something which is greater than the original,” says Hoekstra. As an example, he cited a 60-metre Vripack explorer currently in construction where they consciously chose a synthetic decking material called Esthec. “We use it in a very innovative way. It absolutely resembles the finish you are used to, but [with the patterns we have made] it is not a copy of a teak deck.”

Esthec is a patented thermoset (heat-hardened) material that, unlike many composites, uses bio materials and doesn't contain PVC or wood. Marcel van der Spek co-founded Esthec in 2007. “Despite the fact that sustainability has been part of the conversation for five years, builders are finally asking about synthetics because teak isn't available, and the ones who stockpiled teak three years ago are realising that won't last,” he says. Esthec's recipe is continually being refined, he says. “Our goal is to be completely bio-based by the end of 2024. We don't import anything from India or China and our factory is not more than 350 kilometres away from where we obtain our raw materials, so that [reduces] our CO2 footprint.”

On Project Zero, currently under construction at Vitters, Vripack appeased the owner's desire for wood differently. Following considerable research they selected Tesumo, an engineered product made from a fast-growing African tree that



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Left and below: developed 16 years ago, Esthec was one of the early sustainable decking solutions for yachts and is now in its third generation



Clockwise from far left: Tesumo engineered wood; deforestation in Myanmar; responsibly sourced teak from India; green teak; Tesumo can be sanded like teak; greenheart trees are native to the Guianas

Teak decking: six of the best alternatives

ESTHEC

The patented thermoset (hardened by heat) material uses biomaterials and does not contain PVC or wood. Now in its third generation, the 8mm-thick material does not absorb water and is resistant to most oils and grease. Compared to teak, it weighs less than teak and remains about 8°C cooler. At the end of its life, Esthec can be recycled or reworked locally with a new top layer for a second life cycle.

TESUMO

Developed by Lürssen, Wolz Nautic and the University of Göttingen, this engineered product is made from a fast-growing African tree. The wood from managed forests is modified with a patented process using heat, resin infusion and drying. It has the same appearance, dimensional stability, elasticity and rot resistance as teak. Dr Georg Behr, Tesumo's head of research and development, says it can be “thermally utilised” (disposed of by burning).

ACCOYA

This modified wood uses a sustainable softwood as its base material that is “catalysed” when a strong type of vinegar called acetic anhydride is forced into the raw timber under temperature and pressure, which changes the wood on a molecular level. This makes the wood virtually unable to absorb water, expand and rot. Accoya has a life expectancy of up to 50 years and can be reused, recycled or burned as biomass (fuel).

GREEN TEAK

This type of teak uses the parts of a tree that normally would have been rejected for traditional deck boards because they had knots or imperfections. A sawmill slices the timber into thin veneers, stacks them up and laminates them with a polyurethane glue. The laminated veneers are then turned on their side and sliced into three-inch-wide boards. These stacked veneers are nearly indistinguishable from the vertical grain of a teak deck board.

MARINEDECK 2000, AQUACORK, SEACORK

Cork is naturally waterproof and can be harvested every eight years. Marinedeck 2000, AquaCork and SeaCork all have proprietary mixtures and either compress the product into blocks to be cut into planks or extrude it into sheets that can be templated for installation in large sections. Easily repaired if damaged, cork is easy to work with, doesn't get hot and is more stable. Marinedeck 2000 has been installed on a Feadship.

IROKO AND GREENHEART

These dense hardwoods from Africa and South America, respectively, have natural resistance to rot and termites. Iroko is sometimes called African teak, although the species are not related. Iroko lumber starts out yellow but ages to a darker copper colour, while greenheart is highly variable. Greenheart is a great choice for docks and ship hulls but not so great for yacht decks as it is difficult to work with. Iroko makes up the decks of some existing tall ships.

matures in 50 years or roughly one-third the time of premium teak. "I think we will be using it on all projects that require wood decks," Hoekstra says. "Every board comes with a QR code on the back of it and every tree can be traced back to the source and the person who cut it. We have had it thoroughly tested in the Netherlands. It is the future of decking."

Tesumo was developed from a research project conducted by Lürssen shipyard, German superyacht decking company Wolz Nautic and the German University of Göttingen. The wood, which comes from managed forests with Forest Stewardship Council (FSC) or Origine et Légalité des Bois (OLB) certificates, is modified with a patented process using heat, resin infusion and drying. The result has the same appearance, dimensional stability, elasticity and rot resistance as teak. "The use of easily available wood reduces the ecological risks that go along with logging a rare raw material," says Philipp Warnecke, Tesumo's managing director.

Another new alternative is the Dutch product Accoya, which, like Tesumo, uses an easily available certified sustainable softwood as its base material. Instead of being injected with resin, the wood is "catalysed" – a strong type of vinegar called acetic anhydride is forced into the raw timber under temperature and pressure, which changes the wood on a molecular level. It makes the wood virtually unable to absorb water, expand and rot. Accoya has a life expectancy of 25 to 50 years and can be reused, recycled or burned as biomass (fuel).

Richard Strauss, CEO of Teakdecking Systems, has been negotiating the hot potato that is

Myanmar teak for seven years, with the exception of periods where the US and EU could not legally obtain it. "Teak is a bit taboo," he admits. But, he says, what the world forgets is that ethical teak is also grown responsibly all over southeast Asia, India, Panama, Costa Rica, Brazil and central Africa, in natural forests as well as plantations. "We have four people who source wood. They go to the forests and to the sawmills to check on compliance. The FSC really has its finger on where teak is grown, and they make sure it is logged properly and the paperwork is in order."

Most lumber importers rely on companies like DoubleHelix to oversee certifying sustainability compliance for wood stocks. "They are like the blockchain for wood," says Strauss. "But we are taking it further; we subject our lumber stocks to a DNA test to make sure it is 100 per cent clean. In the future, all yacht builders will want this."

Strauss says that in the past, superyacht-quality teak decking came from trees 80 years old or more. "In this reality, superyacht-quality teak is 30 to 35 years old. The standard for deck exports used to be inch-thick boards four inches wide and 12ft long." Now he says the standard deck board is thinner: "Just one by three inches and the boards are just eight or nine feet long," he notes. "The teak available now requires a re-education process and new designs and decorative patterns to make efficient use of shorter boards."

So with restrictions in place now, is the price of teak stabilising? Strauss gives a resounding "no". The price in Europe for old growth teak is around €30,000 (£26,000) per cubic metre. Plantation teak is not far behind, "about what we paid for Burmese teak four years ago."



One of the latest adaptations is so-called "green teak", which reduces waste by incorporating parts of a tree that would have been rejected for traditional deck boards because they had knots or imperfections. A sawmill slices the timber into thin veneers, stacks them and laminates them. The laminated veneers are then turned on their side and sliced into three-inch-wide boards. Strauss says the stacked veneers look almost exactly like the vertical grain of a teak board. "We have a 107-metre yacht under construction now in Northern Europe with all green teak decking. The response at METS last year was huge. We had three requests for proposals on superyachts over 100 metres that originally wanted Myanmar teak but have switched their request to other teaks. We see wealthy people asking questions now."

Teakdecking is an employee-owned company that saw the writing on the wall for teak eight years ago and began a rigorous testing programme for Accoya, which Strauss notes is harder than teak and very stable. The company

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Above: the hull of Ernest Shackleton's *Endurance* is built in greenheart hardwood. Left: a Marinedeck 2000 cork deck

all have proprietary mixtures and either compress the product into blocks to be cut into planks or extrude it into sheets that can be templated for installation in large sections.

SeaCork is made in France and sold in 100 countries. Randy Fraser in the UK office says that the most common applications have been for tenders and refits, usually to cover a leaking deck or applied over existing faux teak that gets too hot. "We find in general that people [think] the surface is going to be like the cork board they remember from school, which is the cheapest, least durable. It's not even the same species of tree as the cork oaks used to make wine stoppers. It's like comparing a Twinkie and a proper French baguette." Fraser notes that cork graces the floors of many high-traffic institutions like Frank Lloyd Wright's Fallingwater, the Library of Congress, National

Archives and the Los Angeles Public Library.

Chris Groves, managing director of Eco Marine Deck UK, is an advocate of Marinedeck 2000, which uses Portuguese cork and holds full FSC accreditation. Groves says it's easily repaired, easier to work with than wood and more stable. "It doesn't get hot or cold, it's not expanding and contracting, so it has better adhesion and is less likely to lose its bond to the deck."

Other substitutes include the very dense hardwood species iroko and greenheart, which have natural resistance to rot and termites. The trees grow to a very large size and yield wide, long boards. In truth, iroko is difficult to work, splinters and easily blunts tools, as does greenheart. Greenheart is often used in Caribbean construction because it stands up to a wet climate and is resistant to carpenter ants. It is a great choice for docks and ship hulls – Ernest Shackleton's ship *Endurance* was clad in greenheart – but not so great for yacht decks. Some existing tall ships have decks made of iroko.

Esthec's van der Spek says the next leaps must come from designers in terms of how they use the material. He points to how Mercedes-Benz Style used the material aboard the Arrow460 in ways that looked nothing like teak boards. "The material begins as a liquid so we can pour it on anything with an aluminium substrate in practically any pattern. We can make it on ceilings and walls and curved surfaces."

Van der Spek sees a lot of shipyards doing studies of alternative materials, "but most of them are comparing Burmese teak to other teak materials. The next step should be innovation with other materials. It's time to move on." ■

Teak's troubled history

1826	1948	1988	1989	2014	2021	2023
<p>Burmese teak has been a problem since Great Britain won the First Anglo-Burmese War in 1826 and discovered Burma held a huge supply of the wood. Getting it out of the forests meant negotiating hilly terrain, dense jungles and many of the 100 ethnic groups that live in Burma. Within three years the Crown gave up and let private companies do the logging and by 1841 teak forests on the Malay peninsula were decimated.</p>	<p>Burma was granted independence and the new government began logging to cover its debts. By the 1980s, teak made up one-third of Burma's export earnings.</p>	<p>After a coup, a new government, hungry for money to buy weapons, sold logging rights to merchants from Thailand, which went on to further mismanage its forests.</p>	<p>A brutal military takeover in 1989 began a Western rift in trade relations. The government took control of the forestry in what it now declared to be the Union of Myanmar.</p>	<p>The government halted teak exports while the democratically elected government of Aung San Suu Kyi drew up forestry management practices with the international environmental certifications industry. This was overshadowed by the military's persecution and killing of the country's Rohingya and Kachin minorities. Civil rights groups estimate more than a million people have been displaced by the fighting and burning of villages that began in 2016.</p>	<p>General Min Aung Hlaing gained absolute control of the army. The Global Centre for the Responsibility to Protect estimates that 800 pro-democracy protesters have been killed and more than 4,000 people detained. Burmese teak began to be known as Blood Teak or more politely, Conflict Teak.</p>	<p>While Western governments reacted by banning teak imports, India, China and Russia have no such policies. India is now the second-largest importer of "conflict wood" from Myanmar, following China, according to an investigation by the International Consortium of Investigative Journalists. Most teak exported to India is made into furniture that is often exported to the US and EU. Countries including Belarus, Ukraine and Croatia allow importation teak if the trader has documentation, however flimsy, that the logs were cut before the coup and before the restrictions were enacted. In most cases, these logs are quickly turned into lumber, mixed with other stock and exported to other Western countries, exploiting a loophole that is beginning to close. Last year, German, Dutch and American companies caught with identifiably illegal teak, some destined for US and Dutch yacht builders and suppliers, were fined heavily and one CEO was sent to prison.</p>



The Burma flag until 1948

Deforestation began in the 1800s



Independence in 1948



Aung San Suu Kyi in 2014



General Min Aung Hlaing in 2021