COCONUT TIMBER

BLUESTREAM
WASTE · STREET FURNITURE · PLAY

PROTECTING OUR PLANET. A collective responsibility.

Rainforests enhance the well-being of the planet and provide us with everyday products such as timber. However, we are facing the severe degradation of the health of the world's rainforests. In 2020 alone, the world lost 25.8Mha of tree cover.

At Bluestream, we believe that it is our collective responsibility to protect these fragile ecosystems. We do this by developing furniture utilising a production process that is quality and environmentally certified by ISO 9001 and ISO 14001.

As a member of the Dubai Sustainability Network, we try our best to subsidise rainforest timber with coconut timber, fast-growing in popularity as the new timber resource and properties comparable to the hardwood material we have been accustomed to using.

Coconut wood is the processed stem fibre from the farmed plantations of coconut palms. When it is thoroughly sawn, seasoned, completely dried, treated and machined, coconut wood can perform as well or even better than the conventional hardwood.

Stringent laws on harvesting and logging of rainforest trees over the past few decades, and the subsequent scarcity of hardwood supply in the market, has resulted in the use of coconut timber as a viable substitute to sustain the demand.

Grown abundantly in the Asia-Pacific region, particularly in Indonesia, India, Papua New Guinea, the Philippines, and Thailand, the processing of coconut wood has served as an economic relief to coconut farmers, with more than 80% of small coconut farm holders in Asia-Pacific benefitting from the employment and income it generates.

Properties of coconut timber

Table I. Moisture content (%) and shrinkage (%) *Cocos nucifera* stem at different height and lateral positions

Height position	Lateral position	Moisture content (%)	Shrinkage (%)			
			Tangential	Radial	Longitudinal	Volumetric
Top	Periphery	88.28	5.23	4.90	0.78	11.2
	Core	87.85	5.26	5.23	0.98	
	Average	88.07 (3.84)	5.25 (0.02)	5.07 (0.32)	0.88 (0.22)	
Middle	Periphery	83.60	5.35	5.14	0.79	
	Core	83.09	5.50	5.36	1.43	11.8
	Average	83.35 (3.20)	5.43 (0.11)	5.25 (0.17)	1.11 (0.47)	
Bottom	Periphery	83.17	5.43	5.32	0.86	
	Core	79.87	6.18	5.52	1.54	12.4
	Average	81.52 (4.24)	5.81 (0.53)	5.42 (0.23)	1.20 (0.41)	
Average		84.31	84.31	5.46	5.25	11.8

Note: Values in the parenthesis show standard deviation

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The coconut palm is a monocotyledon with a base diameter of up to one metre. Its slender branch-less, and erect pole-like trunk can grow up to 25 metres in height.

Instead of the annual growth rings like those in conventional hardwood, coconut wood is classified according to its three degrees of density.

High-density timber

The dermal part is the hardest and densest section of the coconut trunk, with a hardness between 600 - 900 kilograms per cubic meter. The high-density timber is ideally used in load-bearing structures such as:

- Floor tiles or parquet
- Floor joists
- Door jambs
- Window frames
- Pillars
- Balustrades
- Purlins
- Trusses
- Scaffolding
- Railings
- Girts
- Rafting
- Decking
- Furniture

Medium-density timber

The sub-dermal part is next to the high-density part of the coconut trunk with hardness of around 400 to 600 kilograms per cubic meter. Medium-density timber makes a good material for ceiling joists, horizontal studs, and walls.

Low-density timber

This is the core of the coconut trunk. With a density of 200 - 400 kilograms per cubic meter, it is considered soft-medium and is ideal for use in non-load structures such as the internal trim, panels, and ceiling, and is often also used in homewares applications and novelty products. See Annexure 1 for more details.

The entire coconut trunk is sometimes used as poles in power and telecommunication lines.

An ecologically sound resource

Each year, landfills across the Asia-Pacific region fill up with senile coconut trees that have been felled or others that weather events have torn down. However, with the discovery of the commercial uses of coconut wood, the trunks of the "tree of life" – so-called because each part of the coconut tree has its benefit to humanity – are no longer destined to landfills.

It's easy to replace senile and typhoon-felled coconut trees making it an ecologically sound resource. The seedlings grow rapidly in various soils, and coconut fruit can float on water for long distances and still germinate once washed ashore.

Harvesting these trees is also more convenient and cheaper than other hardwood elements as coconut trees are intentionally planted far apart, allowing logging vehicles to easily pass through. Also, the straight, branchless trunk allows easy movement for vehicles in transporting the harvested trees.

Annexure 1

Table V. Compression strength of *Cocos nucifera* stem at different height and lateral positions

Height position	Lateral position	Air dry condition		Oven dry condition	
		Parallel to grain (N/mm ^{2})	Perpendicular to grain (N/mm ^{2})	Parallel to grain(N/mm ^{2})	Perpendicular to grain (N/mm ^{2})
Top	Periphery	10.34	6.02	11.06	7.16
	Core	12.22	7.13	12.05	8.6
	Average	11.28 (1.33)	6.58 (0.78)	11.56 (0.70)	7.88 (0.86)
Middle	Periphery	10.56	8.38	11.20	8.37
	Core	14.07	11.24	14.51	10.51
	Average	12.32 (2.48)	9.81 (2.02)	12.86 (2.34)	9.44 (1.32)
Bottom	Periphery	10.87	8.76	12.38	9.75
	Core	16.41	14.14	15.89	13.44
	Average	13.64 (3.92)	11.45 (3.80)	14.14 (2.09)	11.60 (2.22)
Average		12.41	9.28	12.85	9.64

Note: Values in the parenthesis show standard deviation