



VISIBLE
ENVIRONMENTAL
IMPACT

Footprint of core

HIDDEN
FACTORS

Mechanical properties at equivalent density

Resin uptake of a particular core material

Monomaterial / fully bio sandwich structure

Scope of INVISIBLE FOOTPRINT

- end of life included or excluded
- recyclability options

Avoidance of ancillary materials

- no scrim
- lower resin uptake with AIREX® SealX

Toxicity and emissions when processing

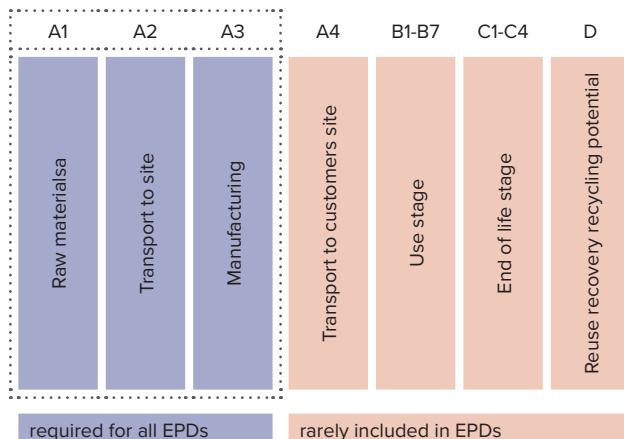


Environmental Product Declaration

AIREX® and **BALTEK®** verified industry-leading lowest carbon footprint
core materials

www.3ACcorematerials.com

Lowest Footprint with our **AIREX®** PET and **BALTEK®** balsa



3A Composites Core Materials continues challenging sustainability aspect of the conventional practices in the composites industry and presents a freshly validated Environmental Product Declaration (EPD) of its **AIREX® T92.100** PET foam and **BALTEK® SBC** balsa wood. Both reports are externally made and externally verified and available on environdec platform's EPD Library section (environdec.com). Scope of the analysis: A1-A3 cradle to gate in Switzerland for PET and in Ecuador for balsa wood.

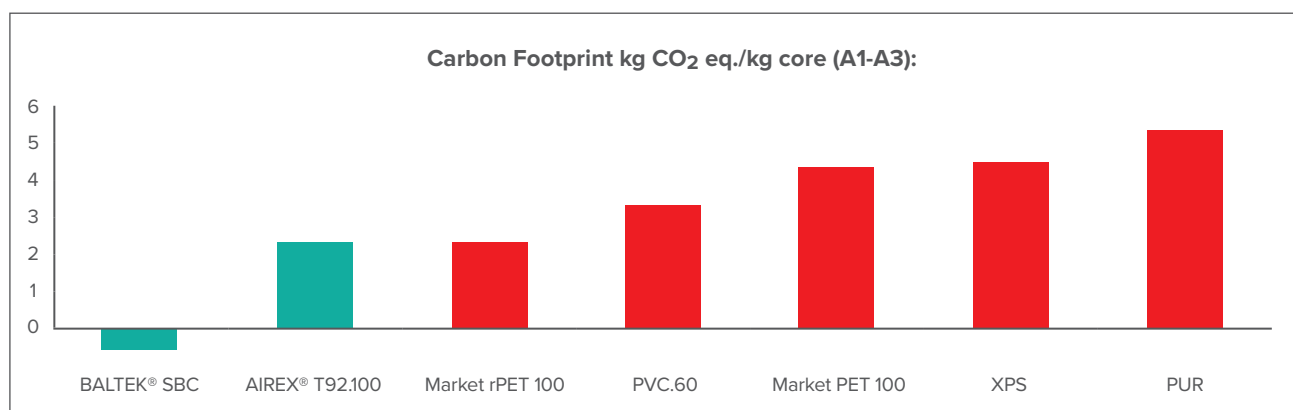
Cradle-to-grave (A1-C): full LCA from resource extraction to disposal
 Cradle-to-site (A1-A4): cradle-to-gate + transportation to customer site
 Cradle-to-gate (A1-A3): from raw materials to production and packaging

Potential environmental impact of 1 m³ of all densities **BALTEK® SBC & SB (CK LP)** balsa wood core material

PARAMETER		UNIT	Upstream		Core	Downstream	TOTAL
			Raw materials	Transport of raw materials	Manufacturing	Use & EoL	
Global Warming Potential GWP-GHG¹	Fossil	kg CO₂ eq.	80.8	67.1	82.1	INA	230.0
	Biogenic	kg CO₂ eq.	-584.0	0.2	309.0	INA	-275.0
	Land use and land transformation	kg CO₂ eq.	0.1	0.03	0.1	INA	0.3
	TOTAL	kg CO₂ eq.	-503.0	67.4	391.2	INA	-44.7

Potential environmental impact of 1 m³ of 100 kg/m³ **AIREX® T92.100** PET foam core material

INDICATOR		UNIT	A1	A2	A3	TOTAL A1-A3
Global Warming Potential GWP-GHG¹	Equivalent for 100 kg/m³	kg CO₂ eq.	160.4	20.1	10.8	191.9

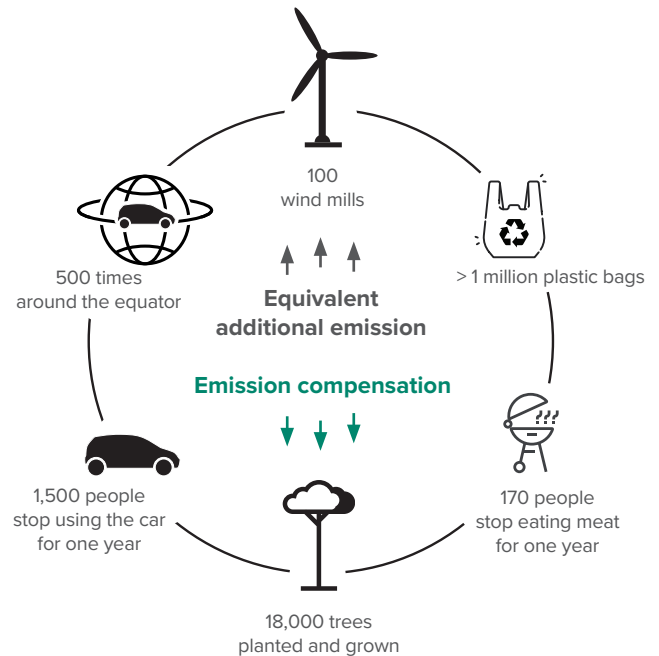


Keeping balsa at least in 30% of the blade can reduce the emission of the whole core footprint by almost a half!

In this case study (75 m long blade with original design having 30% balsa, 50% low density PET and 20% high density PET) we show why our customers should choose **Hybrid Core Concept** not only for perfection in **mechanical properties**, but equally important for **sustainability reasons**.

Replacing balsa in a blade with PET brings a tremendous amount of additional unnecessary CO₂ to the atmosphere.

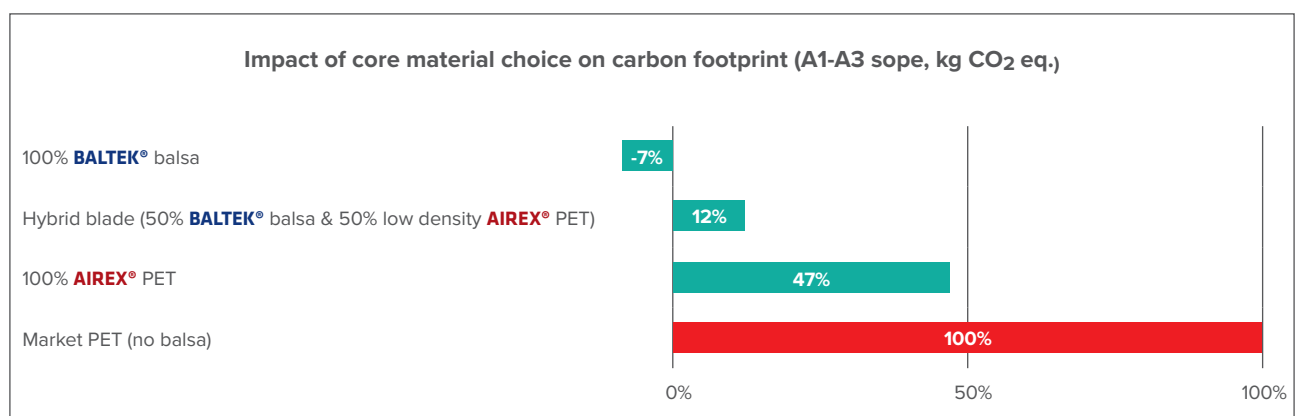
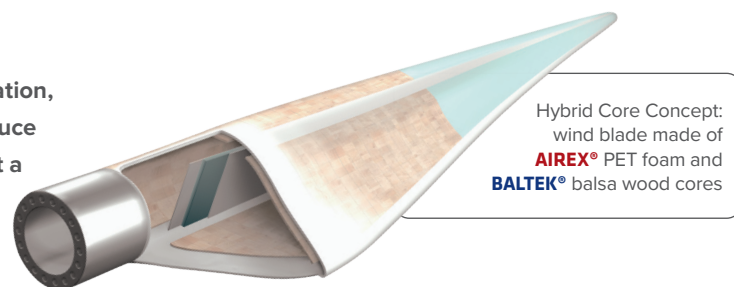
Thus, the production of 100 new wind turbines using only PET foam as core material causes additional carbon emissions equivalent to driving a car around the equator 500 times or more than 1 million plastic bags. These additional emissions can be offset by planting and growing 18,000 trees, 1,500 people not driving a car for a year, or 170 people not eating meat for a year.



Looking at the core-only, **BALTEK®** balsa is the best core material from properties and environmental perspectives. The second best option: **Hybrid Core Concept** with **BALTEK®** balsa and **AIREX® T92.100** SealX that minimizes resin uptake needed and thus brings the best-in-class CO₂ footprint of a blade.

3A Composites Core Materials guarantees stable supply chain and availability of both **AIREX®** PET and **BALTEK®** balsa around the globe. We plant 3.5 million balsa trees a year – the only core material in the world with validated CO₂ sink!

Even with epoxy resin uptake taken into consideration, keeping balsa in at least 30% of the blade can reduce the emission of the whole core footprint by almost a half!



■ Market PET (no balsa) ■ 100% **AIREX®** PET ■ Hybrid blade (50% **BALTEK®** balsa & low density **AIREX®** PET) ■ 100% **BALTEK®** balsa

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