PRODUCT FOOTPRINT ANALYSIS

Double Sided Bamboo Teaching Easel (BE1)

April, 2023

Copernicus educational products

Certified B Corporation

About Copernicus

Copernicus Educational Products is a leading North American designer and manufacturer of innovative classroom furniture and technology support solutions. We design and build from sound foundations; ensuring that mobility, functionality and affordability are evident in all we do. Our products are developed and tested with teachers in real classroom environments, to ensure that they have real purpose in the real world. It is that simple.

As a B Corp, we want to use our business as a force for good. We are striving to lessen our environmental impacts and improve our social impacts throughout our value chain while becoming a leading manufacturer of the education industry. We have set a goal to reduce our upstream product-specific emissions by 50% by 2025. Upstream emissions include any that are created in the manufacturing, transportation and distribution of our products up until they leave for delivery to the customer (also known as cradle-to-gate). To achieve this goal, we need to first measure our product footprints.

Photo top: Aerial view of Copernicus and surrounding area
Photo left: Wetland restoration project on Copernicus property

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Product Description

The Double Sided Bamboo Teaching Easel is designed for PreK-6 classrooms. It combines teacher-driven features while providing a natural aesthetic ideal for neutral or early years environments. Its sturdy design is intended to last many decades of use. It has a lifetime warranty with replacement parts available to keep it in use as long as possible.

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Product Footprint

Material	kg	kg CO_2e	CO_2e Contribution
Bamboo (frame)	8.20	-0.82	-2.0%
Foam (whiteboard cushioning)	0.004	0.01	0.02%
Polyurethane (labels)	0.01	0.05	0.1%
ABS Plastic (book ledge)	0.66	2.91	7.1%
Nylon Plastic (casters)	0.52	4.15	10.2%
Steel (caster stem, chart hooks, whiteboard surface, hardware)	2.24	5.87	14.4%
Polypropylene Plastic with 25% post-industrial recycled content (tubs)	2.38	6.35	15.6%
Powder-coated Steel (frame, book divider, tub support)	3.91	9.61	23.6%
Polycarbonate Plastic (whiteboard core)	1.66	12.65	31.0%
Total Material Carbon Footprint		**40.78**	

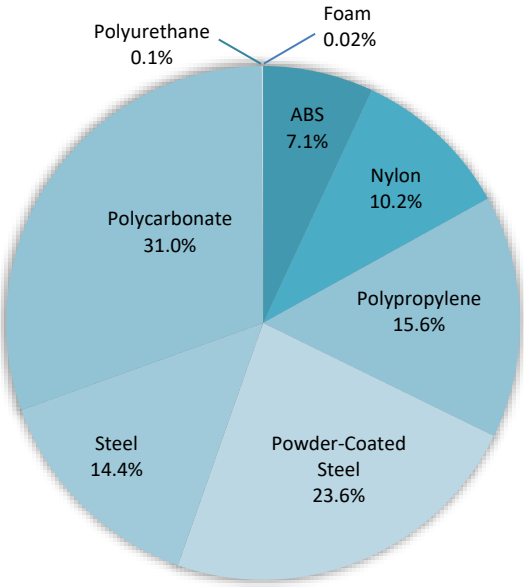
Upstream Transportation Emissions (See Analysis Boundaries chart below for detail)	+ 9.82
Packaging Emissions	+ 5.03
Total Carbon Footprint	**55.63**

Tubs made with recycled material and optional lids are available (not calculated elsewhere in document)

Material	kg	kg CO_2e	Option
Polypropylene Plastic with 100% post-consumer recycled content (tubs) These tubs have a lower environmental impact than our regular tubs.	2.21	3.10	 Set of four 100% Recycled post-consumer plastic tubs
Polypropylene Plastic (lids)	0.94	2.91	 Set of four clear plastic lids for tubs

CO_2e Contribution by Material Type:

Bamboo is expressed as a negative value (see table above) and is therefore not included in the pie chart. Bamboo absorbs carbon dioxide during its growth phase so we included the carbon captured by the bamboo as it grew to be able to truly compare it to non-renewable materials, such as steel. We used the measurements collected by van der Lugt et al. (2015) and selected the relevant data points for our product*.



Social Cost of Carbon:

The social cost of carbon is a monetary measure of the estimated global damage expected from an additional metric tonne of CO_2 being released into the atmosphere. It is calculated by projecting assumed CO_2 paths on the climate (temperature, precipitation, and weather events) and the associated physical climate impacts (sea levels, agriculture, forestry, water availability, and pests). The effect these physical impacts have on the economy is used to create the monetary value. The Government of Canada has estimated a social cost of $50 per metric tonne of released CO_2 per year. Recent research indicates that this value underestimates the damages of climate change to society and the social benefits of reducing carbon pollution.

For this product, the social cost of carbon is **$2.78**.

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Intent

This is not a full Life Cycle Assessment (LCA) conducted by a third party; however, we created this internal analysis using reputable sources and guidance from a product LCA consultant. This product analysis is intended to provide transparency in what we know about this product at this point in time. It also provides a benchmark for us to make more informed decisions in product design and development from a carbon emissions reduction standpoint.

Our Approach

This is the first stage of measurements and we will continue to update this document as we gather more, and better-quality data. We hope to continue to improve our accuracy of measurements over time as well as expand it to incorporate other environmental factors, such as water usage and biodiversity impact. This analysis is from cradle-to-gate which includes the production of raw materials, transportation from the supplier to the manufacturer, product assembly, and packaging.

We have also calculated other product-related emissions, however, due to the type of data we have for those emissions at this point in time (larger scale, not individual product data) we have allocated these greenhouse gas (GHG) categories into our overall Scope 3 GHG inventory. These include warehouse product storage, downstream transportation, product use and end-of-life management. See Analysis Boundaries chart on page five and learn more about how we calculated these other GHG categories here.

All of our emission factors are from peer-reviewed, comprehensive sources such as the United Nations Framework Convention on Climate Change, Inventory of Carbon and Energy, Doconomy, and International Network for Bamboo and Rattan. In most cases, we are using global industry averages. With more than one data source, there can be differences in methodology, however, we needed to use multiple sources due to limited data. We strove to ensure emission factors from each different source were analogous and measured using the same guidelines and assumptions (see page seven for Resources and References).

Photo: Bamboo culms starting to emerge on plantation (Shutterstock)

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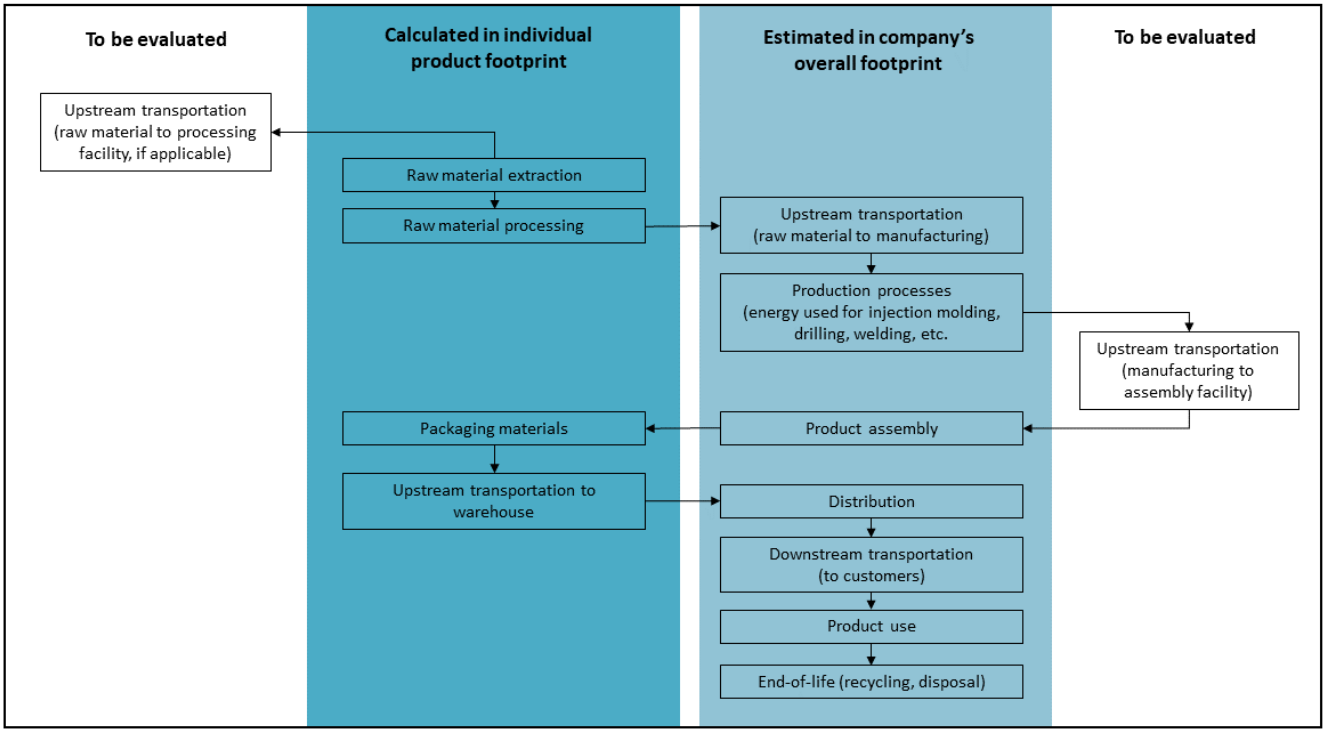
Material Emissions: We selected material emission factors on a per weight basis from peer-reviewed, comprehensive sources to determine the amount of greenhouse gas emissions that were created when each material was extracted and/or processed into its final form. This was multiplied by the weight of each material within the product.

Transportation Emissions: We selected transportation emission factors on a per tonne.km basis from peer-reviewed, comprehensive sources to determine the amount of upstream emissions that were created to ship finished goods from the final assembly facility in China to our facility in Arthur. We are still working on measuring the other upstream emissions. See Analysis Boundaries chart below.

Packaging Emissions: The cardboard used to package the tubs is made with 100% recycled material. The rest of the product packaging is sourced sustainability using chain of custody tracking through the Forestry Stewardship Council (FSC) and is made from 70% recycled material. We are working to eliminate plastic in all of our packaging. This product still has foam corner protectors and internal plastic strapping. Any alternatives have not been able to pass our drop tests as of yet, but we are working hard to find an appropriate solution.

Analysis Boundaries

The declared unit is one Double Sided Bamboo Teaching Easel (including packaging) with a lifetime of at least 20 years.



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Environmental Impact Assessment

We continue to make improvements in our own manufacturing facility in Canada and work closely with our global suppliers to reduce their environmental impacts. The final assembly supplier's facility in China is powered with approximately 100% solar energy and uses electric forklifts. Other environmental factors, such as water usage and biodiversity impact, are areas we hope to report on as we collect more information from our supply chain.

Photo: Solar panel installation at final assembly supplier in China

Social Responsibility Initiatives in our Value Chain

We have implemented a Supplier Code of Conduct and perform regular site visits to our tier one suppliers. We are implementing a Supplier Audit Process that assesses environmental impacts, such as agricultural practices (in the case of bamboo production), water quality, energy consumption, waste management, and employee safety and well-being.

Carbon Offsets

As we measure and reduce our emissions, we still want to be balancing the amount of greenhouse gases we are producing, which we do by purchasing carbon offsets. Purchasing offsets is not the solution to climate change, but it is a helpful step as we work towards reducing our greenhouse gas emissions.

Our criteria for offset projects include:

- The project or program is verified and registered through one of the following standards: American Carbon Registry, Climate Action Reserve, Gold Standard, Verified Carbon Standard, UN Clean Development Mechanism
- The project or program is listed on a third-party public registry so that each carbon credit is only sold once and is then retired and removed
- The project or program is transparent about their allocation of funds
- The project or program is permanent and measurable

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References:

Government of Canada. (2021). *Annex: Pricing Carbon Pollution.* https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/healthy-environment-healthy-economy/annex-pricing-carbon-pollution.html

Resources:

Emission Factor Resources:

van der Lugt, P. & Vogtlander, J. G. (2015). *The environmental impact of industrial bamboo products: Life-Cycle assessment and carbon sequestration.* (Technical Report No. 35, Second Edition). International Network for Bamboo and Rattan. https://www.inbar.int/resources/inbar_publications/the-environmental-impact-of-industrial-bamboo-products/ **Process steps 1,3,5-17 on page 17, plus carbon sequestration data points (minus land use change) on page 30*

United Nations Framework Convention on Climate Change. (2021). *Greenhouse Gas (GHG) Emissions Calculator.* United Nations Framework Convention on Climate Change. https://unfccc.int/documents/271269

Jones, C. & Hammond, G. (2019). *Inventory of Carbon and Energy.* Circular Ecology. https://circularecology.com/embodied-carbon-footprint-database.html

Doconomy. (2021). *The 2030 Calculator Product Carbon Footprint Tool Version 1.0.* Planet Loyalty. https://planetloyalty.com/

Quantis. (2016). *Scope 3 Evaluator.* Greenhouse Gas Protocol. https://quantis-suite.com/Scope-3-Evaluator/

Other Resources:

American Carbon Registry

B Corporation Movement

Climate Action Reserve

Copernicus Educational Products Inc. 2021 Impact Report

Forestry Stewardship Council (FSC)

Gold Standard

UN Clean Development Mechanism

Verified Carbon Standard

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