

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

AYA Stool

from

BENCHMARK

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



GENERAL INFORMATION

PROGRAMME INFORMATION

Programme:	The International EPD® System EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product category rules (PCR)
CEN Standard EN 15804 serves as the Core Product category rules (PCR):
Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.2-c-PCR-021 Furniture (c-PCR to PCR 2019:14) (Adopted from EPD Norway) UN CPC Code: 38122 Other wooden furniture, of a kind used in offices
PCR review was conducted by: The Norwegian EPD Foundation (EPD-Norge), Norsk Industri - Designindustrien, Ekornes ASA, Wonderland AS, Aarsland Møbelfabrikk AS Øyvind, Vestre AS, Flokk AS, Ostfold Research, SINTEF Building and Infrastructure
Life Cycle Assessment (LCA)
LCA accountability: Andrew Norton, Renuables Ltd
Third party verification:
Independent third-party verification of the declaration and data, according to ISO 14025 2006, via:
☒ EPD verification by individual verifier
Thire party verifier: Hüdai Kara, Metsims Sustainability Consulting
Approved by the International EPD® System
Procedure for follow-up of data during EPD validity involves third-party verifier:
☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804 may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs: cover products with identical functions, technical performances and use (e.g., identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION



Owner of the EPD: Benchmark Woodworking Ltd.

Contact: Fiona Coyne

Description of the organisation: Benchmark are a powerhouse of craft, making beautiful, sustainable and healthy furniture from natural materials for commercial and residential markets. At the heart of our workshops lies a dedicated team of skilled and passionate craftspeople. With a strong kinship as our base, we focus on craft, materials and quality to ensure that we offer an honest and conscious furniture solution which will stand the test of time.

For the last 40 years we have collaborated with a variety of partners to drive our mission of sustainability forward and we constantly challenge ourselves to ensure that we are working towards an increased knowledge and awareness of global impact. With a transparent approach, we aim to be open with our sustainable journey, encouraging this mindset amongst others. Through our continued efforts to be at the forefront of the industry, we are looking to set an example in creating a sustainable option for consumers without any compromise on design and quality. We believe that through collaboration and a sharing of knowledge we can participate in a positive future for the furniture industry.

Name and location of production site:

**Benchmark Woodworking Ltd, Bath Road, Kintbury, Berkshire RG17 9SA, UK
+44 1488 658184 info@benchmarkfurniture.com benchmarkfurniture.com**

PRODUCT INFORMATION

Product name: AYA stool

UN CPC code: 38122 Other wooden furniture, of a kind used in offices

Geographical scope: Global

Product description: The AYA collection designed by Foster + Partners demonstrates Benchmark's circular approach to thoughtfully create for people and planet. AYA is a simple, restrained design combined with material honesty to delivery beauty and functionality with minimal impact. Made with solid FSC British grown ash, variation of character and colour is embraced, rather than rejected, to minimise waste. The pieces have been designed and made to be easily disassembled for repair and finished with natural oils for ease of refurbishment to enable the pieces to be in use for several lifetimes.



Materials

This EPD declares the environmental performance of the AYA Stool made in solid British-grown ash. The environmental performance of other sizes and timbers can be provided on request.

The AYA collection, which includes dining tables, meeting tables, high coloration tables & seating, has Red List Free Declare Labelling meaning that it is free from toxic chemicals and meets the air quality standards for WELL certified buildings.

Manufacturing

The AYA collection combines 5-axis CNC machining with the highest level of craftsmanship.

Packaging

Benchmark furniture is blanket wrapped and unwrapped in situ with blankets taken away to be reused. For International Shipments our crates are made from FSC birch plywood and we ensure wherever possible that the crates are returned for re-use. We are working towards having all our packaging created from recycled materials and are using biodegradable corn starch alternatives in place of plastic foam.

Transportation

Benchmark furniture is delivered directly to our clients by road or by road and sea for international shipments.

Product Use and Maintenance

The AYA Collection carries a 5-year warranty and is made to last a lifetime. It is easy to look after and easily refurbished. Finished with a low VOC hard-wax oil which protects it from stains and spillages, it can be kept clean by simply wiping with a damp cloth. Deep scratches and marks can be removed with light sanding and re-oiling.

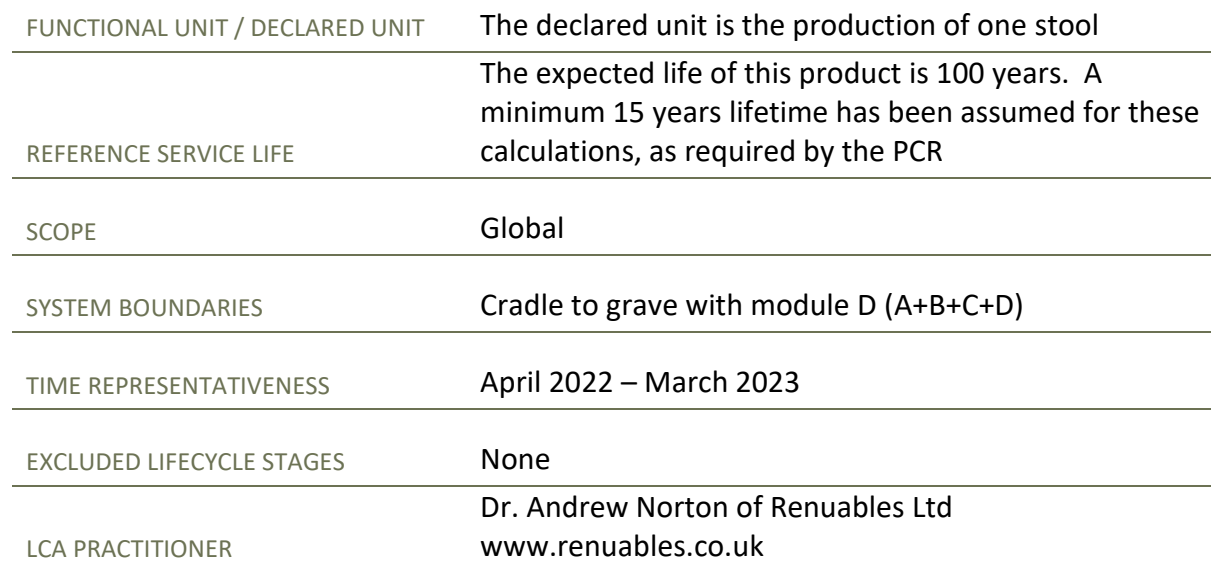
End of Life

To extend the life of our products, Benchmark offer a Lifetime Repair and a Take Back Scheme – all furniture can be returned to us when it is no longer needed. It will be refurbished, repurposed or donated to charitable enterprises.

Further Product Information

Detailed product information and specifications can be found on our website benchmarkfurniture.com

This cradle-to-grave EPD is applicable globally.



Ecoinvent 3. (2023), with Simapro 9.5. (2023) was used for the background data.

An electricity grid mix based upon the Good Energy fuel mix disclosure statement was used (53.9% wind, 13.4% solar, 4.3% hydro, 28.4% biogeneration), $GWP_{100} = 0.00374 \text{ kgCO}_2\text{e/kWh}$.

For characterization factors: Version 2 of the default list of indicators.

[<https://mailto:support@environdec.com/resources/indicators>]

Lower heating value was used for energy content of wood. This data was obtained from the Phyllis 2 database.

All relevant inputs and outputs have been considered in the LCA, except that cut-off criteria were based upon input flows being less than 1% of the total individually, subject to the sum of all flows being less than 5% of the total, and subject to verification that the impacts associated with such flows were not of a magnitude to affect the reported data significantly (less than 5% in total).

Scenarios/Assumptions

A1-A3: Transport of materials to manufacturing site from suppliers/sawmill. Energy and materials associated with the manufacturing process including surface finish.

A4: We have assumed that delivery is from our workshops to London, a distance of 104 km. The impact of other delivery scenarios can be calculated on request.

A5: There are no impacts associated with installation.

B1-B7: No replacement or repair is assumed during the product life. Maintenance consists of periodic wiping with a damp rag. All B modules have nil entries and are not reported to make the data more legible – they are however, declared.

C1: There is no impact associated with this module.

C2: Transport to waste disposal site of 20% of product, on average, for a distance of 20 km.

C3: There is no waste processing assumed.

C4: A default production lifetime of 15 years as specified in the PCR is applied. However, as our products are made to last 100 years and we offer a take back scheme, it is very likely that the products will be reused or recycled. Therefore, our End-of-Life assumption, as a worst-case scenario, is that 80% will be recycled/reused and 20% goes to landfill. In accordance with the requirements of EN 15804, it is assumed that all of the biogenic carbon is eventually released.

D: It is assumed that, on average, 80% of these products will survive longer than 15 years and that therefore 80% of a potential new product is replaced by the product in a second life.

Waste Management: All timber offcuts, which can't be used for smaller components, are used to provide heat onsite.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results)

	Product stage			Construction process stage		Use stage							End of life stage				
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	N/A			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	N/A			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content declaration

Product components	Weight, kg	Post-consumer recycled material, weight %	Biogenic material, weight % and kg C/product or declared unit
Wood	5.10	0%	100% 2.64 kgC
Glue	0.02	0%	0%
Wood treatment oil	0.05	0%	100% 0.05 kgC
Sum	5.17		>99% biogenic material 2.69 kgC/ 9.9 kgCO_{2e}
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/product or declared unit
N/A	N/A	N/A	N/A

We have no consumer packaging for deliveries within the UK. Our furniture is blanket wrapped and unwrapped in situ with blankets taken away to be reused.

No substance included in the Candidate List of Substances of Very High Concern for authorisation under the REACH Regulations is present in the furniture.

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

Mandatory impact category indicators according to EN 15804

Results per AYA stool									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	3.37E+00	4.95E-02	0.00E+00	0.00E+00	4.76E-03	0.00E+00	8.35E-03	-2.69E+00
GWP-biogenic	kg CO ₂ eq.	-1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+01	-8.26E+00
GWP-luluc	kg CO ₂ eq.	1.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.34E-01
GWP-total	kg CO ₂ eq.	-6.79E+00	4.95E-02	0.00E+00	0.00E+00	4.76E-03	0.00E+00	1.02E+01	-1.11E+01
ODP	kg CFC 11 eq.	1.71E-06	1.21E-08	0.00E+00	0.00E+00	1.17E-09	0.00E+00	3.14E-09	-1.37E-06
AP	mol H ⁺ eq.	3.31E-02	1.59E-04	0.00E+00	0.00E+00	1.53E-05	0.00E+00	7.43E-05	-2.65E-02
EP-freshwater	kg P eq.	1.62E-03	3.59E-06	0.00E+00	0.00E+00	3.45E-07	0.00E+00	1.70E-06	-1.30E-03
EP-marine	kg N eq.	9.66E-03	3.56E-05	0.00E+00	0.00E+00	3.42E-06	0.00E+00	3.75E-04	-7.73E-03
EP-terrestrial	mol N eq.	1.07E-01	3.88E-04	0.00E+00	0.00E+00	3.73E-05	0.00E+00	3.03E-04	-8.55E-02
POCP	kg NMVO C eq.	2.94E-02	1.52E-04	0.00E+00	0.00E+00	1.46E-05	0.00E+00	1.10E-04	-2.36E-02
ADP-minerals & metals*	kg Sb eq.	9.04E+01	8.17E-07	0.00E+00	0.00E+00	7.85E-08	0.00E+00	8.61E-08	-7.23E+01
ADP-fossil*	MJ	-3.86E+01	8.00E-01	0.00E+00	0.00E+00	7.69E-02	0.00E+00	2.28E-01	3.09E+01
WDP*	m ³	8.97E-01	2.81E-03	0.00E+00	0.00E+00	2.70E-04	0.00E+00	1.11E-03	-7.17E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Note that although all modules are declared, to improve the legibility of data, B modules are not included in the table, since they have nil entries.

Additional mandatory and voluntary impact category indicators

Results per AYA stool									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	3.53E+00	4.95E-02	0.00E+00	0.00E+00	4.76E-03	0.00E+00	8.36E-03	-2.83E+00

Resource use indicators

Results per AYA stool									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5.37E+02	1.07E-02	0.00E+00	0.00E+00	1.02E-03	0.00E+00	9.16E-03	-4.30E+02
PERM	MJ	1.11E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.90E+01
PERT	MJ	6.48E+02	1.07E-02	0.00E+00	0.00E+00	1.02E-03	0.00E+00	9.16E-03	-5.19E+02
PENRE	MJ	5.68E+01	7.86E-01	0.00E+00	0.00E+00	7.56E-02	0.00E+00	2.24E-01	-4.55E+01
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.68E+01	7.86E-01	0.00E+00	0.00E+00	7.56E-02	0.00E+00	2.24E-01	-4.55E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	2.45E-02	7.46E-05	0.00E+00	0.00E+00	7.17E-06	0.00E+00	2.76E-04	-1.96E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Results per AYA stool									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+00	0.00E+00
Radioactive waste disposed	kg	1.44E-05	2.76E-08	0.00E+00	0.00E+00	2.66E-09	0.00E+00	1.95E-08	-1.15E-05

Output flow indicators

Results per AYA stool									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.14E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.02E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ADDITIONAL ENVIRONMENTAL INFORMATION

Accreditations

Being one of the first UK furniture makers to receive both FSC and PEFC accreditation, we are continuously working to adhere to expectations and to always try to be accountable for our actions.



Alongside our ISO 14001 certification, we have Red List Free Declare Labelling which enables us to be providers to WELL certified projects. The WELL Building Standard was launched in 2014 and focuses on the health and wellness of people within interior environments. Factors such as air quality, light sources, materials and thermal comfort are taken into account to make way for calmer spaces and positive impacts on the mental and physical health of inhabitants.

We are proud to be awarded The King's Award for Enterprise in Sustainable Development, having previously been twice winners of the Queen's Award for Enterprise in Sustainable Development

Transparency

Throughout everything we do, we offer 100% transparency. Our DECLARE label, which is an international specification, provides consumers with honest details of the materials we use including the level of VOC's. We have achieved the Red List Free Label which shows that our furniture does not include any toxic chemicals or emit harmful VOC's. We request the same level of transparency from our suppliers. Our Environmental Product Declarations will provide complete transparency on the impact of our production and distribution on the planet.

Materials

In developing new collections, we use natural materials over synthetic alternatives:

We have selected natural, non-toxic and biodegradable options for our upholstery including organic wool, coir, and natural latex. They are better for our health as well as the environment, meeting fire regulations without the need for toxic fire retardant chemicals.

The forests from which we source timber are all sustainably managed encouraging a positive impact on climate change with the re-planting of trees and maintenance of biodiversity.

The finishes we use are low VOC oils developed from natural materials, again contributing to our drive away from the use of toxic materials within the built environment.

We encourage the use of local suppliers of materials where possible to reduce the carbon footprint in a product and do not work with endangered species of timber.

Circular Mindset

Our goal is to become an innovative enterprise with a circular mindset in every aspect of the business. No waste from our production goes to landfill and any surplus timber is repurposed into smaller components and accessories, or as fuel for energy used within the premises. All kitchen waste is composted on-site, and we work with local waste specialists to recycle uncommon plastics and materials. We operate a Lifetime Repair Scheme and Take Back Scheme where furniture can be returned to us if no longer required. We then refurbish, repurpose or give to charitable enterprises.

See: <https://benchmarkfurniture.com/lifetime-repair-take-back-scheme/>

ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

Community

Supporting our internal and external communities are of paramount importance at Benchmark:

We are Winners of the Best Employer of the Year from the Learning and Skills Council and provide apprenticeship schemes every year. Working with approx. 80 apprentices to date, the majority become full-time employees with over half of our team working over 10 yrs at the company.

We continually strive to build a strong social community in-house with daily shared lunches provided by our own cook and a schedule of social activities throughout the year.

With most of our workforce based within 15 miles of our workshop, we share transport to and from work and are replacing company vehicles to low-emission models.

We ensure our workshops have high levels of natural light, insulation and ventilation to provide better workplaces for our staff.

We seek to build strong relationships with our local community, investing into environmental improvements, supporting local initiatives and working with local schools and charities to strengthen the social benefits within our region.

Sharing our Knowledge

We believe through collaboration and a sharing of knowledge we can participate in a positive future for the furniture industry. We have a CPD programme which educates the design community about sustainability and wellness. We work with young designers and

students and seek to continue the conversations with them around sustainability, encouraging a positive mindset to continue into the future.



REFERENCES

General Programme Instructions of the International EPD System. Version 4.0.

PCR 2019:14, version 1.3.2 Construction products.

NPCR PART A: Construction products and services. Version: 2.0.

PCR 2019:14-c-PCR-021 Furniture (c-PCR to PCR 2019:14) (Adopted from EPD Norway)

EN 15804:2012+A2:2019/AC:2021. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

EN 16485:2014. Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction.

