Environmental Product Declaration

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

Woodtube

from

Woodtube Sales Sweden AB

WOOD TUBE

Programme:	The International EPD® System, www.environdec.com
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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
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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): Construction products, 2019:14, Version 1.3.4
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com. The review panel may be contacted via the Secretariat https://www.environdec.com/contact-us.
Life Cycle Assessment (LCA)
LCA accountability: *Amy Stockwell, Carbonzero AB, Amy.Stockwell@carbonzero.se*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: *Vladimir Koci, LCA Studio, Vlad.Koci@vscht.cz* Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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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 characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Version history
Version 2. 2024-02-28. GWP-GHG results included. Quantified specific data used.
Version 3. 2025-06-13. 1 year of manufacturing data now included. Updated to follow PCR construction products 2019:14 v 1.3.4, from v1.3.0.

Company information

Owner of the EPD: Woodtube Sales Sweden AB
Contact: Lars-Gunnar Horgby
Description of the organisation: Woodtube is a manufacturer of studs made out of recycled paper, enabling construction of light weight interior walls.
Name and location of production site(s): Säffle, Sweden

Product information

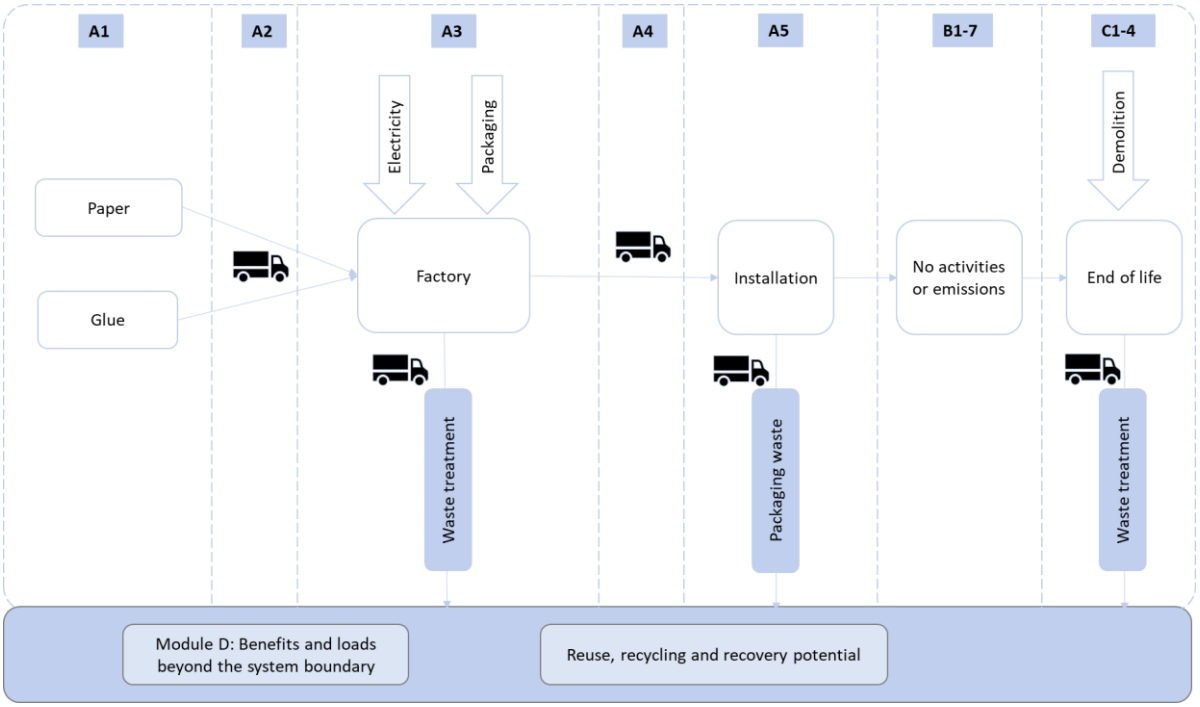
Product name: Woodtube stud
Product description and use: Woodtube studs are used for construction of interior walls, replacing traditional steel- or wooden studs. The Woodtube stud is light weight, making it easy to carry, and it's non-sharp edges reduces risks for cutting wounds. Gypsum and chipboard are screwed into the stud as usual during assembly
UN CPC code: 3219 Other paper and paperboard products
Geographical scope: Europe
Technical specification: Following Boverket Building Regulations (BBR)

Specification	Value	Notes
Fire resistance, class EI 30 respectively EI 60	5:231	Fire resistance class for each wall type follows from the Associated documents.
Airborne sound insulation, Rw37, 44 respectively 46 dB	7	Airborne sound insulation for each wall type follows from the Associated documents.
Safety by use (mechanical strength)	8:1	-

LCA information

Functional unit / declared unit: 1 m of Woodtube stud. It weighs 0.685kg.
Reference service life: it is assumed to be 50 years
Time representativeness: 2024
Database(s) and LCA software used: LCA for Experts v 10.9.1.17 with integrated ecoinvent database 3.9.1
Description of system boundaries: Cradle to gate with options, modules A1-A5, B, C1-C4, D

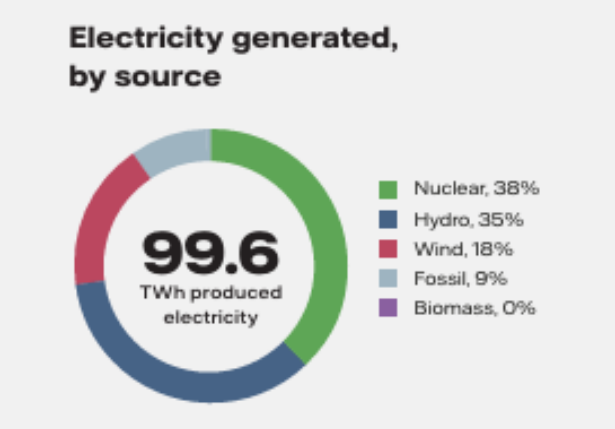
System diagram:



A3 manufacturing:

The tubes are produced by moulding recycled paper and glue into a tube shape, then drying.

The electricity is purchased from a 'green' electricity supplier. The grid mix is shown to the right. It was modelled assuming that fossil was natural gas. The GHG-GWP is calculated as 4.83 E-03 kg CO_2e per kWh.



A4 transport to customer:

This was assumed to be within Europe, using the data below.

A4 scenario information	
Transportation	GLO: Truck-trailer, Euro 0 - 6 mix, 34 - 40t gross weight 27t payload capacity
Fuel type	RER: Diesel (6.35% bio-content)
Fuel consumption	0.0167 kg/tkm
Distance	500 km
Capacity utilisation (including returns)	61 %
Bulk density of transported products	500 kg/m^3
Volume capacity utilisation factor	1

A5 installation:

Installation is done with hand tools and so the impact was assumed to be negligible.

Packaging was disposed of with the following assumptions. The pallet was assumed to be reused. The plastic was disposed of according to Eurostat average European plastic packaging disposal.

A5 scenario information	
Pallet to reuse	1.15E-02 kg
Plastic to recycling	8.28E-04 kg RER: plastic granulate secondary
Plastic to landfill	3.85E-04 kg RER: plastic waste on landfill
Plastic to incineration with energy recovery	1.06E-03 kg RER: plastic packaging in municipal waste incineration plant
Assumptions	Transport assumed 100km by truck

C1-C4 end of life:

It is recommended that Wood Tube is recycled, so that scenario was chosen. According to Eurostat, 99% of paper and card are recycled, so this is believed to be a representative and reasonable assumption.
Note the virtual emission of biogenic carbon from the product is included in C3.

C scenario information	
Collection process	6.85E-01 kg
Recovery system	6.85E-01 kg to recycling
Assumptions	Transport assumed to be 100km by truck

D: benefits beyond the system:

The benefits for plastic packaging incineration with energy recovery are listed below.

Although the paper and plastic are made from 100% post-consumer recycled content, so there are no benefits to recycling allowed in module D.

D scenario information	
Exported electrical energy	4.80E-03 MJ RER: electricity grid mix
Exported thermal energy	8.59E-03 MJ RER: process steam from natural gas

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

X = modules included, ND = not declared, Specific data used and variations are based on the GWP-GHG indicator.

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery 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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	SE	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	3 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Data

Quantitative and qualitative data were collected for all processes within the system boundary and these data were used to compile the LCI. These comprised specific data (primary data) and generic data (secondary data). Generic database data from Sphera and ecoinvent were used for the production of raw materials, energy, transportation, packaging and end-of-life. Specific data were collected from the factory manufacturing this product.

Time representativeness

The site-specific data used for the product manufacturing corresponds to 2024.

Data quality

All datasets used came from reputable databases Sphera and ecoinvent, with good technological representativeness. Secondary/generic data were chosen to be to be as geographically specific as possible, however, this was not always possible. In these cases, a geography was selected to match the technology, feedstock source etc., as closely as possible.

Allocation

In this study a “cut-off” method was applied to all cases of end-of-life allocation, including in the case of generic data, where the ecoinvent v3.9 with a cut-off by classification end-of-life allocation method was used. In this approach, environmental burdens and benefits of recycled / reused materials and recovered energy are given to the product system consuming them, rather than the system providing

them and are quantified based on recycling content of the material under investigation. The cut-off point is where an end-of-waste state is reached, including any sorting, cleaning, and processing of waste prior to recycling, reuse, or energy recovery, following the “polluter pays principle”.

Cut-off criteria

The general rules for the exclusion of inputs and outputs follow the requirements in EN 15804, whereby a process can be excluded if it contributes to <1% of the total mass or energy input of a unit process, up to a maximum of the total mass or energy of the lifecycle. The plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the potential environmental impacts through the life cycle of the product, as well as flows related to human activities, such as employee transport.

Content declaration

Material	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-%	Biogenic material, kg C /m
Paper	0.625	100 %	44 %	0.275
Glue	0.060	0 %	0 %	0
Total product	0.685	91 %	40 %	0.275

Material	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/m
Pallet	0.010	1.5%	0.004
Plastic	0.002	0.3%	0
Total packaging	0.012	1.7%	0.004

At the date of issue there is no “Substance of Very High Concern” (SVHC) in concentration above 0.1 % by weight, and neither does the packaging, following the European REACH regulation.

Information on the biogenic carbon content

Biogenic carbon content	Unit per DU	Amount
Biogenic carbon content in the product	kg C	2.75E-01
Biogenic carbon content in packaging	kg C	4.00E-03

1 kg biogenic carbon is equivalent to 44/12 kg CO2.

Disclaimers

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Using the results of modules A1-A3 without considering the results of module C is discouraged.

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.		
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.		

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804+A2, EF 3.1

Results per m									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	-9.85E-02	2.70E-02	6.87E-03	4.55E-04	5.32E-03	2.75E-01	0.00E+00	-1.05E-03
GWP-fossil	kg CO_2 eq.	1.79E-01	2.67E-02	2.67E-03	4.49E-04	5.25E-03	0.00E+00	0.00E+00	-1.04E-03
GWP-biogenic	kg CO_2 eq.	-2.78E-01	6.15E-05	4.20E-03	1.06E-06	1.21E-05	2.75E-01	0.00E+00	-5.41E-06
GWP-luluc	kg CO_2 eq.	9.47E-04	2.76E-04	4.02E-07	4.55E-06	5.42E-05	0.00E+00	0.00E+00	-1.35E-06
ODP	kg CFC 11 eq.	1.28E-09	3.17E-15	6.09E-16	7.33E-17	6.21E-16	0.00E+00	0.00E+00	-9.24E-15
AP	mol H^+ eq.	5.95E-04	5.34E-05	4.34E-07	2.27E-06	1.05E-05	0.00E+00	0.00E+00	-1.19E-06
EP-freshwater	kg P eq.	2.30E-05	7.25E-08	6.62E-09	1.19E-09	1.42E-08	0.00E+00	0.00E+00	-9.04E-10
EP-marine	kg N eq.	1.38E-04	2.35E-05	1.19E-07	1.09E-06	4.60E-06	0.00E+00	0.00E+00	-3.47E-07
EP-terrestrial	mol N eq.	1.44E-03	2.49E-04	1.83E-06	1.18E-05	4.88E-05	0.00E+00	0.00E+00	-3.88E-06
POCP	kg NMVOC eq.	5.77E-04	4.70E-05	3.36E-07	2.94E-06	9.22E-06	0.00E+00	0.00E+00	-9.47E-07
ADP-minerals&metals*	kg Sb eq.	7.70E-07	1.78E-09	8.16E-12	2.94E-11	3.49E-10	0.00E+00	0.00E+00	-9.83E-11
ADP-fossil*	MJ	5.56E+00	3.42E-01	1.59E-03	5.66E-03	6.71E-02	0.00E+00	0.00E+00	-1.82E-02
WDP*	m^3	1.10E-01	1.07E-04	2.52E-04	2.02E-06	2.11E-05	0.00E+00	0.00E+00	-1.01E-04
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.*

Resource use indicators

The primary energy indicators were calculated following method B from Annex 3 of construction products PCR v 1.3.4

Results per m									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	-1.07E+01	2.52E-02	-2.29E-01	4.27E-04	4.94E-03	0.00E+00	0.00E+00	-5.65E-03
PERM	MJ	0.00E+00	0.00E+00	-1.52E-01	0.00E+00	0.00E+00	-1.25E+01	0.00E+00	0.00E+00
PERT	MJ	-1.07E+01	2.52E-02	-3.81E-01	4.27E-04	4.94E-03	-1.25E+01	0.00E+00	-5.65E-03
PENRE	MJ	4.34E+00	3.42E-01	1.59E-03	5.66E-03	6.71E-02	0.00E+00	0.00E+00	-1.82E-02
PENRM	MJ	0.00E+00	0.00E+00	-4.82E-02	0.00E+00	0.00E+00	-1.60E+00	0.00E+00	0.00E+00
PENRT	MJ	4.34E+00	3.42E-01	-4.66E-02	5.66E-03	6.71E-02	-1.60E+00	0.00E+00	-1.82E-02
SM	kg	6.44E-01	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	2.97E-03	1.21E-05	6.02E-06	2.11E-07	2.38E-06	0.00E+00	0.00E+00	-4.38E-06
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								

Waste indicators

Results per m									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	8.66E-10	1.24E-11	6.33E-13	2.27E-13	2.43E-12	0.00E+00	0.00E+00	-1.09E-11
Non-hazardous waste disposed	kg	1.52E-04	4.50E-05	1.45E-03	7.91E-07	8.83E-06	0.00E+00	0.00E+00	-8.81E-06
Radioactive waste disposed	kg	1.42E-04	4.50E-07	4.27E-08	1.07E-08	8.83E-08	0.00E+00	0.00E+00	-1.30E-06

Output flow indicators

Results per m									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	1.56E-02	0.00E+00	1.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	3.14E-02	0.00E+00	8.28E-04	0.00E+00	0.00E+00	6.85E-01	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	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	4.80E-03	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	8.59E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional mandatory and voluntary impact category indicators

Results per m									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO2 eq.	1.82E-01	2.71E-02	2.67E-03	4.55E-04	5.31E-03	0.00E+00	0.00E+00	-1.05E-03
PM	Disease incidence	5.24E-09	3.98E-10	5.05E-12	2.65E-11	7.80E-11	0.00E+00	0.00E+00	-9.66E-12
IRP	kBq U235 eq.	2.52E-02	6.24E-05	5.75E-06	1.54E-06	1.22E-05	0.00E+00	0.00E+00	-2.14E-04
ETP-fw	CTUe	1.12E+00	4.44E-01	1.51E-03	7.36E-03	8.70E-02	0.00E+00	0.00E+00	-1.55E-03
HTP-c	CTUh	8.60E-11	5.97E-12	4.72E-14	9.93E-14	1.17E-12	0.00E+00	0.00E+00	-1.82E-13
HTP-nc	CTUh	1.48E-09	3.37E-10	3.32E-12	5.56E-12	6.60E-11	0.00E+00	0.00E+00	-2.95E-12
SQP	Dimensionless	2.17E+00	1.52E-01	4.04E-04	2.50E-03	2.98E-02	0.00E+00	0.00E+00	-3.33E-03
Acronyms	GWP-GHG global warming potential - greenhouse gases; PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality								

[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 CO_2 is set to zero.

References

EN 15804:2012+A2	Sustainability of construction works – Environmental product declaration – Core rules for the product category of constructions products
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ISO 14020:2022	International Standard ISO 14020 – Environmental statements and programmes for products – Principles and general requirements
ISO 14025:2006	International Standard ISO 14025 – Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 14040:2006	International Standard ISO 14040: Environmental Management – Life cycle assessment – Principles and framework. Second edition 2006-07-01.
ISO 14044:2006	International Standard ISO 14044: Environmental Management – Life cycle assessment – Requirements and Guidelines.
PCR 2019:14	Construction products v1.3.4

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