Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

SiOO:X Premium Wood Protection - unpigmented (consumer and industrial markets)

from

Sioo Wood Protection AB

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
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): International EPD System PCR 2019:14 “Construction products”, v1.2.5
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Andrew Norton (Renuables – www.renuables.co.uk) 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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Sioo Wood Protection AB, von Utfallsgatan 20, 415 05 Göteborg, Sweden
Contact: Börje Gevert [info@sioox.se]
Description of the organisation:
Founded in Gothenburg, Sweden in 1998 by Herje Bostrom, Sioo Wood Protection AB are the creators of the ground breaking, patented, SiOO:X wood protection system using silicate technology.

Sioo Wood Protection AB was established in 2008 to carry forward marketing and support across Scandinavia and internationally. Today, SiOO:X products are in widespread use by consumers and professionals. Many projects have been in the field for over ten years.

The SiOO:X products are specified by world leading architects, professionals and clients seeking natural and sustainable wood protection solutions that give long life and a beautiful even weathered aged appearance which allows the timber to blend into its environment.

Sioo Wood Protection AB sustains an on-going R&D programme with Chalmers Technical University, the world leading RISE - Research Institutes of Sweden - encompassing the SP Technical Institute and with industrial partners.

Sioo Wood Protection AB is located on a single factory site in Gothenburg in Sweden. All manufacturing takes place at this site and distribution is from this site to users globally.

For further information please visit the company website at www.sioox.com

Name and location of production site(s): Sioo Wood Protection AB, von Utfallsgatan 20, 415 05 Göteborg, Sweden

Product information

Product name: SiOO:X Wood Protection (unpigmented)
Product identification: This EPD applies to the following SiOO:X Wood Protection products manufactured at the site in Göteborg:

- SiOO:X Wood Protection Original
- SiOO:X Premium Wood Protection Deck
- SiOO:X Premium Wood Protection Panel
- SiOO:X Wood Protection Industry
- SiOO:X Wood Protection Marine

Product description: The Sioo Wood Protection System is two-part system comprising the SiOO:X Wood Protection and the SiOO:X Surface Protection, described by patents WO2017109174A1 and WO 2007/11156 A2. The exact formulation employed for the different products is a trade secret. The product is available pigmented or unpigmented. This EPD applies to the unpigmented wood protection product only.

SiOO:X Wood Protection - Step 1

SiOO:X Wood Protection is the first component - Step 1 - in the system and is applied twice.

SiOO:X Wood Protection contains silicon, potassium and natural particles of wood and plants. it is strongly alkaline with a pH value of 10.8. By means of the specifically prepared components SiOO:X Wood Protection penetrates wood very easily. It opens up the wood structure and penetrates the microstructure of the wood fibres. It does it so well that it can be used on practically all types of wood. The wood protection can be applied by brush, roller, by spray or by dipping.

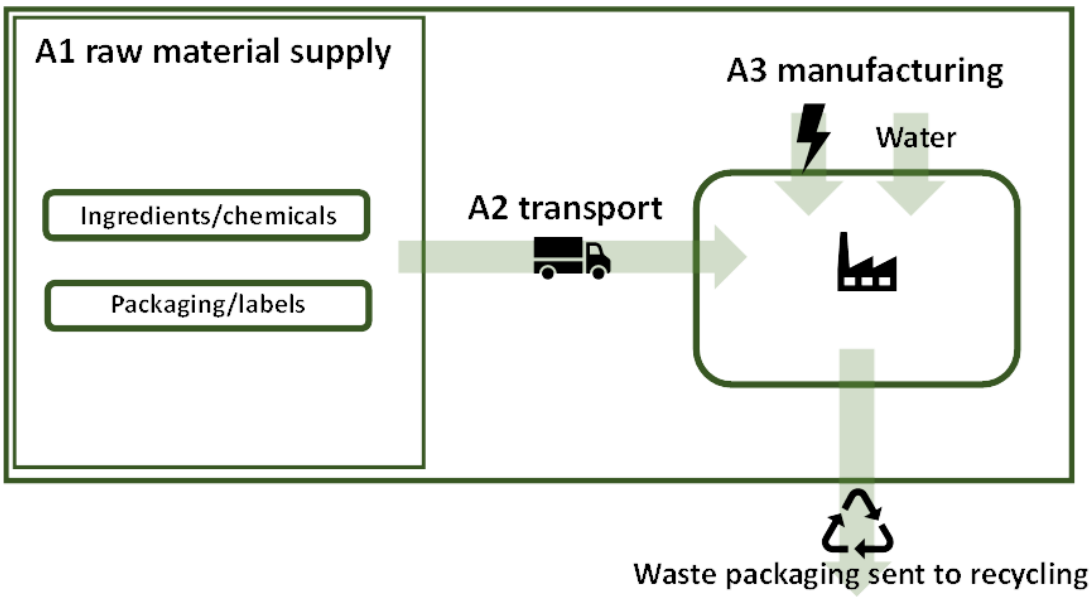
When SiOO:X Wood Protection dries, silica particles are formed in a network. That is when the effect of SiOO:X shows - the silver-grey lustrous appearance develops over time.

UN CPC code: 3511 – Paints and varnishes and related products

Geographical scope: Global

LCA information

Declared unit: One litre of unpigmented wood protection for the industrial and consumer market including container.
Reference service life: Not applicable (cradle to gate only).
Time representativeness: Data for production year 2019 was used for the purposes of allocation.
Database(s) and LCA software used: Ecoinvent 3.8 with Simapro 9.3.0.3
Description of system boundaries:
Cradle to gate (A1–A3), no other modules included.
System diagram:



More information:
LCA was performed in 2022 by Dr Callum Hill FIMMM of JCH Industrial Ecology Ltd, UK (www.jchie.co.uk). for the purposes of business to consumer (B2C) and business to business (B2B) communication. This EPD is to be used to provide information for both business and consumer customers in order to calculate the impact of the use of the product for timber protection. Some sample coverage rates are included in this analysis, especially to provide information for domestic customers, but actual coverage rates are highly dependent upon the timber species and type of

treatment to which the timber has been subjected (e.g., rough sawn, planed, thermally modified, etc.), please see www.sioox.com for more information.

The process involves the mixing of ingredients, filling of containers and preparation for dispatch to distributors, or end-users. Ingredients arrive in a dry or solution state and are dissolved or diluted and mixed to ensure the correct formulation for the product. The ingredients for the products are obtained from various sources in Europe and transported to site by lorry. The incoming containers and packaging are sent for recycling, but this is not accounted for in the LCA, since this is outside of the system boundary.

After mixing, the products are distributed in different containers in various volumes. Containers for the consumer market contain 30% recycled content. This EPD represents an average production mix of products and containers for the production year 2020.

The only energy utility consumed on site is electricity and the total use for 2019 has been used for the analysis, which is representative. Allocation of the use of electricity for the products is by mass of ingredient. A standard Swedish grid mix was used for the electricity.

All data used are based upon the recipes used for preparing the proprietary formulations. Data on electricity consumption are based upon monthly bills for 2019. Transport distances are based upon a list of names and addresses of suppliers and were calculated using Google maps for lorry journeys. All data is judged to be of high quality.

For characterisation factors: CML baseline for the GWP, AP, EP, POCP, ADP elements, ADP-fossil resources, CED (higher heating value) for Primary energy resources renewable/non-renewable used as energy carrier, AWARE for water scarcity potential, USEtox for human toxicity and ecotoxicity, ReCiPe for land use. AWARE for water scarcity potential. Lower heating value was used for primary energy resources renewable/non-renewable used as raw materials.

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).

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

	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**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Geography	**GLO**	**GLO**	**GLO**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	**<10%**			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	**Single site**			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The EPD is for multiple products with the highest values for characterisation factors used to represent the whole product family. Variation between products is no more than 10%.

Content information

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Water	0.70	0	0
Potassium silicate	0.35	0	0
Functional additives	0.05	0	0
TOTAL (one litre)	**1.10**	**0**	**0**
Packaging materials	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
HDPE	0.046	30	0
TOTAL	**0.046**	**30**	**0**

Dangerous substances from the candidate list of SVHC for Authorisation	**EC No.**	**CAS No.**	**Weight-% per functional or declared unit**
None	N/A	N/A	N/A

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit

Indicator	Unit	Tot.A1-A3
Global warming potential -fossil	kg CO_2 eq.	3.88E-01
Global warming potential -biogenic	kg CO_2 eq.	7.16E-04
Global warming potential-luluc	kg CO_2 eq.	1.13E-03
Global warming potential -total	kg CO_2 eq.	3.89E-01
Global warming potential -GHG	kg CO_2 eq.	3.89E-01
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	3.51E-08
Acidification potential	mol H^+ eq.	1.93E-03
Eutrophication potential-freshwater	kg P eq.	1.20E-04
Eutrophication potential-marine	kg N eq.	3.00E-04
Eutrophication potential-terrestrial	mol N eq.	3.11E-03
Formation potential of tropospheric ozone	kg NMVOC eq.	1.13E-03
Abiotic depletion potential -minerals & metals*	kg Sb eq.	1.11E-06
Abiotic depletion potential -fossil*	MJ	8.90E+00
Water scarcity potential	m^3	7.50E-02

** 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.*

Use of resources

Results per declared unit

Indicator	Unit	Tot.A1-A3
Primary energy resources – Renewable (use as energy carrier)	MJ	2.05E+00
Primary energy resources – Renewable (use raw materials)	MJ	0.00E+00
Primary energy resources – Renewable (total)	MJ	2.05E+00
Primary energy resources – Non-renewable (use as energy carrier)	MJ	9.58E+00
Primary energy resources – Non-renewable (use raw materials)	MJ.	2.54E+00
Primary energy resources – Non-renewable (total)	MJ	1.21E+01
Secondary material	kg	0.00E+00
Renewable secondary fuels	MJ	0.00E+00
Non-renewable secondary fuels	MJ	0.00E+00
Net use of fresh water	m^3	7.00E-04

Waste production and output flows

Waste production

Results per declared unit

Indicator	Unit	Tot.A1-A3
Hazardous waste disposed	kg	1.20E-05
Non-hazardous waste disposed	kg	2.66E-01
Radioactive waste disposed	kg	3.64E-05

Output flows

Indicator	Unit	Tot.A1-A3
Components for re-use	kg	0.00E+00
Material for recycling	kg	0.00E+00
Materials for energy recovery	kg	0.00E+00
Exported energy, electricity	MJ	0.00E+00
Exported energy, thermal	MJ	0.00E+00

Additional information

For the consumer market, the following approximate coverage of wood protection product can be assumed for guidance (this is for two applications of the wood protection):

Decking

Area (m^2)	Consumption (litres)
4-5	1
20-25	5
40-50	10
80-100	20

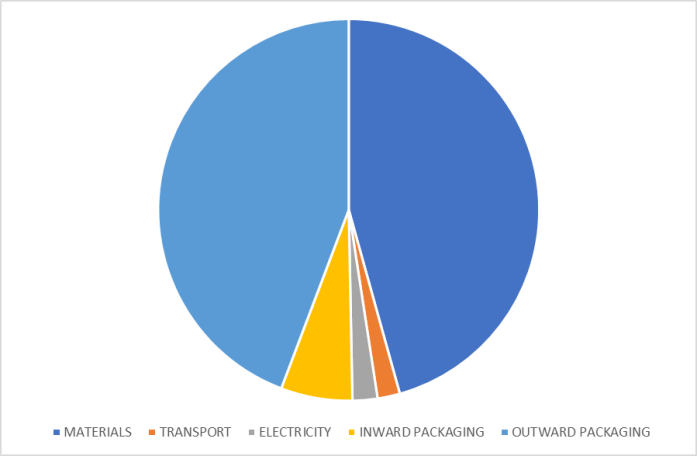
Cladding

Area (m^2)	Consumption (litres)
15-20	5
30-40	10
60-80	20
120-160	40

The actual coverage will vary depending upon wood species, as well as the preparation and pre-treatment of the wood. Coverage is higher on drier wood, sawn wood, and on wood that has been exposed to weathering. For more information, please visit www.sioox.com.

The main contributors to the environmental burden of the SiOO:X Wood Protection products are the chemical ingredients and the container. For the consumer market, a container with 30% recycled content is used to reduce environmental impact. A significant reduction in total environmental impact is therefore possible by ensuring recycling of the containers. All recycling in Sweden is funded by the producers of packaging (according to the Polluter Pays Principle (PPP). See: https://fti.se/en/company.

Contributions to the total GWP impact are shown below:



References

General Programme Instructions of the International EPD® System. Version 3.01.

International EPD System PCR 2019:14 “Construction products”, v1.2.5.

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

EN 15942:2012 Sustainability of construction works - Environmental product declarations - Communication format business-to-business.

ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations. Principles and procedures.

ISO 14044:2006 Environmental management. Life Cycle Assessment. Requirements and guidelines.

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