Environmental Product Declaration

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

SiOO:X End Grain Sealer (consumer and industrial markets)

from

Sioox Wood Protection AB

SIOO:X

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-07762
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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 UN CPC Code 3511
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: Sioox Wood Protection AB, von Utfallsgatan 20, 415 05 Göteborg, Sweden
Contact: Börje Gevert
Description of the organisation:
Founded in Gothenburg, Sweden in 1998 by Herje Bostrom, Sioox Wood Protection AB are the creators of the ground breaking, patented, SiOO:X wood protection system using silicate technology.

Sioox 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.

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

Sioox 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): Sioox Wood Protection AB, von Utfallsgatan 20, 415 05 Göteborg, Sweden

Product information

Product name: SiOO:X End Grain Sealer step 1, SiOO:X End Grain Sealer step 2.
Product identification: This EPD applies to the following SiOO:X Wood Protection product manufactured at the site in Göteborg:

- End Grain Sealer step 1
- End Grain Sealer step 2

Product description: The SiOO:X Wood Protection System is two-part system comprising SiOO:X Wood Protection and the SiOO:X Surface Protection, described by patents WO2017109174A1 and WO 2007/11156A2. The exact formulation employed for the different products is a trade secret. The product is available pigmented or unpigmented. This EPD applies to the End Grain Sealer system product only, which is always used in two parts (step 1 and step 2), step 1 - is applied twice and step 2 is applied once.

SiOO:X End Grain Sealer step 1 contains silicon, potassium, pigments, dispersants and natural particles of wood and plants. it is strongly alkaline with a pH value of 10.8. When SiOO:X End grain Sealer step 1 dries, a silica network is formed within the wood material.

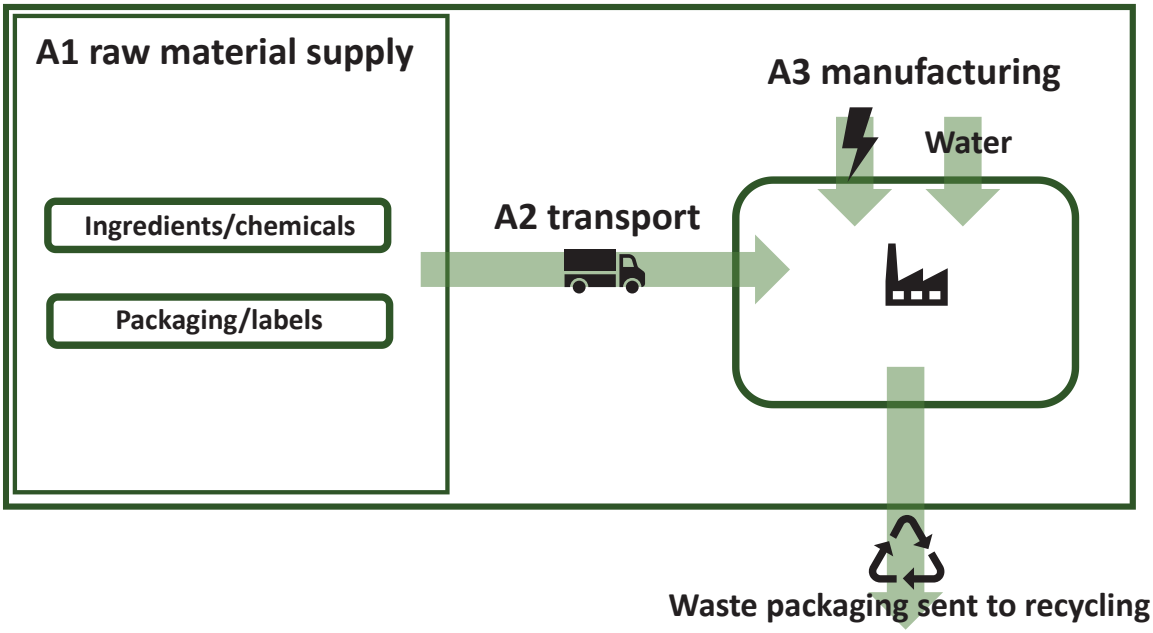
SiOO:X End Grain Sealer step 2 is the second component of the end grain sealer in the system and is applied once. The SiOO:X End Grain Sealer step 2 consists of a formulation containing water-based silane and siloxane emulsions, which is to be applied after the End Grain Sealer step 1 has dried.

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

Geographical scope: Global

LCA information

Declared unit: One litre of end grain sealer for the industrial and consumer market including 5 litre container (an average of step 1 and step 2 based upon proportional usage rates).
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 are 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. 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 5 litre containers, which have a 30% recycled content. This EPD represents the production mix for the production year 2019.

The only energy utility consumed on site is electricity and the total consumption for 2019 has been used for the analysis. 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. 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	**n/a**			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	**Single site**			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information (average of step 1 and step 2)

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Water	0.66	0	0
Potassium silicate	0.20	0	0
Silane and siloxane emulsions	0.14	0	0
Functional additives	0.10	0	0
TOTAL (one litre)	**1.10**	**0**	**0**
Packaging materials	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
HDPE	0.055	30	0
TOTAL	**0.055**	**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.	9.67E-01
Global warming potential -biogenic	kg CO_2 eq.	1.77E-03
Global warming potential-luluc	kg CO_2 eq.	1.81E-03
Global warming potential -total	kg CO_2 eq.	9.70E-01
Global warming potential -GHG	kg CO_2 eq.	9.70E-01
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	4.30E-07
Acidification potential	mol H^+ eq.	6.65E-03
Eutrophication potential-freshwater	kg P eq.	4.68E-04
Eutrophication potential-marine	kg N eq.	1.00E-03
Eutrophication potential-terrestrial	mol N eq.	8.98E-03
Formation potential of tropospheric ozone	kg NMVOC eq.	3.15E-03
Abiotic depletion potential -minerals & metals*	kg Sb eq.	4.65E-06
Abiotic depletion potential -fossil*	MJ	1.73E+01
Water scarcity potential	m^3	6.49E-01

** 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	2.56E+00
Primary energy resources – Renewable (use raw materials)	MJ	0.00E+00
Primary energy resources – Renewable (total)	MJ	2.56E+00
Primary energy resources – Non-renewable (use as energy carrier)	MJ	1.86E+01
Primary energy resources – Non-renewable (use raw materials)	MJ.	2.12E+00
Primary energy resources – Non-renewable (total)	MJ	2.07E+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	6.60E-04

Waste production and output flows

Waste production

Results per declared unit

Indicator	Unit	Tot.A1-A3
Hazardous waste disposed	kg	1.87E-05
Non-hazardous waste disposed	kg	2.57E-01
Radioactive waste disposed	kg	5.41E-05

Output flows

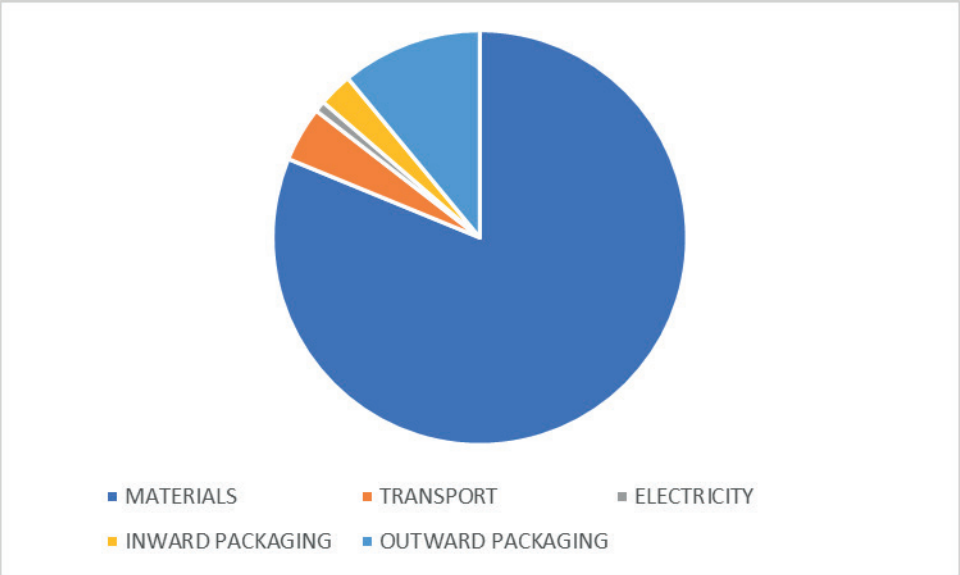
Indicator	Unit	Tot.A1-A3
Components for re-use	kg	0.00E+00
Material for recycling	kg	0.00E+00
Materials for energy recovery	kg	0.00E+00
Exported energy, electricity	MJ	0.00E+00
Exported energy, thermal	MJ	0.00E+00

Additional information

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. End grain will take up more product compared with radial or tangential faces. 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 product. 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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