

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

Isodrän Board and Crushed Isodrän, 60 kPa
EPD of multiple products, based on the average results of the products

from

Isodrän

ISODRÄN®

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
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.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): Construction products 2019:14, version 1.3.1 (EN 15804+A2) c-PCR-005 Thermal insulation products, version 2019-12-20 (EN 16783:2017) UN CPC code: 369- Other plastic products
PCR review was conducted by: The Technical Committee of the International EPD® System Chair of the PCR review: Claudia A. Peña
Life Cycle Assessment (LCA)
LCA accountability Alva Helin and Sara Hidendahl, Trossa AB
LCA results for the EPD are based on "Trossa Isodrän LCA report"
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Pär Lindman, Miljögiraff Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No [Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

Clarifications and disclaimers of EPD and EPD data:

- 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.
- 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.
- In accordance with the recommendations of PCR 2019:14 it is discouraged to use results of modules A1-A3 from this EPD, without considering the results of module C.

Company information

Owner of the EPD: Isodrän AB

Contact: Dick Flink, Site manager

Description of the organisation:

Isodrän AB was founded in 1992 and is a supplier of heat-insulating and draining products for moisture protection. They have an assortment of products with a broad variety of use and purposes within insulation, moisture protection and drainage. The products are used within civil engineering applications, in underground structures of fundaments and buildings. Examples of common areas of use are basement walls, concrete slabs, roof gardens and fundaments.

The main market is within the Nordics, with a majority of the sales in Sweden, Norway and Finland. The Isodrän board is presented in the database of Byggvarubedomningen.

Product-related or management system-related certifications:

Isodrän AB is certified and compliant with the management systems ISO 9001:2015, ISO 14001:2015, ISO 45001:2018.

Name and location of production site:

Isodrän AB
Rörvägen 34
13650 Jordbro
Tel: +46 (0)8 609 00 20
Mail: kundservice@isodran.se

Product information

Product names:

The two product types are Isodrän Board and Isodrän Crushed Board, 60 kPa

Product identification and description:

The product types are the Isodrän Board and Isodrän Crushed Board with solidity 60 kPa. The products are intended to be used as thermal insulation, moisture protection, and drainage of underground structures. Isodrän Boards in kPa 60 are available in two dimensions: 1000 x 750 x 100 mm and 1200 x 800 x 65 mm. The boards are listed in the Nordic Ecolabelling "Ecolabel" and can thus be used in Nordic Ecolabelled buildings. Isodrän Crushed Board is available in one size, a bag of 1,8 m³ material.

UN CPC code:

369- Other plastic products

Geographical scope:

The geographical representation varies depending on the life cycle stage. The raw material originates within global spread and have different origins where mainly and the majority of the product's content, in terms of weight, is sourced from the Netherlands. The production site at Isodrän is located in Sweden and use phase and the end of life is within the Nordic countries.

LCA information

Functional unit / declared unit:

The declared unit assessed in this study is 1 m³ (cubic meter) thermal insulation with solidity of 60 kPa and a heat conductivity of $\lambda=0,042$ W/m K. The choice of the functional unit is in line with the recommendations of the PCR of thermal insulation products and specifically refers to thermal insulation products with broad areas of use within the civil engineering sector.

Reference service life:

The estimated lifetime of the product is 70 years, which is determined by both technical and esthetical aspects. The RSL was determined by investigation in dialogue with production/site manager and the CEO, with knowledge of the technical performance of the products.

Time representativeness:

Year of 2022

Database(s) and LCA software used:

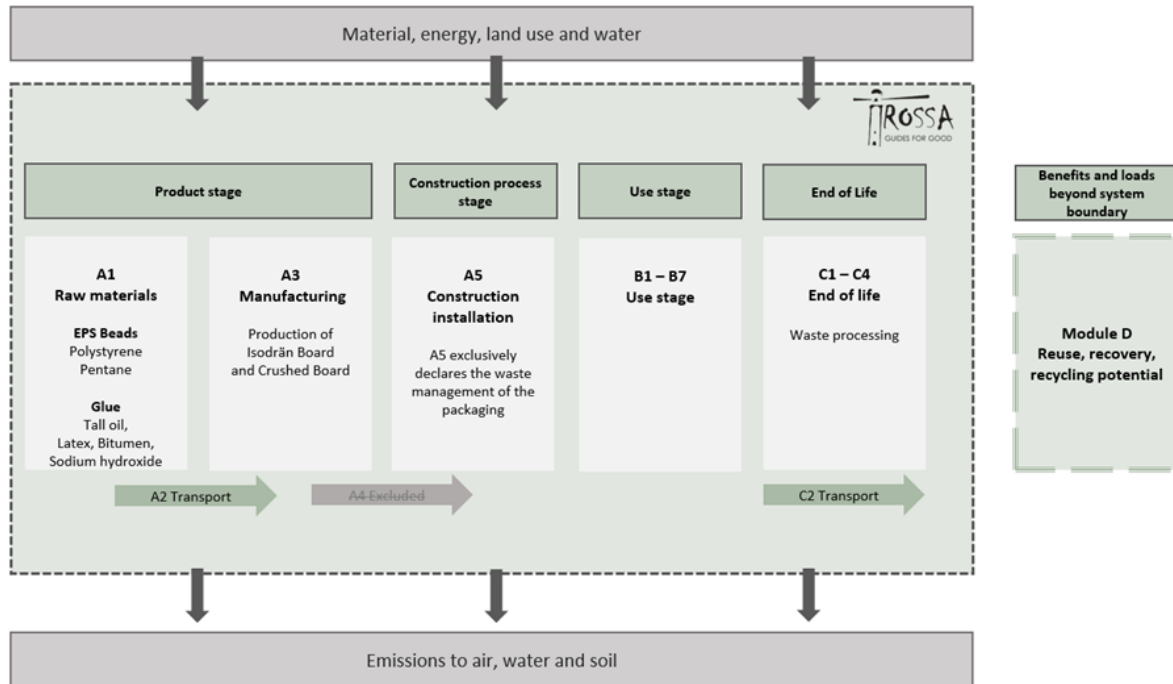
Ecoinvent 3.8 and SimaPro 9.3

Personnel- and infrastructure related cut-offs

Personnel-related processes such as transportation of employees as well as production and end-of-life processes of the used working clothes at the production site are excluded from the study. The production and end-of-life processes of infrastructure and capital goods used at the production site, as well as the infrastructure processes included in generic LCI data for modelling of upstream and downstream modules, are also excluded from the study.

System diagram and description of system boundaries:

The system boundary, including the assemblies of the products, their constituent materials, the transportation, and the production processes of the products divided into the life cycle stages and modules, as well as inputs and outputs of the system as elementary flows. The LCA was performed using the perspective "Cradle to gate with options, module C1-C4, module D and optional modules" on Isodrän Board and Isodrän Crushed Board including its packaging.



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

The product stage includes modules A1 - raw material extraction and processing, A2 - transport to the manufacturer and A3 - manufacturing. The end of life and waste management scenario of the packaging that surrounds the raw materials during transportation are included in module A3. Module A4 is not included in the study. Module A5 is included due to biogenic content in the product packaging of the Isodrän Board, and therefore includes the transport and waste management of the product packaging after installation of the product. Furthermore, Modules B1-B7, C1-C4 and Module D are included in the study. Module D covers benefits and loads beyond the system boundary stage (reuse, recovery, and recycling potential).

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				
	Raw materials	Transport	Manufacturing	Transport	Construction - Installation	Use stage	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	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	X*	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU + Asia	EU	SE														
Specific data used		5 %															
Variation products		3 %															
Variation sites		N/A															

ND: Not declared. The environmental impact of A4 was investigated and shown to have insignificant contribution.

*A5 exclusively declares the waste management of the packaging. The packaging of the product includes more than 5 % biogenic carbon, and therefore the waste management of this packaging need to be declared, according to requirements in PCR.

Conversion factors

The declared unit assessed in this study can be used with a conversion factor to determine the environmental impact of three products from Isodrän. These are the three products from Isodrän's assortment that have the solidity of 60 kPa and thermal conductivity of $\lambda=0,042$ W/m K.

These products are:

1. Isodrän Board, with dimensions 1000 x 750 x 100 mm. 5 boards with a total volume of 0,375 m³ per package.
2. Isodrän Board, with dimensions 1200 x 800 x 65 mm. 6 boards with a total volume of 0,3744 m³ per package.
3. Isodrän Crushed Board, delivered in a tarp bag with 1,8 m³ of product.

Therefore, the conversion factors in the table below can be used to calculate the environmental impact of the above-mentioned products. The conversion factor from the declared unit to mass (1 kg product) is 0,06 as the declared unit of one m³ of product weighs 16,36 kg.

ENVIRONMENTAL IMPACTS CONVERSION FACTORS			
Declared unit	Board 1000 x 750 x 100 mm	Board 1200 x 800 x 65 mm	Crushed Board
1	0,375	0,3744	1,8

Content information

Average content declaration of the weighted average of 1 m³ Isodrän Board and Crushed Board, including 98 % Board and 2 % Crushed Board.

CONTENT DECLARATION – WEIGHTED AVERAGE CONTENT		
Product material	Weight (kg)	%
Polystyrene (expanded)	14,07	86,0%
Bitumen	0,414	2,53%
Latex	0,170	1,04%
Distilled Tall oil	0,009	0,06%
Sodium hydroxide	0,002	0,01%
Packaging material		
Spruce wood	1,170	7,15%
Low density polyethylene	0,113	0,69%
Polyethylene	0,392	2,40%
Steel	0,005	0,03%
Polypropylene	0,022	0,14%
<i>No substances included in the Candidate List of SVHC (Substances of Very High Concern) for authorization under the REACH regulations are exceeding 0,1 wt % in any material.</i>		

Post consumer material

None of the components of the products or product packaging contains post-consumer recycled material.

Biogenic material

The share of biogenic content within the customer- and distribution packaging for Isodrän Board is 7,3 weight-%, compared to the total weight of the product, including packaging. Isodrän Crushed Board is transported in its consumer packaging, which consists of a large tarp bag made of polyethylene. It does not have a specific distribution packaging. Therefore, the share of biogenic content within the customer- and distribution packaging of Isodrän Crushed Board is 0 %. The weighted average content of the product includes 1,170 kg spruce wood, representing 7,15 % of the weighted average product. The spruce wood in the weighted average product packaging entails 0,58 kg biogenic C, representing 0,04 kg biogenic C/ kg weighted average product.

Variations

This study is performed on multiple products, where an average result is declared. The average results are weighed according to production volume. An investigation has been carried out to confirm that the GWP-GHG results in modules A1-A3 of the assessed products do not differ more than 10%. The variation between the products is 3%.

VARIATIONS OF IMPACT INDICATOR RESULTS GHG-GWP				
Module and unit	Isodrän Board	Isodrän Crushed Board	Average	Variation in percentage
A1-A3 (kg CO ₂ eq)	6,27E+01	6,44E+01	6,35E+01	3%
Total A-C (kg CO ₂ eq)	1,15E+02	1,16E+02	1,15E+02	1%

Results of the environmental performance indicators

Environmental footprint midpoint results calculated as an average value per Isodrän Board and Crushed Board. The results of the represented modules (A1, A2 and A3) within the product stage, are presented in an aggregated format and are consolidated into a single module, denoted as A1-A3.

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.

PARAMETER		UNIT	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D*
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	6,27E+01	ND	1,58E+00	0,00E+00	0,00E+00	1,50E-01	5,04E+01	0,00E+00	-9,89E+00
	Biogenic	kg CO ₂ eq.	-1,93E+00	ND	2,12E+00	0,00E+00	0,00E+00	1,42E-04	2,66E-02	0,00E+00	-3,09E-01
	Land use and land transformation	kg CO ₂ eq.	1,20E-02	ND	1,26E-05	0,00E+00	0,00E+00	8,94E-05	9,78E-05	0,00E+00	-1,43E-01
	TOTAL	kg CO ₂ eq.	6,08E+01	ND	3,70E+00	0,00E+00	0,00E+00	1,50E-01	5,05E+01	0,00E+00	-1,03E+01
Ozone layer depletion (ODP)		kg CFC 11 eq.	1,41E-06	ND	1,21E-08	0,00E+00	0,00E+00	3,27E-08	3,36E-08	0,00E+00	-5,69E-07
Acidification potential (AP)		mol H+ eq.	2,34E-01	ND	8,66E-04	0,00E+00	0,00E+00	4,31E-04	5,68E-03	0,00E+00	-5,40E-02
Eutrophication	Aquatic freshwater	kg P eq.	2,35E-03	ND	9,66E-06	0,00E+00	0,00E+00	1,39E-05	5,39E-05	0,00E+00	-8,87E-03

potential (EP)	Aquatic marine	kg N eq.	4,01E-02	ND	4,18E-04	0,00E+00	0,00E+00	7,96E-05	2,89E-03	0,00E+00	-1,02E-02
	Aquatic terrestrial	mol N eq.	4,31E-01	ND	4,34E-03	0,00E+00	0,00E+00	8,65E-04	2,96E-02	0,00E+00	-9,07E-02
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	8,10E-01	ND	1,24E-03	0,00E+00	0,00E+00	3,35E-04	7,83E-03	0,00E+00	-2,39E-02
Abiotic depletion potential (ADP)**	Metals and minerals	kg Sb eq.	5,32E-05	ND	8,04E-01	0,00E+00	0,00E+00	2,23E+00	2,21E+00	0,00E+00	-4,10E+02
	Fossil resources	MJ, net calorific value	1,37E+03	ND	1,16E-07	0,00E+00	0,00E+00	9,29E-07	9,83E-07	0,00E+00	-9,51E-05
Water deprivation potential (WDP)**		m3	3,41E+01	ND	7,44E-03	0,00E+00	0,00E+00	8,62E-03	7,36E-02	0,00E+00	-4,95E+00

*Module D covers benefits and loads beyond the system boundary stage (reuse, recovery, and recycling potential) therefore, when summing up results, this stage should be considered separately

**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

Additional mandatory and voluntary impact category indicators

The GWP-GHG indicator is identical to GWP total, where the characterization factor for biogenic is set to zero (except methane).

Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	6,27E+01	ND	1,58E+00	0,00E+00	0,00E+00	1,50E-01	5,04E+01	0,00E+00	-1,00E+01

Resource use indicators

Average results on resources and energy use per (declared unit) Isodrän Board and Crushed Board. The calculation for separating the use of primary energy into energy used as raw material verses energy used as energy carrier, are according to option (A) as described in PCR 2019:14, Annex 3. No secondary fuels or material in the product.

Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	8,5E+01	ND	9,1E-03	0,00E+00	0,00E+00	3,5E-02	1,4E-01	0,00E+00	0,00E+00
PERM	MJ	2,4E+01	ND	-2,4E+01	0,00E+00	0,00E+00	0,0E+00	-4,3E-01	0,00E+00	0,00E+00
PERT	MJ	1,1E+02	ND	-2,4E+01	0,00E+00	0,00E+00	3,5E-02	-2,9E-01	0,00E+00	0,00E+00
PENRE	MJ	0,0E+00	ND	0,0E+00	0,00E+00	0,00E+00	0,0E+00	0,0E+00	0,00E+00	4,74E+02
PENRM	MJ	1,3E+03	ND	-4,8E+01	0,00E+00	0,00E+00	0,0E+00	-1,3E+03	0,00E+00	0,00E+00
PENRT	MJ	1,3E+03	ND	-4,8E+01	0,00E+00	0,00E+00	0,0E+00	-1,3E+03	0,00E+00	4,74E+02

SM	kg	0,0E+00	ND	0,0E+00	0,00E+00	0,00E+00	0,0E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,0E+00	ND	0,0E+00	0,00E+00	0,00E+00	0,0E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,0E+00	ND	0,0E+00	0,00E+00	0,00E+00	0,0E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	5,54E-03	ND	1,63E-05	0,00E+00	0,00E+00	8,06E-05	1,42E-04	0,00E+00	0,00E+00
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

Waste production within the system boundary of the modelled life cycle.

PARAMETER	UNIT	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	ND	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	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Output flow indicators

Note that although waste for incineration is produced within the system boundary of the modelled life cycle, it does not pass the system boundary as output flows as the waste incineration and recycling is modelled within the system boundary. The energy that is produced from the waste incineration is reported as exported energy. The output flows of the system consists of materials for reuse and recycling in A3.

PARAMETER	UNIT	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	4,35E-01	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,72E-02	ND	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	ND	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, net calorific value	4,54E-01	ND	8,45E+00	0,00E+00	0,00E+00	0,00E+00	1,27E+02	0,00E+00	1,42E+02
Exported energy, thermal	MJ, net calorific value	1,06E+00	ND	1,97E+01	0,00E+00	0,00E+00	0,00E+00	2,97E+02	0,00E+00	3,32E+02

Other environmental performance indicators

PARAMETER	UNIT	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Human toxicity, cancer effects	CTUh	1,36E-08	ND	5,41E-10	0,00E+00	0,00E+00	8,13E-11	7,38E-09	0,00E+00	-5,17E-09
Human toxicity, non-cancer effects	CTUh	4,23E-07	ND	2,66E-09	0,00E+00	0,00E+00	1,85E-09	6,38E-08	0,00E+00	-1,39E-07
Eco-toxicity, freshwater	CTUe	3,77E+02	ND	9,83E-01	0,00E+00	0,00E+00	1,95E+00	2,41E+02	0,00E+00	-1,87E+02
Land use	Pt	1,23E+03	ND	1,67E-01	0,00E+00	0,00E+00	1,09E+00	9,82E-01	0,00E+00	-8,47E+01
Ionizing radiation	kBq U-235 eq	5,90E-01	ND	3,46E-03	0,00E+00	0,00E+00	1,24E-02	1,15E-02	0,00E+00	-2,17E+01
Particulate matter	disease inc.	7,24E-06	ND	1,06E-08	0,00E+00	0,00E+00	8,63E-09	4,36E-08	0,00E+00	-2,68E-07

Additional environmental information

Renewable energy within the manufacturing site

The electricity used on site is Swedish renewable electricity from the supplier Dalakraft. The shares of the different types of energy within this green contract are solar (0,1%), wind (16,2%) and hydro (83,7%). The resulting emissions from the use of one kWh of this energy is 0,0110 kg CO₂ eq /kWh. The steam for expanding polystyrene and casting of the products is produced using bio pellets.

Minimizing waste at manufacturing site

Defective boards are used as raw material for Isodrän Crushed Boards. By taking care of defective boards, Isodrän minimizes waste production and promotes an effective use of input materials.

References

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