

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

ItuGraf
Itula Oy



EPD HUB, HUB-0409

Publishing date 30 April 2023, last updated on 30 April 2023, valid until 30 April 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Itula Oy
Address	Raudustie 3 56510 Puntala
Contact details	sales@itula.com
Website	www.itula.fi

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Susanna Kiviniemi
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
EPD verifier	H.N, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	ItuGraf
Additional labels	Heliuz Panel
Product reference	-
Place of production	Finland
Period for data	2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	m ²
Declared unit mass	9.41 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	27.4
GWP-total, A1-A3 (kgCO ₂ e)	27.4
Secondary material, inputs (%)	25.1
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	123.0
Total water use, A1-A3 (m ³ e)	0.555

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

We offer the best expertise and energy-efficient solutions for optimal temperatures in both residential and commercial properties. Our operations are based on high-quality products and solutions, strong expertise, a trailblazing spirit and a desire to always do better. As a pioneer in the industry, we are constantly developing ever more energy-efficient solutions in our own laboratory. Our factory is the only one in Finland to manufacture radiant ceiling panel systems that save energy and the environment.

One of our guiding principles is our promise to be an expert who works closely with our customers. We are involved in most of our projects at every stage, from planning to finish. This means first-class product and system solutions that are sure to fit the site, as well as rapid responses, flexibility, reliability and technical support throughout the project.

PRODUCT DESCRIPTION

ItuGraf is hydronic heating and cooling panel. ItuGraf is the most efficient radiant ceiling system on the market. It is ideal for the management of heating systems in buildings of all sizes, for both new buildings and renovation projects. ItuGraf heating and cooling panels effectively create a comfortable room temperature without dust, drafts or noise, and therefore significantly improve indoor climate. Manufactured from 100% recyclable materials, ItuGraf panels have a CE marking. They have been tested by an accredited testing laboratory in accordance with the EN14037 standard. ItuGraf panels can serve as the installation base for all building technology located in the ceiling area.. ItuGraf ceiling panels give you a uniform look and colour scheme that matches perfectly with your ambient choice.

Further information can be found at www.itula.fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	85-90 %	Europe
Minerals	10-15 %	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.035

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m ²
Mass per declared unit	9.41 kg
Reference service life	25 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	MND							X	X	X	X		X	
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Finnish-made ItuGraf heating and cooling panels can be customised in numerous ways to suit different spaces. Various size, colour and surface

options are available as well as device integrations, and there is also a ceiling panel model that blends almost invisibly into any ceiling designed by your architect. ItuGraf ceiling models allow you to design a space on the basis of its architecture, and you can be sure that the panels look consistent with the selected ceiling system.

The panels are manufactured in Puntala factory and packed in wooden boxes for delivery.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The panels are mostly delivered to the Helsinki region, which is used as a calculation basis. The installation doesn't need heavy machinery and the use of electricity is minimal. There is no installation loss as the product is made by order to size. The packaging waste are treated at this stage.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product is a heat and cool distribution device which itself does not use energy and is maintenance free. The product is compatible with all energy sources.

Air, soil, and water impacts during the use phase have not been studied.

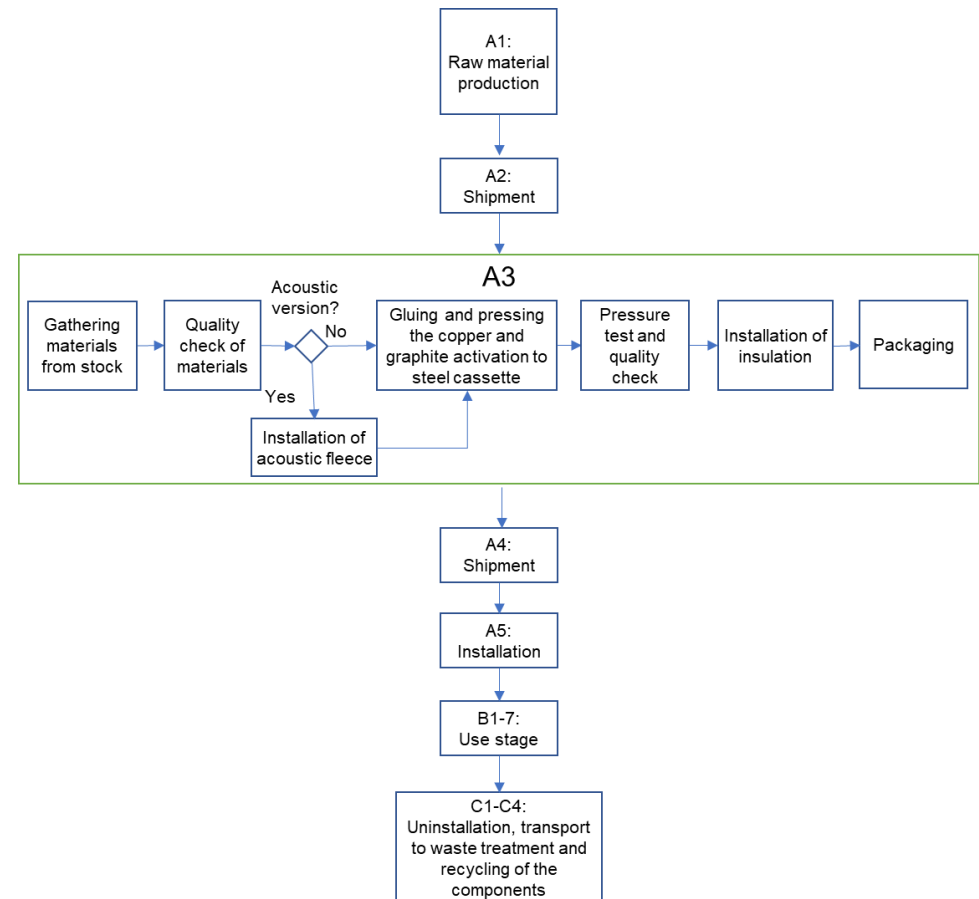
PRODUCT END OF LIFE (C1-C4, D)

100% product at EoL is collected and sorted for recycling. The metal components are assumed to be fully recycled as material. The graphite in the product is delivered to the recycling centre and recycled as a part of the metal components. 100% graphite and acoustic fabric are landfilled. The end of life is assumed to take place in the EU area. The benefits and loads of the recycling of the raw materials replacing virgin material are

counted as a benefit in the study. Also the benefits from the avoided energy production due to the incineration of packaging wood and the benefits and load of packaging film recycling are taken into account.

MANUFACTURING PROCESS AND SYSTEM BOUNDARY

The ItuGraf manufacturing process is described in the flow chart below. The materials arrive to the factory stock where the materials are quality checked. The product consists of the panel made from pre-painted metal sheet, copper meander, acoustic fabric, and possible insulation. The meanders for the panels are manufactured of 10 mm copper pipe with copper bending machine. The meanders are quality checked and transported to the assembly. When manufacturing an acoustic product, first an acoustic fabric is cut on the bottom of the panel. The fabric includes a glue with which the fabric is attached to the metal sheet when the panel is inserted into oven. Next the pipe support and the graphite sheet are glued to the panel with hot melt glue. On top of the graphite, the meander is installed. Then another graphite sheet is attached on top of the previous with hot melt glue. After the graphite sheets are installed, the sheets are pressed. The product is then pressure tested, and quality tested. After the testing the possible insulation is installed. The panel is ready after the top unit of the pipe support and the fixtures are stapled to the product. The readymade product is quality controlled and transported to packaging. The final product is packed in the wooden box, which is repurposed from the raw material shipments, and shipped to the customer. The manufacturing process in total is included in the calculation.



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass. In the study the acoustic fabric and hotmelt glue were neglected from the study because data about the environmental impacts of the fabric could not be found. The acoustic fabric represents 0,8 % and hotmelt glue 0,9 % of the total mass of the product. In total the neglected mass is 1,7 %.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass or volume
Packaging materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	-
Variation in GWP-fossil for A1-A3	-

The EPD is an average of the different sizes of ItuGraf products, which are tailor made to customer lengths and widths.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	2,23E1	6,4E-1	4,46E0	2,74E1	2,85E-1	1,46E-1	MND	0E0	7,53E-2	5,04E-1	7,52E-3	-1,05E1
GWP – fossil	kg CO ₂ e	2,22E1	6,4E-1	4,54E0	2,74E1	2,88E-1	1,36E-2	MND	0E0	7,53E-2	5,04E-1	7,47E-3	-1,05E1
GWP – biogenic	kg CO ₂ e	8,79E-2	4,48E-4	-9,99E-2	-1,15E-2	2,09E-4	1,32E-1	MND	0E0	5,47E-5	2,81E-4	4,46E-5	8,11E-2
GWP – LULUC	kg CO ₂ e	2,52E-2	1,97E-4	2,44E-2	4,98E-2	8,66E-5	4,75E-6	MND	0E0	2,26E-5	9,55E-5	3,94E-6	8,46E-5
Ozone depletion pot.	kg CFC-11e	1,68E-6	1,5E-7	6,25E-7	2,46E-6	6,76E-8	1,05E-9	MND	0E0	1,77E-8	1,06E-7	1,94E-9	-3,07E-7
Acidification potential	mol H ⁺ e	6,62E-1	2,71E-3	1,13E-2	6,76E-1	1,21E-3	1,08E-4	MND	0E0	3,16E-4	5,14E-3	5,59E-5	-8,89E-2
EP-freshwater ²⁾	kg Pe	6,37E-4	5,22E-6	1,15E-4	7,58E-4	2,34E-6	2E-7	MND	0E0	6,12E-7	3,31E-6	1,19E-7	-1,36E-4
EP-marine	kg Ne	4,48E-2	8,14E-4	2,11E-3	4,78E-2	3,64E-4	4,79E-5	MND	0E0	9,53E-5	2,23E-3	1,94E-5	-1,13E-2
EP-terrestrial	mol Ne	2,47E0	8,99E-3	2,55E-2	2,51E0	4,02E-3	5,11E-4	MND	0E0	1,05E-3	2,45E-2	2,14E-4	-1,43E-1
POCP (“smog”) ³⁾	kg NMVOCe	1,25E-1	2,87E-3	7,4E-3	1,35E-1	1,29E-3	1,29E-4	MND	0E0	3,38E-4	6,73E-3	6,12E-5	-6,68E-2
ADP-minerals & metals ⁴⁾	kg Sbe	7,63E-2	1,17E-5	9,89E-6	7,63E-2	4,91E-6	1,75E-7	MND	0E0	1,28E-6	8,67E-7	1,22E-7	-1,05E-3
ADP-fossil resources	MJ	2,81E2	9,91E0	1,05E2	3,96E2	4,47E0	1,25E-1	MND	0E0	1,17E0	7E0	1,43E-1	-7,83E1
Water use ⁵⁾	m ³ e depr.	1,44E1	3,62E-2	6,48E-1	1,51E1	1,66E-2	-5,19E-3	MND	0E0	4,35E-3	2,51E-2	4,32E-3	-3,85E0

1) GWP=Global warming potential

2) EP=Eutrophication

3) POCP=Formation potential of tropospheric ozone

4) AD= Abiotic depletion potential

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	2,67E1	1,27E-1	2,09E1	4,77E1	5,63E-2	4,28E-3	MND	0E0	1,47E-2	7,33E-2	2,48E-3	-2,37E0
Renew. PER as material	MJ	0E0	0E0	2,25E0	2,25E0	0E0	-2,25E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	2,67E1	1,27E-1	2,31E1	5E1	5,63E-2	-2,25E0	MND	0E0	1,47E-2	7,33E-2	2,48E-3	-2,37E0
Non-re. PER as energy	MJ	2,79E2	9,91E0	1,04E2	3,93E2	4,47E0	1,25E-1	MND	0E0	1,17E0	7E0	1,43E-1	-7,76E1
Non-re. PER as material	MJ	2,04E0	0E0	7,07E-1	2,74E0	0E0	-7,09E-1	MND	0E0	0E0	0E0	0E0	-6,98E-1
Total use of non-re. PER	MJ	2,81E2	9,91E0	1,05E2	3,96E2	4,47E0	-5,84E-1	MND	0E0	1,17E0	7E0	1,43E-1	-7,83E1
Secondary materials	kg	2,36E0	0E0	1,19E-3	2,36E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,79E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	5,34E-1	2,02E-3	1,94E-2	5,55E-1	9,32E-4	1,6E-4	MND	0E0	2,44E-4	8,6E-4	1,13E-4	-9,08E-2

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	5,22E0	9,69E-3	1,6E-1	5,39E0	4,35E-3	3,35E-3	MND	0E0	1,14E-3	0E0	2,61E-4	-2,19E0
Non-hazardous waste	kg	1,22E2	1,02E0	4,18E0	1,27E2	4,81E-1	5,66E-1	MND	0E0	1,26E-1	0E0	3,73E-1	-2,82E1
Radioactive waste	kg	7,44E-4	6,8E-5	7,21E-4	1,53E-3	3,07E-5	3,59E-7	MND	0E0	8,04E-6	0E0	8,81E-7	5,32E-5

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-2	2,4E-2	0E0	1,48E-2	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2,4E-1	2,4E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	1,65E0	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	2,22E1	6,34E-1	4,44E0	2,72E1	2,85E-1	1,33E-2	MND	0E0	7,46E-2	4,99E-1	7,37E-3	-1E1
Ozone depletion Pot.	kg CFC ₋₁₁ e	1,62E-6	1,19E-7	6,5E-7	2,38E-6	5,37E-8	8,82E-10	MND	0E0	1,41E-8	8,4E-8	1,54E-9	-2,7E-7
Acidification	kg SO ₂ e	4,02E-1	1,33E-3	9,23E-3	4,12E-1	5,85E-4	7,38E-5	MND	0E0	1,53E-4	8,29E-4	2,77E-4	-6,5E-2
Eutrophication	kg PO ₄ ³ e	1,19E-1	2,66E-4	3,52E-3	1,23E-1	1,18E-4	8,31E-5	MND	0E0	3,09E-5	1,73E-4	9,66E-6	-2,6E-2
POCP ("smog")	kg C ₂ H ₄ e	1,21E-2	8,34E-5	4,97E-4	1,26E-2	3,71E-5	2,26E-6	MND	0E0	9,7E-6	7,79E-5	1,56E-6	-9,5E-3
ADP-elements	kg Sbe	7,63E-2	1,17E-5	9,89E-6	7,63E-2	4,91E-6	1,75E-7	MND	0E0	1,28E-6	8,67E-7	1,22E-7	-1,05E-3
ADP-fossil	MJ	2,81E2	9,91E0	1,05E2	3,96E2	4,47E0	1,25E-1	MND	0E0	1,17E0	7E0	1,43E-1	-7,83E1

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
30.04.2023

