Environmental Product Declaration

In accordance with the EN 15804 +A2 and the NMD Bepalingsmethode, v1.1

PSQ1 ISOKURK (ICB), 140mm expanded corkboard insulation

Scope of the declaration

Type of the EPD is Cradle to grave, including modules A-D

According to the EN 15804 +A2 and the NMD Bepalingsmethode, version 1.1

The LCA was carried out by Agrodome B.V. (NL)

Based on production data from Pro Suber

Release Date: 11 December 2023
Validity for: 5 years

Functional unit: 1 m^2

Goal and target group

Goal

The declaration covers the environmental effects throughout the lifetime of the product PSQ1 ISOKURK (ICB), 140mm expanded corkboard insulation.

Target audience

The EPD can be used for building or building part level assessments by designers, architects, constructors, developers etc. The EPD is made business-to-business communication and can be used for business-to-consumer communication purposes. The background EPD report is third party verified.

Product description

PSQ1 expanded corkboard insulation consists of expanded corkboard, which is a result of an natural expansion process of cork as raw material. It can be used for thermal, acoustic and antivibration insulation.

The main applications are in constructive systems.

The raw material ('falca', from the skin of the branches of cork oaks), after a first phase of selection and granulation, undergoes an industrial process of expansion under high pressure and temperature.

During this 100% natural process, the resin inside cork particles leaves and acts as a natural binder in the agglomeration process.

The result of this process is a block of expanded cork, that after a period of stabilisation, is ready to be cut into the thicknesses demanded by the market.

Function of the product

PSQ1 expanded corkboard insulation can be used for thermal, acoustic and antivibration insulation to achieve a comfortable indoor climate. It is suitable for use in external, internal and cavity walls, slabs and floors, roofs and ceilings.

Composition of PSQ1 expanded corkboard insulation

Material	Share
Falca cork	100 %

Table 1: Composition PSQ1 expanded corkboard insulation

Technical data PSQ1 expanded corkboard insulation

Name	Value
Thickness element at R = 3,6 m²k/W	140 mm
Weight	16,1 kg/m^2
Density	115 kg/m^3
Fire reaction	Euroclass E

Thermal conductivity	0,039 W/m.K
Water absorption	WS
Water vapour transmission	MU20
Compressive strength at 10% deformation	CS(10)100
Tensile strenght perpendicular to surface	TR50
Fluency by compression	CC(0,8/0,4/10)5
Specific heat	1560 J/kg.°C

Table 2: Technical data PSQ1 expanded corkboard insulation

Environment and health during use phase

PSQ1 expanded corkboard insulation does not contain concentrations of substances or materials listed in the 'Candidate List of Substances of Very High Concern for authorisation'.

Environmental certificates

Amorim has implemented a chain of custody system that meets the requirements of Forest Stewardship Council standards and is certified with number FSC STD 40-004 V3-0.

The expanded insulation corkboard has the natureplus seal of approval, license number 0113-1501-133-1.

For these and other certifications, see: https://www.prosuber.com/certificeringen-geexpandeerde-kurk/

Biogenic carbon storage[1]

Biogenic carbon storage during the lifetime of the product is 45,54 kg C/m^3 (EPD Amorim 2023), which is 166,98 kg CO2-eq./m^3.

Biogenic content in 140 mm PSQ1 expanded corkboard insulation, m^2

Biogenic carbon	Share biogenic carbon per m^2
Biogenic carbon in product	6,38 kg C
Biogenic carbon in packaging	–

Table 3: Biogenic content in PSQ1 expanded corkboard insulation, m^2

LCA calculation rules

Functional unit

One square meter PSQ1 expanded corkboard insulation, with a lifespan of 75 years, with a thickness of 140 mm, a density of 115 kg/m^3 and an insulation value of 3,6 m^2k/W.

Name	Value	Unit
Functional Unit	1,00	m^2

[1] Calculated according to the calculation method in the norm EN 16449 'Wood and wood based products - Calculation of sequestration of atmospheric carbon dioxide'.

Weight	16,10	kg/FU

Reference Service Life

The lifespan of the product, as declared by the manufacturer, is 75 years when correctly applied as an insulation material. No maintenance is needed. Pro Suber has a take-back programme.

Comparability

A comparison or evaluation of EPD data is only possible if all datasets have been made in accordance with EN 15804 and the same product-related standard properties and modules have been taken into account.

System boundaries

The LCA study was created for 'Cradle to Grave A1-D' according to the modules below. All declared values relate to the specified functional unit. The functional unit of the European standard EN 15804 +A2 and the NMD - Bepalingsmethode 'Milieuprestatie Bouwwerken'are identical.
The environmental performance of building materials is categorized in four modules corresponding to different lifecycle phases in the building material; Modules A (production of materials and construction), B (use phase), C (end-of-life phase of the building) and D (loads and benefits outside the system boundary); see Figure 1.

Product stage			Construction installation stage		Use stage							End of life stage					Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal		Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒		☒

Figure 1: Calculated modules PSQ1 expanded corkboard insulation

For this LCA study, all modules A1-3, A4, A5, B, C and D have been examined, except B6 and B7.

Allocations

The production process of expanded cork results in the main product PSQ1 expanded corkboard insulation and two co-products: grinded cork which is sold to the market (economic allocation of 10%) and expanded cork granulate, loose, which is sold separately to the market (economic allocation of 12%).

Assumptions, omissions and deviations

The falca cork used to produce the expanded corkboard is a waste stream from the cork production for bottle stoppers. It could be justified that it enters the production system free of burden. However, the economic value of the corkboard insulation in the Amorim group is 1.5% of the total sales. Therefore, in this study we allocated 1.5% of the cork forestry to the falca cork as a worst case scenario.

Based on the information from the manufacturer, it is assumed that no structural maintenance is needed.

Production process and Flowchart PSQ1 ISOKURK (ICB)

The flowchart below shows the production process of PSQ1 expanded corkboard insulation. This flowchart lists the entire production process starting with the harvested falca cork.

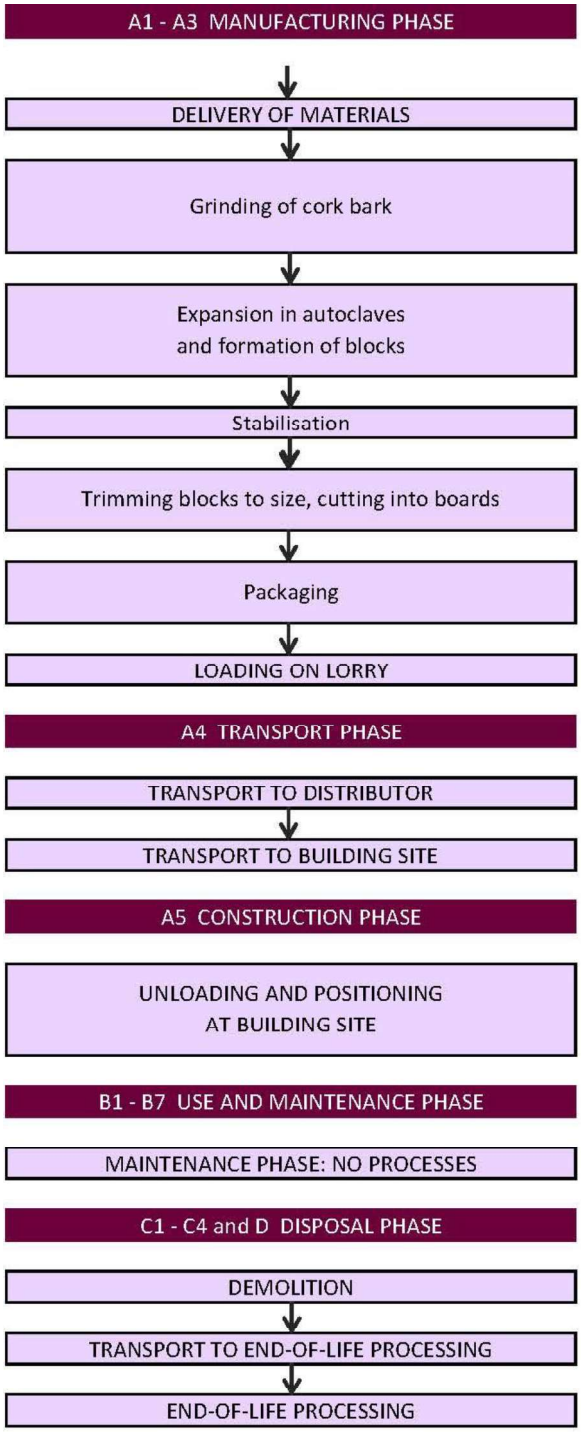

Figure 2: Flowchart PSQ1 ISOKURK (ICB) expanded corkboard insulation

Explanation Flowcharts and Life Cycle per phase

Production phase (A1-3)

The raw material is transported from the cork oak forests to the factories (Silves and Vendas Novas in Portugal). In a first selection process, earth and stones are separated from the raw material. The raw material ('falca', from the skin of the branches of cork oaks and burned trees) is granulated after a second selection process, in which the parts that are not suited for the expansion process are separated. All this material gets other uses (cork for floors, clothes, sport fields, absorbents etc.) and is sold as grinded cork. The wooden parts that are in the falca and the cork dust resulting from granulation are used for heating of the steam. The remaining selected material then undergoes an industrial process of expansion in an autoclave under high pressure and temperature.

During this process, the resin contained in the cork particles comes free from the particles and acts as natural binder in the agglomeration process.

The result of this process is a block of expanded cork, that after a period of stabilization in the outdoor, is ready to be cut into the thicknesses demanded by the market. Plates that have faults are reshaped or reused in the process. Offcuts are grinded and sold separately as expanded cork granulate. Sawdust is used in the boiler for heating the steam. After the cutting, the plates are wrapped with foil and stored in the warehouse.

Co-products of the production process are grinded cork and expanded cork granulate.

Construction process phase (A4-5)

Transport to the building site (A4)

The finished product is transported from the production site in Portugal to the Netherlands. To the transport movement from Portugal to the Netherlands, no empty return applies. The default values from the determination method version 1.1 are used for the transport to the building site, in this case Portugal to Utrecht. Transport from Portugal to the Netherlands takes place by container ship; transport to and from the harbour by lorry.

Processing and construction on the construction site (A5)

At the construction site the insulation is fitted; for this only hand tools are used. Cutting losses are limited to 2% by careful measuring and cutting. The cork offcuts and packaging material (PE foil) are disposed of together with other building materials. For waste processing, the distribution below and the scenarios chosen have been taken into account. Since cork is a wood product, and it can be recycled, the waste scenario for wood was selected

- Cork: 5% landfill, 80% incineration, 15% recycling
- PE foil: 10% landfill, 85% incineration, 5% recycling

Use phase (B1-7)

PSQ1 expanded corkboard insulation has a lifespan of 75 years when correctly applied as insulation material in a building. This period is equal to the Dutch standard for residential buildings. During this period, no additional maintenance is needed.

End-of-life phase (C1-4)

Disassembly and demolition (C1)

Disassembly and demolition takes place manually, there is no industrial process.

Transport (C2)

Transport phase assumptions: the default value according to the bepalingsmethode 1.1 is used. This is 50 km to sorting installation and 100 km from demolition or sorting location to processing location. Selection of the means of transport according to the bepalingsmethode version 1.1 (Chapter 2.6.3.7, p20).

Waste treatment (C3-C4)

For waste processing, the distribution below and the scenarios chosen have been taken into account. Since cork is a wood product, and it can be recycled, the waste scenario for wood was selected:

- 5% landfill, 80% incineration, 15% recycling

Benefits and burdens outside the system boundary (D)

The benefits and burdens outside the system boundary relate to combustion in which energy use is avoided. The recycling and reuse of the attachment is also part of the benefits and burdens outside the system boundary. The efficiency of heat and electricity recovery from waste material is 31% for heat and 18% for electricity, according to the fixed values in the NMD bepalingsmethode.

LCA results

Environmental indicators per FU (m^2) EN 15804 +A1, PSQ1 expanded corkboard insulation

Potential Environmental Impacts	Production		Construction process stage		Use stage					End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 manufacturing		A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
ADPE (kg Sb-eq)	5,65E-05		2,03E-05	5,65E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,53E-06	7,69E-07	9,13E-08	-1,98E-05
ADPF (kg SB-eq)	5,11E-02		7,36E-03	1,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,17E-03	8,61E-04	9,80E-05	-1,48E-02
GWP (kg CO2-eq)	6,51E+00		1,07E+00	4,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,95E-01	1,44E-01	6,07E-02	-2,01E+00
ODP (kg CFC 11-eq)	5,58E-07		1,82E-07	1,36E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,23E-08	1,48E-08	2,11E-09	-3,36E-07
POCP (kg C2H4-eq)	4,45E-03		9,23E-04	2,67E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,78E-04	5,32E-04	1,90E-05	-3,18E-03
AP (kg SO2-eq)	4,65E-02		1,31E-02	2,10E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E-03	2,86E-03	5,62E-05	-2,29E-02
EP (kg (PO4)3-eq)	6,45E-03		1,69E-03	4,00E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,55E-04	7,25E-04	2,32E-05	-6,25E-03
HTP (kg 1,4-DB-eq)	2,36E+00		5,03E-01	3,78E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,24E-01	3,34E-01	5,26E-03	-1,74E+00
FAETP (kg 1,4-DB-eq)	5,40E-02		1,19E-02	1,87E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,62E-03	2,70E-03	8,55E-05	-3,70E-02
MAETP (kg 1,4-DB-eq)	1,89E+02		4,67E+01	5,05E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E+01	7,36E+00	3,51E-01	-6,73E+01
TETP (kg 1,4-DB-eq)	4,43E-02		1,64E-03	8,69E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,39E-04	3,94E-04	1,71E-05	-1,54E-02

ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels; GWP = Global warming Potential; ODP = Ozone Depletion Potential; POCP = Photochemical Ozone Creation; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; HTP = Human Toxicity Potential : FAETP = Fresh Aquatic Ecotoxicity Potential ; MAETP = Marine Aquatic Ecotoxicity Potential; TETP = Terrestrial Ecotoxicity Potential

Table 4: Environmental indicators per FU (m^2) EN 15804 +A1, PSQ1 expanded corkboard insulation

Core Environmental Indicators per FU (m^2) EN 15804 +A2, PSQ1 expanded corkboard insulation

Potential Environmental Impacts	Production		Construction process stage		Use stage					End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 manufacturing		A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
CC total (kg CO2 eq)	-1,00E+02		1,07E+00	8,16E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,97E-01	1,07E+02	8,97E-02	1,36E+01
CC fossil (kg CO2 eq)	6,50E+00		1,07E+00	4,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,97E-01	1,46E-01	8,69E-03	-2,02E+00
CC biogenic (kg CO2 eq)	-1,07E+02		2,00E-04	3,78E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,37E-04	1,07E+02	8,10E-02	1,57E+01
CC luluc (kg CO2 eq)	6,59E-02		5,19E-04	3,67E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E-04	8,97E-05	4,19E-06	-1,85E-02
ODP (kg CFC 11 eq)	6,28E-07		2,29E-07	1,36E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,56E-08	1,60E-08	2,64E-09	-3,54E-07
AP (mol H+ eq)	5,88E-02		1,66E-02	2,80E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,72E-03	4,19E-03	7,40E-05	-3,39E-02
EP – freshwater (kg P eq)	2,89E-04		8,51E-06	1,39E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,00E-06	4,31E-06	1,78E-07	-1,22E-04
EP – marine (kg N eq)	1,12E-02		4,49E-03	9,27E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,07E-04	1,90E-03	4,80E-05	-9,03E-03
EP – terrestrial (mol N eq)	1,47E-01		4,98E-02	1,03E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,70E-03	2,18E-02	2,74E-04	-1,43E-01
POCP (kg NMVOC eq)	3,54E-02		1,33E-02	2,76E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,91E-03	5,70E-03	9,77E-05	-2,66E-02
ADP Elements (kg Sb eq)	5,65E-05		2,03E-05	5,65E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,53E-06	7,69E-07	9,13E-08	-1,98E-05
ADP fossil fuels (MJ)	9,23E+01		1,53E+01	3,71E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,48E+00	1,62E+00	2,02E-01	-2,80E+01
WDP (m^3 water eq deprived)	1,53E+01		4,43E-02	2,32E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,60E-02	4,68E-02	8,65E-03	-2,36E+00

CC total = Climate Change total; CC fossil = Climate Change fossil; CC biogenic= Climate Change biogenic; CC-luluc = Climate Change land use and land use change; ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels; WDP = water use (Water (user) deprivation potential, deprivation-weighted water consumption)

Table 5: Core Environmental Indicators per FU (m^2) EN 15804 +A2, PSQ1 expanded corkboard insulation

Additional Environmental Indicators per FU (m^2) EN 15804 +A2, PSQ1 expanded corkboard insulation

Potential Environmental Impacts	A1 t/m A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
PM (disease incidence)	3,98E-07	7,36E-08	2,27E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,67E-08	3,36E-08	1,40E-09	-3,98E-07
IRHH (kg U235 eq)	2,28E-01	6,46E-02	1,50E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,88E-02	5,26E-03	7,90E-04	-7,41E-02
ETF (CTUe)	2,35E+02	1,24E+01	5,51E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,00E+00	3,49E+00	2,03E-01	-2,78E+02
HTCE (CTUh)	3,94E-09	5,19E-10	1,59E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E-10	3,81E-09	5,57E-12	-3,39E-09
HTnCE (CTUh)	1,31E-07	1,26E-08	1,96E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,37E-09	1,24E-08	2,17E-10	-1,21E-07
Land Use Related impacts (dimensionless)	9,96E+02	9,65E+00	1,48E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,89E+00	4,58E-01	4,78E-01	-1,10E+03
PERE (MJ, net calorific value)	-4,68E+01	1,63E-01	-3,57E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,61E-02	-1,80E+02	3,55E-03	-2,60E+02
PERM (MJ, net calorific value)	4,57E+02	0,00E+00	3,61E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,80E+02	0,00E+00	0,00E+00
PERT (MJ, net calorific value)	4,10E+02	1,63E-01	3,61E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,61E-02	1,07E-01	3,55E-03	-2,60E+02
PENRE (MJ, net calorific value)	9,78E+01	1,62E+01	-6,45E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,76E+00	1,74E+00	2,15E-01	-3,00E+01
PENRM (MJ, net calorific value)	4,51E-01	0,00E+00	6,84E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT (MJ, net calorific value)	9,82E+01	1,62E+01	3,95E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,76E+00	1,74E+00	2,15E-01	-3,00E+01
SM (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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF (MJ, net calorific value)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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, net calorific value)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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 water eq)	3,51E-01	1,52E-03	7,85E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,46E-04	6,52E-03	2,11E-04	-5,46E-02

PM = Particulate Matter; IRHH = Ionizing Radiation – human health effects; ETF = Ecotoxicity – freshwater; HTCE = Human Toxicity – cancer effects; HTnCE = Human Toxicity – non cancer effects; 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

Table 6: Additional Environmental Indicators per FU (m^2) EN 15804 +A2, PSQ1 expanded corkboard insulation

Environmental information describing output flows and waste categories per FU (m^2) EN 15804 +A2, PSQ1 expanded corkboard insulation

Potential Environmental Impacts	Production	Construction process stage		Use stage					End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 manufacturing	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Hazardous waste disposed (kg/FU)	1,07E-04	3,08E-05	7,14E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,14E-05	3,48E-06	3,11E-07	-5,45E-05
Non-hazardous waste disposed (kg)	1,28E+01	6,69E-01	4,49E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,84E-01	8,73E-02	8,07E-01	-2,24E+00
Radioactive waste disposed (kg)	2,67E-04	1,02E-04	1,34E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,94E-05	5,27E-06	1,20E-06	-1,01E-04
Components for reuse (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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling (kg)	6,34E-04	0,00E+00	5,78E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,42E+00	0,00E+00	0,00E+00
Materials for energy recovery (kg)	3,27E+01	0,00E+00	4,19E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,29E+01	0,00E+00	0,00E+00
Exported energy Heat (MJ)	8,23E+01	0,00E+00	1,88E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,24E+01	0,00E+00	0,00E+00
Exported energy Energy (MJ)	1,42E+02	0,00E+00	3,24E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,59E+01	0,00E+00	0,00E+00

Table 7: Environmental information describing output flows and waste categories per FU (m^2) EN 15804 +A2, PSQ1 (ISOKURK) 140mm

Representativeness of the production process

Purchase of raw materials

The most important raw material, cork, for the product described in this LCA comes from sustainable forests in Portugal.

Data quality

For the collection of the process and product data, information is used provided by the manufacturer, Amorim Cork Insulation SA. These data were discussed and checked with Pro Suber and Amorim Cork Insulation in 2022 and are completely up-to-date. In January 2023 an additional company visit was made to Portugal.

Energy consumption of equipment and equipment required to manufacture the product under investigation is based on consumption figures for 2021. For the materials a choice was made from the available data in the Ecoinvent database, version 3.6, and the NMD database version 3.6, based on the main ingredients.

With the exception of the manufacturing phase, standard values have been used where appropriate in accordance with Ecoinvent 3.6. or NMD. This applies in particular to transport distances, processing in the waste phase and the choice of means of transport. Return transports loaded/unloaded are as per the manufacturer's instructions. In the final processing phase, the transports were calculated according to the Bepalingsmethode version 1.1.

Production processes can change over time. The information used in this LCA of the production process of the product is based on measurements and observations from 2022 (energy, waste percentages, quantities net, production volume).

Accountability

The LCA study was conducted by Agrodome B.V. in 2022-2023.

The data provided by Pro Suber and Amorim have been extensively discussed with Agrodome B.V.

A factory visit took place in January 2023 at the Silves location.

The final version of the LCA study has been submitted to LBP Sight for external peer review.

The LCA is carried out according to EN 15804 +A1 and +A2 in compliance with the standards from the ISO 14000 series: 14025, 14040 and 14044. The LCA report has been tested against the Bepalingsmethode ‘Milieuprestatie Bouwwerken’, version 1.1 March 2022.

When calculating the environmental impact categories, Simapro, version 9.4.0.2 and environmental data from the NMD-basic processes database, version 3.6 October 2022 and in some cases, namely where no NMD-data were available, the Ecoinvent database, version 3.6.

When making calculations in Simapro, the long-term effects (emissions that can occur after 100 years) are not taken into account, in accordance with the Bepalingsmethode version 1.1. The effects of capital goods and infrastructural processes are included.

References

ISO 14040
ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044
ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14040:2006

ISO 14025
ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A1
EN 15804+A1: 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

EN 15804+A2
EN 15804+A2: 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

Nationale Milieudatabase
Bepalingsmethode Milieuprestatie Bouwwerken, versie 1.1 March 2022.

Sissy Verspeek, Caroline van der Laan and Fred van der Burgh
Background report EPD, Life cycle analysis, PSQ1 ISOKURK (ICB), 140mm expanded corkboard insulation, Agrodome B.V. Wageningen, the Netherlands

	Author of the EPD Agrodome B.V. Generaal Foulkesweg 42 a 6703 BT Wageningen	 E: W:	 info@agrodome.nl www.agrodome.nl
	Commissioner of the EPD Pro Suber	 E: W:	 info@ProSuber.com www.ProSuber.com
	Reviewer van de LCA background report LBP|SIGHT Kelvinbaan 40 3439 MT Nieuwegein	 E: W:	 info@lbpsight.nl www.lbpsight.nl
	Programma P St. Nationale Milieudatabase Postbus 1201 2280 CE Rijswijk	 E: W:	 info@milieudatabase.r www.milieudatabase.r

Declaration Agrodome B.V.

LBP|SIGHT has reviewed the LCA background report PSQ1 ISOKURK (ICB), 140mm expanded corkboard insulation, 2023, according to the Bepalingsmethode 'Milieuprestatie Bouwwerken' versie 1.1. as an external reviewer. This EPD is the summary of that LCA background report, to be used for external communication.
The LCA background report is approved by René Kraaijenbrink, LBP|Sight, 17 October 2023.