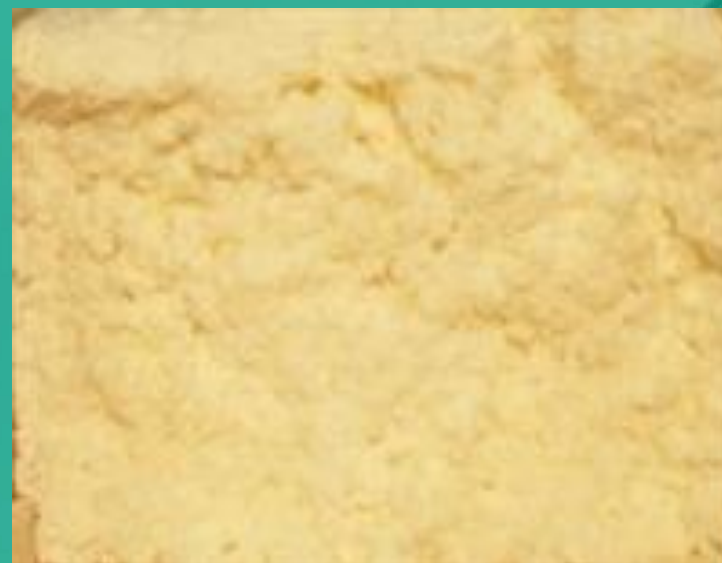


ENVIRONMENTAL PRODUCT DECLARATION

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

TERMOTRÄ ORIGINAL & TERMOTRÄ FIRE PROTECT. SVENSKA TERMOTRÄ AB



Programme: The
International EPD®
System,
www.environdec.com

Programme operator:
EPD International AB

EPD registration
number: S-P-06002

Publication
date:
2022-05-04

Valid until:
2027-04-29

Geographical
scope:
Sweden

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

MANUFACTURER INFORMATION

Manufacturer	Svenska Termoträ AB
Address	Oppsättarvägen 28, 811 71, Järbo
Contact details	Office@termotra.se
Website	https://www.termotra.se/

PRODUCT IDENTIFICATION

Product name	Termoträ Original & Termoträ Fire Protect.
Additional label(s)	–
Product number / reference	–
Place(s) of production	Järbo, Sweden
CPC code	3752 - Boards, blocks and similar articles of vegetable fibre, straw or wood waste agglomerated with mineral binders

The International EPD System

EPDs within the same product category but from different programmes may not be comparable.

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021) is used. c-PCR 006 Wood & wood-based is used.
EPD author	Edwin Måradson, NordNest AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Verification date	2022-04-29
EPD verifier	Elisabet Amat
EPD number	S-P-06002
ECO Platform nr.	-
Publishing date	2022-05-04
EPD valid until	2027-04-29

PRODUCT INFORMATION

PRODUCT DESCRIPTION

The products with trade names Termoträ Original and Termoträ Fire Protect are loose wood fiber air-injected insulation materials that consist of 95 % natural wood fibers and 5 % flame retardant additives. The wood-based fiber consists of cellulose in the form of pulp and is produced by mechanical crushing. The products are installed with different densities depending on the area of application. Blowing machines are used on-site to blow insulation into the different construction elements.

This EPD is an average EPD covering both products. In terms of raw materials, waste, and energy, there are no differences between these products. The only difference is that Termoträ Fire Protect uses a different wood fiber structure, which increases its density a little more. The result is that Termoträ Fire Protect complies with the requirements of fire technical class REI 30-120, whereas Termoträ Original is designed to provide insulation without fire requirements.

PRODUCT APPLICATION

Insulation products are used as thermal and/or acoustic insulation in cavities of roofs, walls, or floors, between rafters and timber work, supplied as loose-fill for mechanical installation.

TECHNICAL SPECIFICATIONS

Termoträ Original: Thermal Conductivity: 0.038 W / mK (23 °C / 50% RH); Density range 26 – 60 kg/m³; The mass-related moisture content at 23°C and 50% relative humidity: 0.095 kg/kg.

Termoträ Fire Protect: Thermal Conductivity: 0.038 W / mK (23 °C / 50% RH); Density range 27 – 60 kg/m³; The mass-related moisture content at 23°C and 50% relative humidity: 0.095 kg/kg.

PRODUCT STANDARDS

Termoträ Original and Termoträ Fire Protect products have the technical properties in their European Technical Assessment, ETA 12/0240 of 24/04/2019, and Termoträ Fire Protect even have the fire approved constructions in the Swedish type approval no. 16 56 03. These technical requirements of construction, the conditions, and results obtained when the specific element of construction described herein was tested following the procedure outlined in the accredited test methods:

- EN 1365-1:2012/AC:2013
- EN 1363-1:2012 and where appropriate EN 1363-2:1999
- EN 1365-2:2014

PHYSICAL PROPERTIES OF THE PRODUCT

The product is a homogeneous material that is dimensionless and packed in 15 kg bags. More information can be found on the company website at <https://www.termotra.se/produkter>

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at <https://www.termotra.se/>.

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Wood-based fiber (CTMP: Chemi Thermo Mechanical Pulp)	0.952	0	100	Sweden
Ammonium polyphosphate	0.048	0	0	Sweden
Wood pallet packaging	0.04	0	100	Sweden
Plastic packaging (polyethylene)	0.0061	0	0	Sweden

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances.

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

Termoträ Original and Termoträ Fire Protect are loose wool insulations made of wood fibers and flame retardant additives (Ammonium polyphosphate). Wood fibers are transported from the company SCA in Sundsvall to Svenska Termoträ AB as pulp for manufacturing. The wood fibers (i.e., raw materials) arrive at Termoträ company in paper packaging. After unpacking, the paper packaging is sent to the nearest waste treatment center. Next, the wood fibers are processed and mechanically broken down into smaller flakes, like chips, and then ground into loose wool in a mill. The next step is to add the fire protection additive, ammonium polyphosphate. Then it is transported to the packing machine, where it is packed in low-density polyethylene bags of 15 kg. Finally, the bags are stacked on wooden pallets, and each pallet is weighed individually with the help of a robot. Then, pallets are placed in the warehouse for transportation to customers.

Electricity is required for manufacturing processes. All the electricity is produced from hydropower, a renewable energy source. The production site (excluding the office) is also heated by electricity, making up 10% of total electricity consumption.

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 transportation distance is defined according to the PCR. The average distance of transportation from the production plant to the construction sites (in the biggest cities in Sweden) is assumed as 390 km. The transportation method is considered a full load lorry. In reality, it may vary, but as the role of transportation emissions in total results is small, the variation in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that the transportation company uses return trips to serve the needs of other clients. Transport does not cause losses as the product is packaged correctly. Also, the volume capacity utilization factor is assumed to be 1 for the nested packaged products. (A4)

Protective clothes, earplugs, protective masks, helmets, and safety shoes are used for health and safety purposes during installation but are considered negligible for the declared unit.

Electricity is assumed to be used by blowing machines to install the product on the building site. The wooden pallet and plastic packaging used during the transportation are incinerated for energy recovery, then integrated as exported energy in the calculation for substitution potentials in Module D. (A5)

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

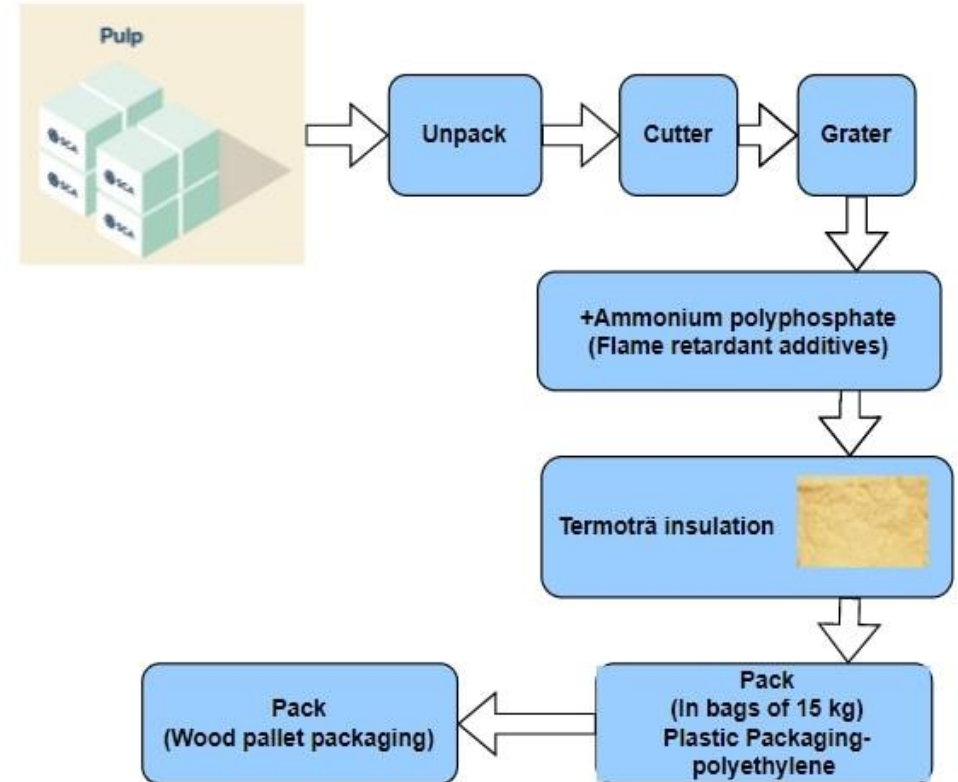
At the end-of-life, in the demolition phase, 100% of the product is assumed to be collected by machines. The energy source is electricity. The energy consumption of the demolition process is on average 0,004 kWh/kg, and this information is based on what we received from the factory. (C1)

Then the insulation is retaken into the factory process, after quality control is repacked, and delivered again for insulation work. We assumed the average distance to the factory from the biggest cities in Sweden is about 390 km transported by an average-sized lorry, full load. (C2)

Termoträ insulation can be reused. One of the reasons is that the product contains no hazardous substances, such as boron salts. Everything that has been blown into enclosed spaces such as walls, floors, sloping ceilings can be sucked into a truck with a hose and reused. The insulation can be reused as long as it is in good condition and has good functionality. (C3)

Module D takes account of the thermal utilization of the packaging and the re-using of the product at their end of life and the following potential benefits and burdens in the form of a system extension. (D)

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data 2020

DECLARED UNIT

Declared unit 1 kg of average cellulose loose-fill insulation.

Mass per declared unit 1 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C 0.44

Biogenic carbon content in packaging, kg C 0.006

SYSTEM BOUNDARY

This EPD covers the *cradle to gate with options* scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

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	D	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU			EU
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.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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.

This LCA study does not cover the use phase, assuming there are no emissions or replacements. In addition, the production of capital goods, used paint on packaging, infrastructure, carrying of product

to the storage area in manufacturing site, production of manufacturing equipment, and personnel-related activities and sales activities are not included.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order.

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

In this study, the allocation could not be avoided for raw materials, packaging, ancillary material, energy consumption, and waste production as the information was only measured at the factory or production process level. Therefore, the inputs were allocated to the studied product based on annual production volume (mass).

The values for 1 kilogram of insulation product are calculated by considering the total product weight per annual production. In the factory, two kinds of insulation products with the trade name Termoträ Original and Termoträ Fire Protect are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total raw materials, energy consumption, packaging materials per the

declared product are allocated. Subsequently, the product output is fixed to 1 kg, and the corresponding amount of product is used in the calculations. On the other hand, used energy in the factory is shared according to the energy consumption rates of each product. All estimations and assumptions regarding the cut-off criteria and the allocation are declared in part "Cut-off Criteria" except the estimations/assumptions below:

Pallet packaging is 0.04 kg/kg product; this value applies if no pallet is reused. However, more than half of the pallets are reused at least once, usually 1-5 times. Therefore, this study assumed that wood pallets are used three times on average.

The average distance of transportation from the production plant to the construction sites in the biggest cities in Sweden is assumed as 390 km.

An average-size full-load lorry is assumed to be used for all transportation.

The C3 module assumes that 100% of the products blown into building elements can be sucked by machines and reused.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

Primary data represents the manufacturing of wood fiber insulation products with the trade names Termoträ Original and Termoträ Fire Protect. These data were used to calculate average impacts on the insulation products. The variability of the primary data or the emissions between the different products did not exceed 10% of

the relevant data (the highest compared to the lowest). In terms of raw materials, waste, and energy, there are no differences between these products. The only difference is that Termoträ Fire Protect uses another wood fiber structure, which increases its density a little more. The weighing was based on the production mass shares for each product.

The International EPD System additional data requirements

Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	94 %
Variation in GWP-GHG between products	0 %
Variation in GWP-GHG between sites	- %

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-1,63E0	2,48E-2	-1,11E-2	-1,62E0	3,68E-2	2,48E-2	MND	MND	MND	MND	MND	MND	MND	2,05E-4	3,55E-2	1,72E0	0E0	1,55E-1
GWP – fossil	kg CO ₂ e	1,03E-1	2,48E-2	1,04E-2	1,38E-1	3,71E-2	2,59E-3	MND	MND	MND	MND	MND	MND	MND	1,85E-4	3,54E-2	0E0	0E0	-3,95E-1
GWP – biogenic	kg CO ₂ e	-1,74E0	1,72E-5	-2,16E-2	-1,76E0	2,69E-5	2,22E-2	MND	MND	MND	MND	MND	MND	MND	7,49E-6	2,57E-5	1,72E0	0E0	5,51E-1
GWP – LULUC	kg CO ₂ e	9,59E-4	7,71E-6	2,18E-5	9,89E-4	1,12E-5	1,41E-5	MND	MND	MND	MND	MND	MND	MND	1,25E-5	1,07E-5	0E0	0E0	-6,77E-4
Ozone depletion pot.	kg CFC ₁₁ e	1,74E-8	5,8E-9	9,34E-10	2,41E-8	8,72E-9	2,76E-10	MND	MND	MND	MND	MND	MND	MND	9,39E-11	8,33E-9	0E0	0E0	-2,4E-8
Acidification potential	mol H ⁺ e	1,31E-3	1,04E-4	5,08E-5	1,47E-3	1,56E-4	8,14E-6	MND	MND	MND	MND	MND	MND	MND	8,85E-7	1,49E-4	0E0	0E0	-2,77E-3
EP-freshwater ³⁾	kg Pe	4,91E-5	2,03E-7	6E-7	4,99E-5	3,02E-7	6,38E-8	MND	MND	MND	MND	MND	MND	MND	1,39E-8	2,88E-7	0E0	0E0	-3,24E-5
EP-marine	kg Ne	1,43E-4	3,12E-5	1,13E-5	1,85E-4	4,69E-5	2,11E-6	MND	MND	MND	MND	MND	MND	MND	1,95E-7	4,49E-5	0E0	0E0	-4,78E-4
EP-terrestrial	mol Ne	1,68E-3	3,44E-4	1,27E-4	2,15E-3	5,18E-4	2,36E-5	MND	MND	MND	MND	MND	MND	MND	2,53E-6	4,95E-4	0E0	0E0	-5,4E-3
POCP (“smog”)	kg NMVOCe	5,53E-4	1,1E-4	4,35E-5	7,06E-4	1,67E-4	7,32E-6	MND	MND	MND	MND	MND	MND	MND	5,6E-7	1,59E-4	0E0	0E0	-1,8E-3
ADP-minerals & metals	kg Sbe	1,41E-5	4,68E-7	1,48E-7	1,47E-5	6,33E-7	3,18E-8	MND	MND	MND	MND	MND	MND	MND	3,11E-9	6,05E-7	0E0	0E0	-5,53E-6
ADP-fossil resources	MJ	1,71E0	3,84E-1	1,6E-1	2,26E0	5,77E-1	4,75E-2	MND	MND	MND	MND	MND	MND	MND	2,25E-2	5,51E-1	0E0	0E0	-5,6E0
Water use ²⁾	m ³ e depr.	1,86E-1	1,39E-3	6,68E-3	1,94E-1	2,15E-3	7,95E-4	MND	MND	MND	MND	MND	MND	MND	2,89E-4	2,05E-3	0E0	0E0	-1,2E-1

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1,6E0	4,93E-3	8,47E-1	2,45E0	7,26E-3	1,23E-2	MND	MND	MND	MND	MND	MND	MND	1,08E-2	6,94E-3	0E0	0E0	-4,16E-1
Renew. PER as material	MJ	1,8E1	0E0	2,07E-1	1,83E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	-7,85E0
Total use of renew. PER	MJ	1,96E1	4,93E-3	1,05E0	2,07E1	7,26E-3	1,23E-2	MND	MND	MND	MND	MND	MND	MND	1,08E-2	6,94E-3	0E0	0E0	-8,27E0
Non-re. PER as energy	MJ	1,71E0	3,84E-1	1,6E-1	2,26E0	5,77E-1	4,75E-2	MND	MND	MND	MND	MND	MND	MND	2,25E-2	5,51E-1	0E0	0E0	-5,6E0
Non-re. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

Total use of non-re. PER	MJ	1,71E0	3,84E-1	1,6E-1	2,26E0	5,77E-1	4,75E-2	MND	MND	MND	MND	MND	MND	MND	2,25E-2	5,51E-1	0E0	0E0	-5,6E0
Secondary materials	kg	5,28E-4	0E0	6,16E-3	6,68E-3	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	9,3E-4	7,75E-5	6,05E-5	1,07E-3	1,2E-4	1,33E-5	MND	MND	MND	MND	MND	MND	MND	5,85E-6	1,15E-4	0E0	0E0	-3,59E-3

6) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	4,03E-3	3,76E-4	7,24E-4	5,13E-3	5,6E-4	1,47E-4	MND	MND	MND	MND	MND	MND	MND	1,69E-5	5,36E-4	0E0	0E0	-3,06E-2
Non-hazardous waste	kg	1,18E-1	3,88E-2	2,7E-2	1,84E-1	6,2E-2	4,14E-3	MND	MND	MND	MND	MND	MND	MND	4,89E-4	5,93E-2	0E0	0E0	-1,1E0
Radioactive waste	kg	6,96E-6	2,64E-6	7,14E-7	1,03E-5	3,96E-6	4,19E-7	MND	MND	MND	MND	MND	MND	MND	3,16E-7	3,78E-6	0E0	0E0	-1,34E-5

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	2,84E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO _{2e}	1,03E-1	2,48E-2	1,04E-2	1,38E-1	3,71E-2	2,59E-3	MND	MND	MND	MND	MND	MND	MND	1,85E-4	3,54E-2	0E0	0E0	-3,95E-1

8) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, hydro, run-of-river (Reference product: electricity, high voltage), Sweden, ecoinvent 3.6, 2019
Electricity CO ₂ e / kWh	0.0039
District heating data source and quality	–
District heating CO ₂ e / kWh	–

BIBLIOGRAPHY

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

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

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

Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021)

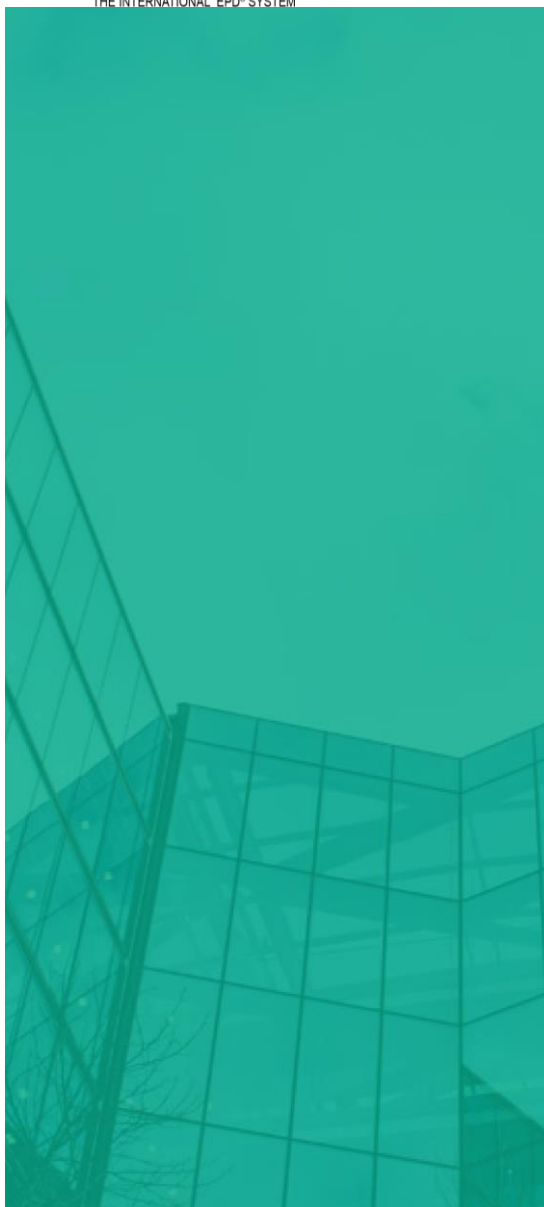
Termoträ Original & Termoträ Fire Protect. LCA background report 14.03.2022

ABOUT THE MANUFACTURER

Svenska Termoträ AB has over 30 years of experience in manufacturing, selling, and installing wood fiber loose wool insulation. As a result of their use of renewable forest raw materials, Termoträs loose wool insulation contributes to sustainable development. Termoträ insulations are reusable, recyclable, and can even be returned to nature. Furthermore, they do not contain any harmful materials or boron salt but have only 5% ammonium polyphosphate for fire protection, which is not hazardous to the environment or health.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Svenska Termoträ AB
EPD author	Edwin Måradson, NordNest AB
EPD verifier	Elisabet Amat
EPD program operator	The International EPD System
Background data	This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Wood and plant-fibre based products



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 EN 15804, 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 background report (project report) for this EPD

Why does verification transparency matter? [Read more online.](#)

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Elisabet Amat
EPD verification started on	2022-04-12
EPD verification completed on	2022-04-29
Supply-chain specific data %	94
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Edwin Måradson, NordNest AB
EPD author training completion	2021-09-27
EPD Generator module	Wood and plant-fibre based products
Independent software verifier	Ugo Pretato, Studio Fieschi & soci Srl.

Software verification date	2021-05-11
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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 EN 15804:2012+A2:2019.

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.



VERIFICATION AND REGISTRATION (ENVIRONDEC)

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.11
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. 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:	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Third party verifier	Elisabet Amat
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no



THE INTERNATIONAL EPD® SYSTEM

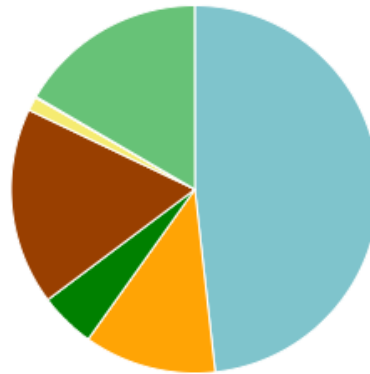
EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com

ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1,02E-1	2,46E-2	1,03E-2	1,37E-1	3,68E-2	2,55E-3	MND	MND	MND	MND	MND	MND	MND	1,95E-4	3,51E-2	0E0	0E0	-3,83E-1
Ozone depletion Pot.	kg CFC ₋₁₁ e	1,4E-8	4,61E-9	8,69E-10	1,95E-8	6,93E-9	3,06E-10	MND	MND	MND	MND	MND	MND	MND	1,52E-10	6,62E-9	0E0	0E0	-2,21E-8
Acidification	kg SO ₂ e	1,09E-3	5,04E-5	3,84E-5	1,17E-3	7,54E-5	5,36E-6	MND	MND	MND	MND	MND	MND	MND	6,7E-7	7,21E-5	0E0	0E0	-2,3E-3
Eutrophication	kg PO ₄ ³ e	2,67E-4	1,02E-5	2,36E-5	3,01E-4	1,52E-5	5,48E-6	MND	MND	MND	MND	MND	MND	MND	4,06E-7	1,46E-5	0E0	0E0	-9,18E-4
POCP ("smog")	kg C ₂ H ₄ e	5,92E-5	3,21E-6	2,83E-6	6,52E-5	4,78E-6	4,42E-7	MND	MND	MND	MND	MND	MND	MND	3,02E-8	4,57E-6	0E0	0E0	-1,28E-4
ADP-elements	kg Sbe	1,41E-5	4,68E-7	1,48E-7	1,47E-5	6,33E-7	3,18E-8	MND	MND	MND	MND	MND	MND	MND	3,11E-9	6,05E-7	0E0	0E0	-5,53E-6
ADP-fossil	MJ	1,71E0	3,84E-1	1,6E-1	2,26E0	5,77E-1	4,75E-2	MND	MND	MND	MND	MND	MND	MND	2,25E-2	5,51E-1	0E0	0E0	-5,6E0

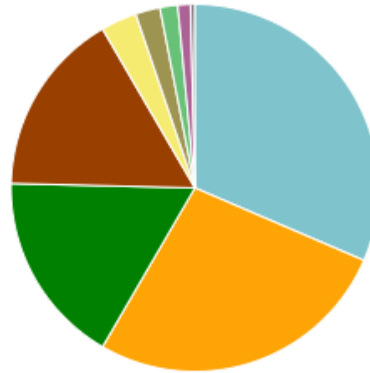
ANNEX 6 : LIFE-CYCLE ASSESSMENT RESULT VISUALIZATION

Global Warming Potential fossil kg CO2e - Life-cycle stages



- A1 Raw material extraction and processing - 49.9%
- A2 Transport to the manufacturer - 1.2%
- A3 Manufacturing - 4.9%
- A4 Transport to the building site - 17.6%
- A5 Installation into the building - 1.2%
- C1 Deconstruction - 0.1%
- C2 Waste transportation - 16.6%

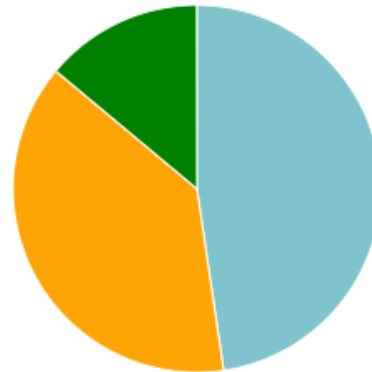
Global Warming Potential fossil kg CO2e - Classifications



- Fire retardant - 31.5%
- Transport to waste treatment - 16.3%
- Wood pallet - 1.6%
- Wood fiber - 26.9%
- Plastic packaging - 3.1%
- Packaging waste - 1.1%
- Transport to building site - 17.0%
- PE waste - 2.2%
- Electricity production - 0.4%

Global Warming Potential fossil kg CO2e - Resource types

This is a drilldown chart. Click on the chart to view details



● Other resource types - 47.7%

● A: Agriculture, forestry and fishing - 3...

● E: Water supply; sewerage, waste m...