# Environmental Product Declaration

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

## *CLT (Cross Laminated Timber)*

by

**Stora Enso**

| | |
|---|---|
| Programme: | The International EPD® System, www.environdec.com |
| Programme operator: | EPD International AB |
| EPD registration number: | S-P-09949 |
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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<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| **Website:** | www.environdec.com |
| **E-mail:** | info@environdec.com |

| **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):<br>*PCR 2019:14, v1.2.5 Construction products (EN 15804:A2). Sub-PCR- 006, Wood and wood-based products for use in construction (EN 16485). UN CPC 314* |
| 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.* |
| **Life Cycle Assessment (LCA)** |
| LCA accountability: *Product Sustainability, Stora Enso – Division Wood Products* |
| **Third-party verification** |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><br>☒ EPD verification by individual verifier<br><br>Third-party verifier: *Martin Erlandsson, IVL Swedish Environmental Research Institute*<br><br>  <br><br>Approved by: The International EPD® System |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☒ Yes ☐ No |

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

***Please note:*** *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.*

## Company information

Owner of the EPD: Stora Enso
Contact: Product Sustainability – Division Wood Products
Description of the organisation: Part of the global bioeconomy, Stora Enso is a leading provider of renewable products in packaging, biomaterials, wooden construction and paper, and one of the largest private forest owners in the world. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow. With renewable materials at the foundation, our solutions for paper, packaging, wooden construction and biomaterials are today found across continents and industries. We are active in sectors such as building, retail, food and beverages, manufacturing, publishing, pharmaceutical, cosmetics, confectionary, hygiene and textiles.

The Wood Products division is the largest sawn wood producer in Europe and a leading provider of renewable wood-based solutions for the construction industry. Our growing Building Solutions business offers building concepts to support low-carbon construction and sustainable designs. We develop digital tools to simplify the designing of building projects with wood. We also offer applications for windows, doors and for packaging industries, and our pellets provide a sustainable heating solution.

All our mills run an integrated management system, which is certified in accordance with Chain of Custody (FSC® and/or PEFC), quality management (ISO 9001), environmental management (ISO 14001), health and safety (ISO 45001), and energy management (ISO 50001) requirements.

Product-related or management system-related certifications:
ISO 9001:2015 Quality Management System
ISO 14001:2015 Environmental Management System
ISO 45001:2018 Occupational Health and Safety Management System
ISO 50001:2018 Energy Management System
FSC® and PEFC Chain of Custody multi-site certificates
Due Dilligence System standard (FSC® Certified Wood, PEFC, Sustainable Biomass Program)

Name and location of production site(s):

| Mill name | Location | CLT annual capacity |
|---|---|---|
| Bad St. Leonhard Sawmill | Wisperndorf 4, 9462 Bad St. Leonhard, Austria | 80 000 m³ |
| Gruvön Sawmill | Timmervägen 2, 664 33 Grums, Sweden | 80 000 m³ |
| Ybbs Sawmill | Bahnhofstrasse 31, 3370 Ybbs an der Donau, Austria | 110 000 m³ |
| Zdirec Sawmill | Nádražní 66, 58263 Ždírec nad Doubravou, Czech Republic | 120 000 m³ |

This EPD covers 100 % of the CLT by Stora Enso production (volume). Life Cycle Impact Assessment results are weighted averages of the production volumes of the reference year of data.

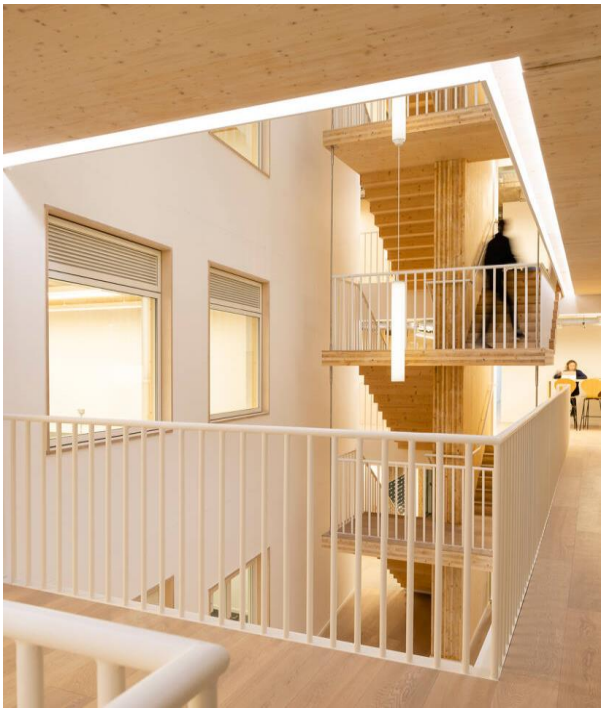
## Product information

Product name: CLT by Stora Enso

Product identification: CLT by Stora Enso is placed on the marked according to ETA-14/0349 (European Technical Assessment)

Product description: Cross laminated timber (CLT) is a solid wood construction product consisting of at least three bonded single-layer panels arranged at right angles to each other. Sizes of up to 3,45 x 16 metres can be produced. CLT by Stora Enso solid wood panels are made up of several layers and are available in different panel thicknesses. The layers are bonded with carefully selected adhesives that are suitable for their respective purpose. CLT by Stora Enso products are long-lasting and safe to use and recycle. They are continuously tested to ensure that they meet the strictest requirements in terms of ambient air emissions. CLT by Stora Enso also offers virtually boundless possibilities in terms of construction concept, style and architecture. It is suitable for internal and external walls and for floors and roofs.

CLT by Stora Enso is extremely versatile and can be fully combined with other building materials. Thanks to its load distribution properties in two directions, it sets no limits to architectural building projects. For this reason, it is becoming increasingly used for the construction of houses and apartment buildings, as well as for industrial and commercial buildings and as a high-quality structural building material with an excellent strength to weight-ratio.



## LCA information

Functional unit / declared unit: 1 m³ of CLT by Stora Enso with a moisture content of 12 %
Reference service life: The reference service life (RSL) is understood as the period of time until the structure is replaced, rebuild, renovated or restored. If properly installed, the service lifetime of the CLT by Stora Enso is equal to the lifetime of the building, and thus 50 years is the default reference service life. Wood products can reach over 100 years' service life in service classes 1 and 2.
Time representativeness: Data for the study was collected from the production sites and represents the year 2020. This data includes raw material supply, transport distances, fuels, energy consumption, packaging, produced CLT by Stora Enso, by-products and waste.
Database used: Ecoinvent 3.8 (November 2021)
LCA software used: SimaPro 9.3.0.3

Description of system boundaries:
Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules).

Target group: business to business and business to consumers

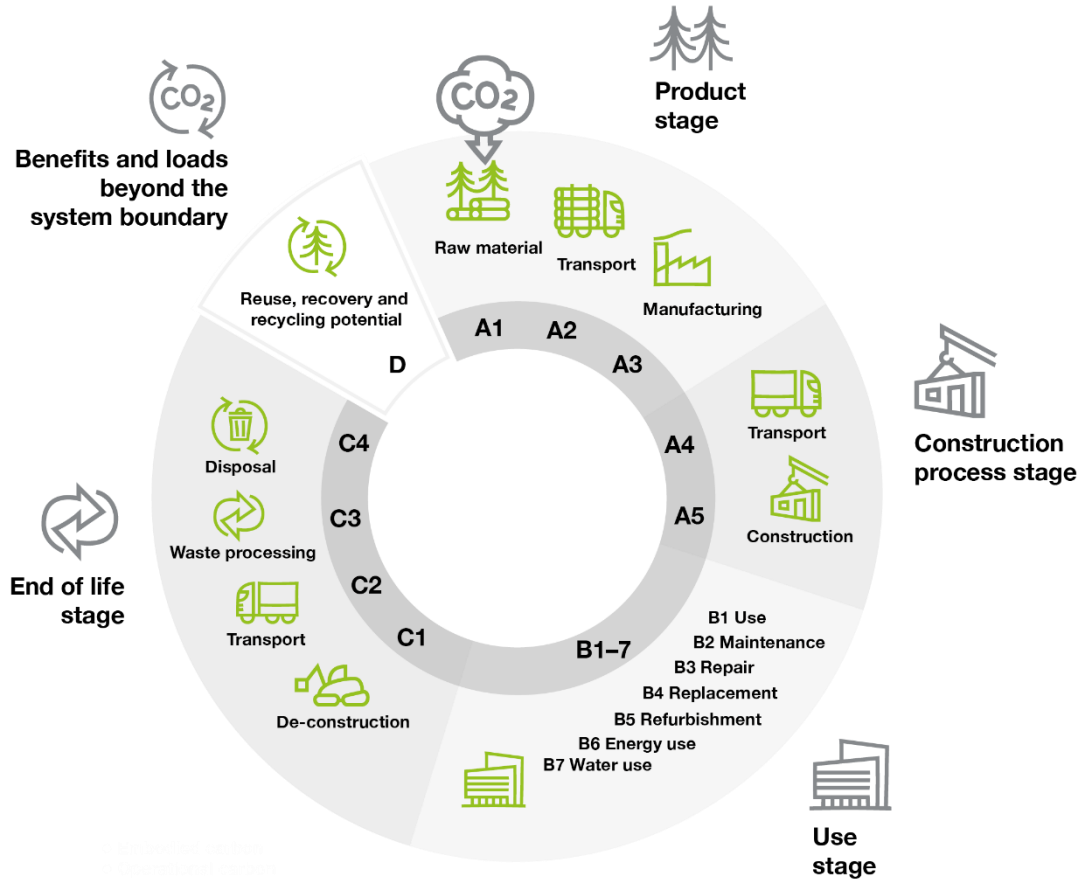
Allocation: Environmental impact from forestry operations is allocated to the roundwood only and nothing to forestry residues such as branches and tops.

The production of sawn timber and further processed CLT by Stora Enso results in several valuable by-products like wood chips used for example in cellulose pulp production, as well as sawdust, bark and dry wood chips that can be used as biofuels.

The environmental impact allocation from the sawmill and further processing have been done between sawn timber and by-products as well as the main product and by-products based on economic revenue in accordance with EN 15804.

Cut-Off Rule: 1 %. This rule is based on the assumption that the input flows do not have a major impact on the environmental impacts as a whole. In insufficient data cases for such material flows known to have the potential to cause significant emissions into air and water or soil related to the environmental indicators, conservative "worst case" assumptions have been used when filling the data gaps.

System diagram:

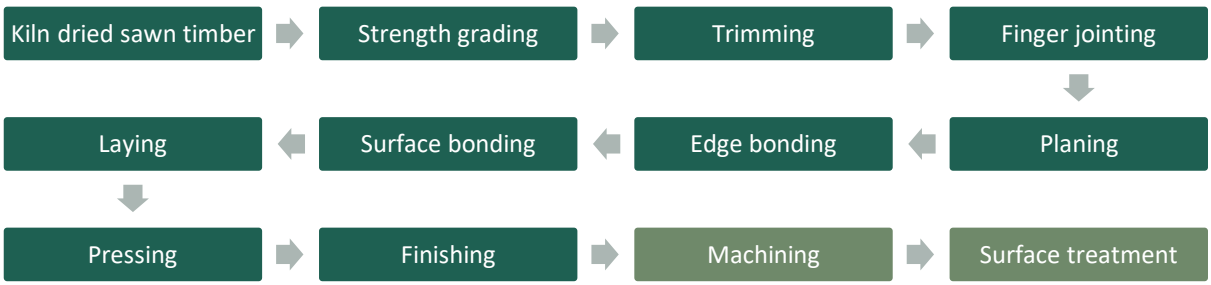



Product stage:

**A1:** This stage covers the extraction and processing of raw materials, such as forestry operations as well as glue production. All Stora Enso's wood raw material is sourced through a third-party certified wood traceability system. Stora Enso traceability system is certified according to FSC® and PEFC Chain of Custody systems.[1]

**A2:** This stage covers the transportation of the raw materials to the mill and the fuels needed for on-site transportation. The wood supply operations cover procurement of softwood from Austria, its neighboring countries and Sweden. Purchased logs are spruce logs transported with trucks and train.

**A3:** This stage covers the production of CLT by Stora Enso and by-products. Generation of electricity or heat from primary energy resources are counted. Also packaging materials and the treatment of waste not leaving the factory with the product are counted.




More information on the manufacturing process of CLT can be accessed via The making of CLT by Stora Enso - YouTube

[1] FSC® trademark license nr. C125195

Construction process stage:

**A4:** This stage shows additional information such as average figures from the transportation to the construction sites. The figures show the impact of 1 $m^3$ CLT by Stora Enso delivered to European customer from one of its production units. Transportation distance is a weighted average based on % of sales volumes.

| Scenario information | Values and units |
|---|---|
| Vehicle type used for transport | Transport, freight, lorry >32 metric ton, EURO6 |
| Fuel type and consumption of vehicle | Low sulphur diesel 0,015969 liter/tkm |
| Distance | 634 km |
| Capacity utilisation (including empty returns) | 50 % |
| Bulk density of transported products | 470 kg/$m^3$ |

**A5:** The construction process includes such packaging waste, which relates to the delivered product as well as the lifting of CLT by Stora Enso. No assembly of the elements is considered because of the multiple application possibilities, meaning additional metal pieces (fittings, screws) or other materials possibly needed for the installation like glues, sealants, rubbers etc. are excluded from the product system.

Use stage:

**B1–B7:** There are no environmental impacts expected in the use phase, and at least no harmful substances are released to air, water or ground during the use of the product.

End-of-life scenarios:

**C1–C4 and Module D:** Four alternative European average scenarios have been presented for the end-of-life stage. Wood has an average content in European Construction and Demolition waste of around 2,3 %. Cascading usage should be applied and therefore re-use and recycling should be preferred over incineration. If this principle can't be followed incineration in general is a treatment with the highest net savings and therefore considered as main scenario in this EPD.[2]

***Please note:*** *The end-of-life options are scenario based and the choice of the most appropriate one can vary from situation, country and their legislation, energy and raw material availability. The options should indicate the potential environmental impact. Specific scenarios are available on request.*

| See chapter | Environmental information | Additional environmental information | | |
|---|---|---|---|---|
| **Scenario** | **100 % Incineration with energy recovery** | **100 % Recycling to wood chips** | **100 % Re-Use in coherent form** | **100 % Landfill with energy recovery** |
| Stage C1 | Deconstruction / Demolition of the building. 470 kg which equals the declared unit is collected separately per scenario. | | | |
| Stage C2 | Transport to the incineration site | Transport to the sorting platform | Transport to the sorting platform | Transport to landfill |
| | Distance is assumed to be 50 km in each scenario. | | | |
| Stage C3 | Crushing, site operation and wood combustion. Biogenic carbon flows and energy stored as material are balanced out according to EN 16485. | Sorting and crushing at the platform. Biogenic carbon flows and energy stored as material are balanced out according to EN 16485. | Sorting and preparing at the platform. Biogenic carbon flows and energy stored as material are balanced out according to EN 16485. | - |
| Stage C4 | - | - | - | Landfilling (waste operation, leachate treatment and landfill gas combustion). Biogenic carbon flows and energy stored as material are balanced out according to EN 16485 as if released |

[2] Damgaard, Anders, et al. "Background data collection and life cycle assessment for construction and demolition waste (CDW) management." (2022).

| | | | | |
|---|---|---|---|---|
| | | | | immediately without taking into account delayed emissions. |
| Module D | Avoided impact of electricity production and thermal energy recovery. | Avoided impact of forestry, harvesting, wood chips preparation and drying. | Avoided impact of producing CLT from virgin wood. | Avoided impact of electricity production and thermal energy recovery from landfill gas. |
| *Additional information on Module D scenario* | *For the thermal energy recovery, it is assumed that European average heat produced from natural gas is replaced. The replaced electricity is referring to the European average grid mix.* | *Wood chips produced from virgin wood and representing European average market are replaced, considering additional transport and energy to produce wood chips in the same quality from the recycled product.* | *CLT produced from virgin wood and representing Stora Enso's CLT production units, as declared in this EPD, are replaced, considering additional energy for cutting, drilling or sanding of the re-used product.* | *For the thermal energy recovery, it is assumed that European average heat produced from natural gas is replaced. The replaced electricity is referring to the European average grid mix.* |

***Please note:*** *Module D declares potential benefits and loads of secondary material, secondary fuel or recovered energy leaving the product system. The information given in Module D lies beyond the system boundary.*

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

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End-of-life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-Landfill-potential |
| **Module** | **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Modules declared | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Geography | EU | EU | AT, CZ, SE | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU |

GWP-GHG (A1-A3): specific data used: 55 %, variation - products: 0 %, variation - sites: ± 22 %.

# Technical information

| Properties | Definition |
|---|---|
| Application | Structural elements for walls, floors & roofs |
| ETA number | 14/0349 |
| Maximum dimensions | Length: 16 m / Width: 2,95 m / Thickness: 0,32 m |
| Invoiced widths | 2,25 m / 2,45 m / 2,75 m / 2,95 m (on request up to 3,45 m) |
| Panel lay-up | 3, 5, 7 or more layers depending on structural design requirements |
| Wood species | Spruce (pine, fir, stone pine/larch and other wood types on request) |
| Strength class | C24 according to EN 338, maximum 10 % C16 permitted (other strength class compare with ETA 14/0349) |
| Moisture content | 12 % +/-2 % on delivery |
| Adhesives | Formaldehyde-free PUR adhesive for finger jointing and surface bonding, approved for load-bearing and non-load-bearing components indoors and outdoors according to EN 15425; Formaldehyde-free EPI adhesive for edge bonding |
| Surface quality | Non-visual quality (NVI), Industrial visual quality (IVI) and Visual quality (VI); the surfaces are always sanded on both faces |
| Weight | For determining transport weight: approx. 470 kg/m³ |
| Fire rating | Timber components (apart from floors) Euroclass D-s2, d0<br>Floors Euroclass Dfl-s1 |
| Thermal conductivity | 0,12 W/(mK) |
| Air tightness | CLT by Stora Enso panels are made up of at least three layers of single-layer panels and are therefore extremely air-tight. The air-tightness of a 3-layer panel was tested according to EN 12114 |
| Service class | Service class 1 and 2 according to EN 1995-1-1 |

# Content information

| Product components | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/m³ |
|---|---|---|---|
| Wood (*Picea abies* and *Pinus sylvestris*) | 465,2 | - | 99 % / 207,8 |
| Polyurethane (PUR) resin | 4,2 | - | 0 % / 0 |
| Emulsion polymer isocyanate (EPI) resin | 0,5 | - | 0 % / 0 |
| Hardener | 0,1 | - | 0 % / 0 |
| **TOTAL** | **470** | **-** | **99 % / 207,8** |

| Packaging materials | Weight, kg | Weight-% (versus the product) | Weight biogenic carbon, kg C/kg |
|---|---|---|---|
| Plastic wrap | 0,67 | 0,14 | 0 |
| Plastic straps | 0,03 | 0,01 | 0 |
| Bubble wrap | 0,08 | 0,02 | 0 |
| Cardboard | < 0,1 | < 0,1 | < 0,1 |
| **TOTAL** | **0,78** | **0,17** | **< 0,1** |

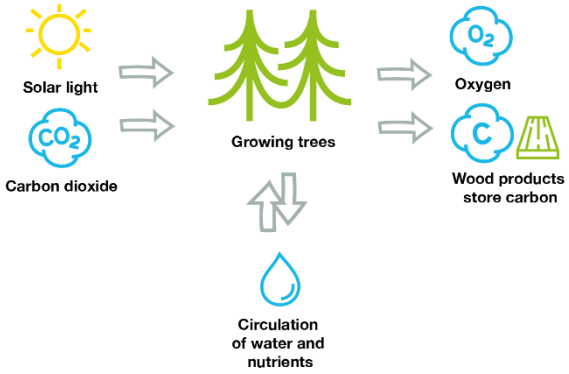
| Dangerous substances from the candidate list of SVHC for Authorisation | EC No. | CAS No. | Weight-% per declared unit |
|---|---|---|---|
| Total | - | - | - |

# Biogenic carbon content at the factory gate

| Biogenic carbon content | Unit (expressed per declared unit) |
|---|---|
| Biogenic carbon content in product | 762 kg $CO_2$ eq. / $m^3$ = 207,8 kg C / $m^3$ |
| Biogenic carbon content in accompanying packaging | 0 kg $CO_2$ eq. / $m^3$ = < 0,1 kg C / $m^3$ |
| ***Please note:*** *1 kg biogenic carbon is equivalent to 44/12 kg of $CO_2$* | |

Carbon sequestration and storage:

The sequestration of carbon dioxide ($CO_2$) is unique to renewable materials. Biogenic carbon content of a renewable material is an outcome of the $CO_2$ that has effectively been removed from the atmosphere by photosynthesis of growing trees and other plants, and turned into sugars (carbon) and oxygen. The quantity of atmospheric $CO_2$ has thus been reduced. The longer the $CO_2$ is not in the atmosphere but stays stored in a material, the greater the environmental benefit.




Biogenic carbon of wood is calculated according to the EN 16485 and 16449 standards. Half of the dry mass of wood is carbon. Each kg of stored biogenic carbon is equal to ~3.67 kg of $CO_2$, which is effectively removed from the atmosphere. In case of CLT by Stora Enso the biogenic carbon content is -762 kg $CO_2$ eq./$m^3$. Biogenic carbon enters the product system in forest (module A1) and for calculation purpose it is assumed to leave latest from the product system in the end-of-life stage (module C). This assumption can be made when wood is sourced from sustainably managed forest.

# Environmental Information

Below tables are describing the environmental indicator results of 1 m³ CLT by Stora Enso along its life cycle. INCINERATION as the most representative end-of-life scenario in Europe is applied. The incineration scenario is describing the dismantling and chipping of CLT before incineration and is replacing average European heat produced with natural gas and average European market high voltage electricity. Other end-of-life scenarios have been made available in the chapter "Additional environmental information".

## Mandatory impact category indicators according to EN 15804+A2

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-fossil | kg $CO_2$ eq. | 3,26E+1 | 8,71E+0 | 1,12E+1 | **5,26E+1** | 2,59E+1 | 5,38E+0 | 0,00E+0 | 4,01E+0 | 2,04E+0 | 2,02E+1 | 0,00E+0 | -2,67E+2 |
| GWP-biogenic | kg $CO_2$ eq. | -7,62E+2 | 6,28E-3 | 3,40E-1 | **-7,62E+2** | 1,03E-2 | 1,00E-3 | 0,00E+0 | 6,98E-4 | 8,12E-4 | 7,62E+2 | 0,00E+0 | -7,51E-1 |
| GWP luluc | kg $CO_2$ eq. | 8,26E-1 | 4,73E-3 | 4,76E-2 | **8,78E-1** | 9,72E-3 | 4,06E-4 | 0,00E+0 | 3,97E-4 | 7,67E-4 | 2,27E-3 | 0,00E+0 | -2,77E-1 |
| GWP total | kg $CO_2$ eq. | -7,29E+2 | 8,72E+0 | 1,16E+1 | **-7,08E+2** | 2,59E+1 | 5,38E+0 | 0,00E+0 | 4,01E+0 | 2,05E+0 | 7,82E+2 | 0,00E+0 | -2,68E+2 |
| ODP | kg CFC 11 eq. | 2,36E-6 | 4,47E-6 | 2,32E-6 | **9,15E-6** | 6,46E-6 | 8,53E-7 | 0,00E+0 | 8,49E-7 | 5,10E-7 | 1,75E-6 | 0,00E+0 | -2,86E-5 |
| AP | mol $H^+$ eq. | 1,09E-1 | 4,92E-2 | 1,53E-1 | **3,11E-1** | 8,26E-2 | 2,02E-2 | 0,00E+0 | 2,00E-2 | 6,51E-3 | 2,04E-1 | 0,00E+0 | -7,43E-1 |
| EP-freshwater | kg P eq. | 5,66E-3 | 1,09E-4 | 5,79E-4 | **6,35E-3** | 1,85E-4 | 1,34E-5 | 0,00E+0 | 1,32E-5 | 1,46E-5 | 1,01E-4 | 0,00E+0 | -1,25E-2 |
| EP-marine | kg N eq. | 3,60E-2 | 1,02E-2 | 4,58E-2 | **9,19E-2** | 1,82E-2 | 7,87E-3 | 0,00E+0 | 7,75E-3 | 1,43E-3 | 9,41E-2 | 0,00E+0 | -1,17E-1 |
| EP-terrestrial | mol N eq. | 3,44E-1 | 1,12E-1 | 6,01E-1 | **1,06E+0** | 2,02E-1 | 8,65E-2 | 0,00E+0 | 8,52E-2 | 1,59E-2 | 1,07E+0 | 0,00E+0 | -1,32E+0 |
| POCP | kg NMVOC eq. | 3,04E-1 | 3,98E-2 | 1,21E-1 | **4,65E-1** | 7,95E-2 | 2,44E-2 | 0,00E+0 | 2,41E-2 | 6,27E-3 | 2,82E-1 | 0,00E+0 | -3,90E-1 |
| ADP minerals&metals[3] | kg Sb eq. | 8,10E-5 | 2,31E-5 | 1,17E-4 | **2,21E-4** | 6,20E-5 | 2,11E-6 | 0,00E+0 | 2,04E-6 | 4,89E-6 | 2,00E-5 | 0,00E+0 | -1,40E-4 |
| ADP-fossil[3] | MJ | 2,20E+2 | 2,86E+2 | 3,10E+2 | **8,16E+2** | 4,22E+2 | 5,48E+1 | 0,00E+0 | 5,45E+1 | 3,33E+1 | 1,21E+2 | 0,00E+0 | -5,07E+3 |
| WDP[3] | $m^3$ | 1,52E+1 | 5,03E-1 | 5,16E+0 | **2,09E+1** | 1,41E+0 | 8,26E-2 | 0,00E+0 | 7,77E-2 | 1,11E-1 | 1,21E+0 | 0,00E+0 | -2,79E+1 |
| Acronyms | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | | | | | | |

## Additional mandatory and voluntary impact category indicators

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-GHG[4] | kg $CO_2$ eq. | 3,28E+1 | 8,71E+0 | 1,16E+1 | **5,31E+1** | 2,59E+1 | 5,38E+0 | 0,00E+0 | 4,01E+0 | 2,04E+0 | 2,03E+1 | 0,00E+0 | -2,68E+2 |

[3] 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.

[4] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic $CO_2$ is set to zero.

## Resource use indicators

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| PERE | MJ | 4,60E+1 | 3,33E+0 | 7,83E+2 | **8,32E+2** | 5,37E+0 | 3,12E-1 | 0,00E+0 | 3,07E-1 | 4,23E-1 | 2,57E+0 | 0,00E+0 | -4,45E+2 |
| PERM | MJ | 7,43E+3 | 0,00E+0 | 4,44E-3 | **7,43E+3** | 0,00E+0 | -4,44E-3 | 0,00E+0 | 0,00E+0 | 0,00E+0 | -7,43E+3 | 0,00E+0 | 0,00E+0 |
| PERT | MJ | 7,47E+3 | 3,33E+0 | 7,83E+2 | **8,26E+3** | 5,37E+0 | 3,07E-1 | 0,00E+0 | 3,07E-1 | 4,23E-1 | -7,42E+3 | 0,00E+0 | -4,45E+2 |
| PENRE | MJ | 5,40E+2 | 3,03E+2 | 3,37E+2 | **1,18E+3** | 4,48E+2 | 5,82E+1 | 0,00E+0 | 5,79E+1 | 3,53E+1 | 1,30E+2 | 0,00E+0 | -5,48E+3 |
| PENRM | MJ | 1,16E+2 | 0,00E+0 | 3,61E+1 | **1,52E+2** | 0,00E+0 | -3,61E+1 | 0,00E+0 | 0,00E+0 | 0,00E+0 | -1,16E+2 | 0,00E+0 | 0,00E+0 |
| PENRT | MJ | 6,56E+2 | 3,03E+2 | 3,73E+2 | **1,33E+3** | 4,48E+2 | 2,21E+1 | 0,00E+0 | 5,79E+1 | 3,53E+1 | 1,44E+1 | 0,00E+0 | -5,48E+3 |
| SM | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | **0,00E+0** | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| RSF | MJ | 0,00E+0 | 0,00E+0 | 0,00E+0 | **0,00E+0** | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| NRSF | MJ | 0,00E+0 | 0,00E+0 | 0,00E+0 | **0,00E+0** | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| FW | $m^3$ | 4,31E-1 | 2,06E-2 | 7,91E-1 | **1,24E+0** | 4,64E-2 | 2,93E-3 | 0,00E+0 | 2,75E-3 | 3,66E-3 | 2,27E-1 | 0,00E+0 | -2,14E+0 |
| 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

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Hazardous waste disposed | MJ | 1,34E-3 | 7,27E-4 | 4,29E-1 | **4,31E-1** | 1,02E-3 | 1,51E-4 | 0,00E+0 | 1,49E-4 | 8,05E-5 | 3,41E-4 | 0,00E+0 | -4,18E-3 |
| Non-hazardous waste disposed | MJ | 2,44E+0 | 8,55E+0 | 5,02E+0 | **1,60E+1** | 3,94E+1 | 1,09E+0 | 0,00E+0 | 7,28E-2 | 3,11E+0 | 3,28E+0 | 0,00E+0 | -9,00E+0 |
| Radioactive waste disposed | MJ | 1,02E-2 | 1,98E-3 | 3,28E-3 | **1,55E-2** | 2,86E-3 | 3,78E-4 | 0,00E+0 | 3,76E-4 | 2,25E-4 | 6,32E-4 | 0,00E+0 | -1,98E-2 |

## Output flow indicators

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Components for re-use | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | **0,00E+0** | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| Material for recycling | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | **0,00E+0** | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| Materials for energy recovery | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | **0,00E+0** | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 4,70E+2 | 0,00E+0 | 0,00E+0 |
| Exported energy, electricity | MJ | 0,00E+0 | 0,00E+0 | 8,58E+0 | **8,58E+0** | 0,00E+0 | 4,35E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| Exported energy, thermal | MJ | 0,00E+0 | 0,00E+0 | 3,08E+0 | **3,08E+0** | 0,00E+0 | 8,37E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |

# Additional environmental Information – alternative end-of-life scenarios Re-Use / Recycling / Landfill

**Results per declared unit – 1 m³ CLT by Stora Enso**

| | | Re-use | | | | | Recycling | | | | | Landfill | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **C1** | **C2** | **C3** | **C4** | **D** | **C1** | **C2** | **C3** | **C4** | **D** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-fossil | kg $CO_2$ eq. | 4,01E+0 | 2,04E+0 | 0,00E+0 | 0,00E+0 | -4,44E+1 | 4,01E+0 | 2,04E+0 | 5,52E+0 | 0,00E+0 | -1,59E+1 | 4,01E+0 | 2,04E+0 | 0,00E+0 | 4,30E+0 | -4,54E-2 |
| GWP-biogenic | kg $CO_2$ eq. | 6,98E-4 | 8,12E-4 | 7,62E+2 | 0,00E+0 | -3,46E-1 | 6,98E-4 | 8,12E-4 | 7,62E+2 | 0,00E+0 | -1,63E-1 | 6,98E-4 | 8,12E-4 | 0,00E+0 | 1,01E+3 | -1,50E-4 |
| GWP luluc | kg $CO_2$ eq. | 3,97E-4 | 7,67E-4 | 0,00E+0 | 0,00E+0 | -8,34E-1 | 3,97E-4 | 7,67E-4 | 5,51E-4 | 0,00E+0 | -1,81E-1 | 3,97E-4 | 7,67E-4 | 0,00E+0 | 1,03E-3 | -5,57E-5 |
| GWP total | kg $CO_2$ eq. | 4,01E+0 | 2,05E+0 | 7,62E+2 | 0,00E+0 | -4,56E+1 | 4,01E+0 | 2,05E+0 | 7,68E+2 | 0,00E+0 | -1,62E+1 | 4,01E+0 | 2,05E+0 | 0,00E+0 | 1,02E+3 | -4,56E-2 |
| ODP | kg CFC 11 eq. | 8,49E-7 | 5,10E-7 | 0,00E+0 | 0,00E+0 | -7,51E-6 | 8,49E-7 | 5,10E-7 | 1,18E-6 | 0,00E+0 | -1,12E-6 | 8,49E-7 | 5,10E-7 | 0,00E+0 | 1,46E-6 | -4,49E-9 |
| AP | mol $H^+$ eq. | 2,00E-2 | 6,51E-3 | 0,00E+0 | 0,00E+0 | -2,38E-1 | 2,00E-2 | 6,51E-3 | 5,73E-2 | 0,00E+0 | -1,33E-1 | 2,00E-2 | 6,51E-3 | 0,00E+0 | 3,43E-2 | -1,43E-4 |
| EP-freshwater | kg P eq. | 1,32E-5 | 1,46E-5 | 0,00E+0 | 0,00E+0 | -6,01E-3 | 1,32E-5 | 1,46E-5 | 1,83E-5 | 0,00E+0 | -2,34E-3 | 1,32E-5 | 1,46E-5 | 0,00E+0 | 4,96E-5 | -2,51E-6 |
| EP-marine | kg N eq. | 7,75E-3 | 1,43E-3 | 0,00E+0 | 0,00E+0 | -6,19E-2 | 7,75E-3 | 1,43E-3 | 2,54E-2 | 0,00E+0 | -3,45E-2 | 7,75E-3 | 1,43E-3 | 0,00E+0 | 2,67E-2 | -2,16E-5 |
| EP-terrestrial | mol N eq. | 8,52E-2 | 1,59E-2 | 0,00E+0 | 0,00E+0 | -7,26E-1 | 8,52E-2 | 1,59E-2 | 2,78E-1 | 0,00E+0 | -4,02E-1 | 8,52E-2 | 1,59E-2 | 0,00E+0 | 1,41E-1 | -2,45E-4 |
| POCP | kg NMVOC eq. | 2,41E-2 | 6,27E-3 | 0,00E+0 | 0,00E+0 | -3,65E-1 | 2,41E-2 | 6,27E-3 | 7,65E-2 | 0,00E+0 | -1,35E-1 | 2,41E-2 | 6,27E-3 | 0,00E+0 | 1,14E-1 | -7,11E-5 |
| ADP minerals&metals[3] | kg Sb eq. | 2,04E-6 | 4,89E-6 | 0,00E+0 | 0,00E+0 | -2,07E-4 | 2,04E-6 | 4,89E-6 | 2,84E-6 | 0,00E+0 | -1,55E-4 | 2,04E-6 | 4,89E-6 | 0,00E+0 | 1,34E-5 | -2,68E-8 |
| ADP-fossil[3] | MJ | 5,45E+1 | 3,33E+1 | 0,00E+0 | 0,00E+0 | -6,99E+2 | 5,45E+1 | 3,33E+1 | 7,57E+1 | 0,00E+0 | -3,37E+2 | 5,45E+1 | 3,33E+1 | 0,00E+0 | 1,05E+2 | -8,78E-1 |
| WDP[3] | $m^3$ | 7,77E-2 | 1,11E-1 | 0,00E+0 | 0,00E+0 | -1,97E+1 | 7,77E-2 | 1,11E-1 | 1,08E-1 | 0,00E+0 | -2,01E+1 | 7,77E-2 | 1,11E-1 | 0,00E+0 | 5,36E-1 | -5,60E-3 |
| GWP-GHG[4] | kg $CO_2$ eq. | 4,01E+0 | 2,04E+0 | 0,00E+0 | 0,00E+0 | -4,50E+1 | 4,01E+0 | 2,04E+0 | 5,52E+0 | 0,00E+0 | -1,60E+1 | 4,01E+0 | 2,04E+0 | 0,00E+0 | 2,73E+2 | -4,55E-2 |
| PERE | MJ | 3,07E-1 | 4,23E-1 | 0,00E+0 | 0,00E+0 | -7,90E+2 | 3,07E-1 | 4,23E-1 | 4,26E-1 | 0,00E+0 | -2,93E+3 | 3,07E-1 | 4,23E-1 | 0,00E+0 | 4,66E+0 | -8,96E-2 |
| PERM | MJ | 0,00E+0 | 0,00E+0 | -7,43E+3 | 0,00E+0 | -7,06E+3 | 0,00E+0 | 0,00E+0 | -7,43E+3 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | -7,43E+3 | 0,00E+0 |
| PERT | MJ | 3,07E-1 | 4,23E-1 | -7,43E+3 | 0,00E+0 | -7,85E+3 | 3,07E-1 | 4,23E-1 | -7,43E+3 | 0,00E+0 | -2,93E+3 | 3,07E-1 | 4,23E-1 | 0,00E+0 | -7,42E+3 | -8,96E-2 |
| PENRE | MJ | 5,79E+1 | 3,53E+1 | 0,00E+0 | 0,00E+0 | -1,04E+3 | 5,79E+1 | 3,53E+1 | 8,04E+1 | 0,00E+0 | -3,60E+2 | 5,79E+1 | 3,53E+1 | 0,00E+0 | 1,12E+2 | -9,44E-1 |
| PENRM | MJ | 0,00E+0 | 0,00E+0 | -1,16E+2 | 0,00E+0 | -1,44E+2 | 0,00E+0 | 0,00E+0 | -1,16E+2 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | -1,16E+2 | 0,00E+0 |
| PENRT | MJ | 5,79E+1 | 3,53E+1 | -1,16E+2 | 0,00E+0 | -1,19E+3 | 5,79E+1 | 3,53E+1 | -3,51E+1 | 0,00E+0 | -3,60E+2 | 5,79E+1 | 3,53E+1 | 0,00E+0 | -3,69E+0 | -9,44E-1 |
| SM | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| RSF | MJ | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| NRSF | MJ | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| FW | $m^3$ | 2,75E-3 | 3,66E-3 | 0,00E+0 | 0,00E+0 | -1,18E+0 | 2,75E-3 | 3,66E-3 | 3,82E-3 | 0,00E+0 | -6,21E-1 | 2,75E-3 | 3,66E-3 | 0,00E+0 | 1,33E-1 | -4,29E-4 |
| HWD | kg | 1,49E-4 | 8,05E-5 | 0,00E+0 | 0,00E+0 | -4,09E-1 | 1,49E-4 | 8,05E-5 | 2,07E-4 | 0,00E+0 | -3,95E-4 | 1,49E-4 | 8,05E-5 | 0,00E+0 | 1,29E-4 | -6,58E-7 |
| NHWD | kg | 7,28E-2 | 3,11E+0 | 0,00E+0 | 0,00E+0 | -1,51E+1 | 7,28E-2 | 3,11E+0 | 1,01E-1 | 0,00E+0 | -3,61E+0 | 7,28E-2 | 3,11E+0 | 0,00E+0 | 9,41E+2 | -1,77E-3 |
| RWD | kg | 3,76E-4 | 2,25E-4 | 0,00E+0 | 0,00E+0 | -1,42E-2 | 3,76E-4 | 2,25E-4 | 5,23E-4 | 0,00E+0 | -1,52E-3 | 3,76E-4 | 2,25E-4 | 0,00E+0 | 6,81E-4 | -3,90E-6 |
| CRU | kg | 0,00E+0 | 0,00E+0 | 4,70E+2 | 0,00E+0 | 5,00E-2 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| MFR | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 4,70E+2 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| MER | kg | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 |
| EEE | MJ | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | -8,09E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 3,21E+1 | 0,00E+0 |
| EET | MJ | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | -2,86E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 0,00E+0 | 6,76E+1 | 0,00E+0 |

| | |
|---|---|
| Acronyms | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption; 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; HWD = Hazardous waste; NHWD = Non-hazardous waste; RWD = Radioactive waste; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electric; EET = Exported energy, thermal; * |

## Additional impact category indicators according to EN 15804+A2 – all modules including incineration end-of-life scenario

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Particulate matter emissions | Disease incidence | 7,63E-7 | 6,77E-7 | 1,76E-6 | **3,20E-6** | 2,26E-6 | 3,17E-7 | 0,00E+0 | 3,13E-7 | 1,78E-7 | 2,67E-6 | 0,00E+0 | -1,92E-6 |
| Ionising radiation, human health[5] | kBq U235 eq. | 7,01E-1 | 1,26E+0 | 5,07E+0 | **7,03E+0** | 1,83E+0 | 2,33E-1 | 0,00E+0 | 2,32E-1 | 1,44E-1 | 4,21E-1 | 0,00E+0 | -2,33E+1 |
| Ecotoxicity (freshwater)[3] | CTUe | 2,98E+2 | 1,83E+2 | 1,17E+3 | **1,65E+3** | 3,29E+2 | 3,32E+1 | 0,00E+0 | 3,19E+1 | 2,60E+1 | 1,72E+2 | 0,00E+0 | -1,36E+3 |
| Human toxicity, cancer effects[3] | CTUh | 2,84E-8 | 4,14E-9 | 1,87E-8 | **5,12E-8** | 8,98E-9 | 3,80E-9 | 0,00E+0 | 3,59E-9 | 7,08E-10 | 1,42E-7 | 0,00E+0 | -4,28E-8 |
| Human toxicity, non-cancer effects[3] | CTUh | 6,44E-7 | 1,13E-7 | 5,63E-7 | **1,32E-6** | 3,46E-7 | 2,45E-8 | 0,00E+0 | 2,19E-8 | 2,73E-8 | 4,55E-7 | 0,00E+0 | -1,09E-6 |
| Land use related impacts / soil quality[3] | dimensionless | 3,72E+4 | 1,35E+2 | 2,13E+3 | **3,95E+4** | 4,82E+2 | 7,24E+0 | 0,00E+0 | 6,94E+0 | 3,80E+1 | 2,35E+1 | 0,00E+0 | -3,90E+2 |

## Additional impact category indicators according to EN 15804+A2 - alternative end-of-life scenarios Re-Use / Recycling / Landfill

| Results per declared unit – 1 m³ CLT by Stora Enso | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Re-use** | | | | | **Recycling** | | | | | **Landfill** | | | | |
| **Indicator** | **Unit** | **C1** | **C2** | **C3** | **C4** | **D** | **C1** | **C2** | **C3** | **C4** | **D** | **C1** | **C2** | **C3** | **C4** | **D** |
| Particulate matter emissions | Disease incidence | 3,13E-7 | 1,78E-7 | 0,00E+0 | 0,00E+0 | -1,52E-6 | 3,13E-7 | 1,78E-7 | 1,52E-6 | 0,00E+0 | -5,04E-6 | 3,13E-7 | 1,78E-7 | 0,00E+0 | 7,39E-7 | -3,63E-10 |
| Ionising radiation, human health[5] | kBq U235 eq. | 2,32E-1 | 1,44E-1 | 0,00E+0 | 0,00E+0 | -6,36E+0 | 2,32E-1 | 1,44E-1 | 3,22E-1 | 0,00E+0 | -1,92E+0 | 2,32E-1 | 1,44E-1 | 0,00E+0 | 4,86E-1 | -4,64E-3 |
| Ecotoxicity (freshwater)[3] | CTUe | 3,19E+1 | 2,60E+1 | 0,00E+0 | 0,00E+0 | -1,52E+3 | 3,19E+1 | 2,60E+1 | 4,43E+1 | 0,00E+0 | -7,60E+2 | 3,19E+1 | 2,60E+1 | 0,00E+0 | 8,88E+1 | -2,67E-1 |
| Human toxicity, cancer effects[3] | CTUh | 3,59E-9 | 7,08E-10 | 0,00E+0 | 0,00E+0 | -4,69E-8 | 3,59E-9 | 7,08E-10 | 1,71E-9 | 0,00E+0 | -1,13E-7 | 3,59E-9 | 7,08E-10 | 0,00E+0 | 3,04E-9 | -7,88E-12 |
| Human toxicity, non-cancer effects[3] | CTUh | 2,19E-8 | 2,73E-8 | 0,00E+0 | 0,00E+0 | -1,22E-6 | 2,19E-8 | 2,73E-8 | 3,21E-8 | 0,00E+0 | -4,89E-7 | 2,19E-8 | 2,73E-8 | 0,00E+0 | 4,00E-7 | -2,14E-10 |
| Land use related impacts / soil quality[3] | dimensionless | 6,94E+0 | 3,80E+1 | 0,00E+0 | 0,00E+0 | -3,75E+4 | 6,94E+0 | 3,80E+1 | 9,64E+0 | 0,00E+0 | -1,59E+4 | 6,94E+0 | 3,80E+1 | 0,00E+0 | 2,74E+2 | -7,69E-2 |

[3] 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.

[5] Disclaimer: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

# References

EPD International (2021): General Programme Instructions for the International EPD® System. version 4.0 dated 2021-03-29.

EPD International (2018): PCR 2019:14 Construction products, version 1.2.5, dated 2022-11-01

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## Standards

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

EN 16485:2014 Round and sawn timber. Environmental product declarations. Product category rules for wood and wood-based products for use in construction

EN 16449:2014 Wood and wood-based products. Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

EN 15942:2012 Sustainability of construction works - Environmental product declarations - Communication format business-to-business

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

ISO 14044:2006 Environmental management. Life Cycle Assessment. Requirements and guidelines.

## Detailed product information

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**CLT technical brochure**

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