

# Environmental Product Declaration

According to EN 15804 and ISO 14025

Division Wood Products



## Cross Laminated Timber – CLT

**Product:** Cross Laminated Timber (CLT). CLT is a solid wood construction product consisting of at least three bonded single-layer panels arranged at right angles to each other.

**Manufacturer:** Stora Enso Wood Products Oy Ltd, P.O.Box 309, FI-00101 Helsinki

**Manufacturing sites:** Ybbs and Bad St. Leonhard (Austria)

**Declared unit:** 1 m<sup>3</sup> CLT

**Date of issue:** 15 April 2016

**Valid until:** 31 December 2019

**Reference year:** 2014

The declaration is calculated on the basis of standard EN 15804:2012+A1:2014. EPDs of construction products may not be comparable if they do not comply with this standard.

**Verification:**

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025:2010

internal       external

**Third party verifier:** [REDACTED]



## 1 Product

Cross Laminated Timber by Stora Enso is a solid wood construction product consisting of bonded single-layer panels arranged at right angles to each other. It can measure up to 2.95 m × 16.00 m. CLT solid wood panels are made up of several layers (3, 5, 7, or 8 layers) and are available in different panel thicknesses (maximum thickness 0.4 m). The layers are bonded using formaldehyde-free adhesives. Panels of CLT are used for the construction of houses and apartment buildings, as well as for industrial and commercial buildings. Panel can be used in wall, ceiling and roof constructions.

### Technical information

Wood species: spruce (*Picea abies*), pine (*Pinus sylvestris*)

Wood moisture: 12% ± 2%

Glue/adhesive: polyurethane resin

Composition: wood (%), resin (%)

Visual quality: non-visible, industrial visible and visible quality; the surface are sanded on both faces

Weight: approx.. 470 kg/m<sup>3</sup>

Water vapour transmission resistance: 20–50 μ (EN 12524)

Thermal conductivity λ: 0.11 W/(mK) (EN 12524)

Specific heat capacity c<sub>p</sub>: 1,600 J/(kgK) (EN 12524)

Usage classes: 1 and 2 (EN 1995-1-1)

Information and guidance on safe and effective installation, use and disposal of the product can be obtained from

- <http://www.clt.info>
- <http://www.storaenso.com> > Wood Products > Products & Services

## Production

For verification of the responsible and legal wood origin, Stora Enso applies PEFC™ and FSC® Chain of Custody certified wood traceability systems. (FSC trademark C125195).

Stora Enso's mills apply ISO 9001, ISO 14001, ISO 50 001 and OHSAS 18001 based management systems for continual improvement in quality, environment, energy efficiency and safety of their operations.

## 2 Assessment coverage and scenarios

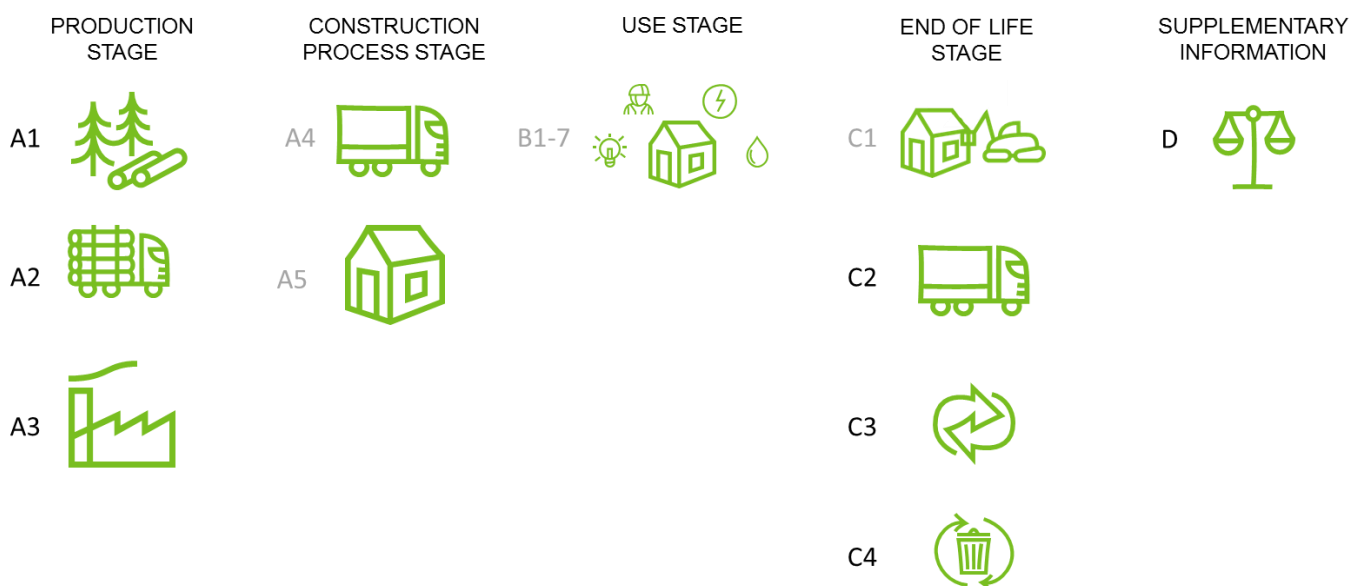
This environmental product declaration covers life cycle information from the product stage (modules A1–A3) and from a scenario based end of life stage (modules C2–C4). Supplementary information beyond the building life cycle is also provided (module D). Other life cycle phases were excluded.

Life cycle assessment was done according ISO 14040 and ISO 14044 standards. Functional unit of calculation was 1 m<sup>3</sup> of CLT.

The EPD is representative for 100% of CLT manufactured by Stora Enso. The variability of the results is indicated in the environmental parameters tables.

End of life scenario

- to reuse
- to recycling
- to incineration -> substitute natural gas



### 3 Environmental Parameters

Life cycle assessment was done with Sulca 4.2 LCA software and generic data was from ecoinvent and Lipasto databases. Potential environmental impacts were calculated according EN15804 + A1 impact assessment factors.

#### Use of resources

Parameters describing resource use	Unit	Production		End of life	Credits
		[A1-A3]		[C2-C4]	[D]
Use of renewable primary energy resources as energy	MJ	1630	± 121	86.7	28.8
Use of renewable primary energy resources as raw material	MJ	7470	± 8	0	0
Total use of renewable primary energy resources	MJ	9100	± 129	86.7	28.8
Use of non-renewable primary energy resources as energy	MJ	626	± 117	235	-7480
Use of non-renewable primary energy resources as raw material	MJ	338	± 4	0	0
Total use of non-renewable primary energy resources	MJ	964	± 121	235	-7480
Use of secondary material	kg	0	± 0	0	0
Use of renewable secondary fuels	MJ	0	± 0	0	0
Use of non-renewable secondary fuels	MJ	0	± 0	0	0
Net use of fresh water	m <sup>3</sup>	0.400	± 0.054	0.260	0.0820

#### Environmental impacts

Parameters describing environmental impacts	Unit	Production		End of life	Credits
		[A1-A3]		[C2-C4]	[D]
Abiotic depletion potential (elements)	kg Sb-eq	-		-	-
Abiotic depletion potential (fossil)	MJ	959	± 120	223	-7490
Acidification potential of soil and water	kg SO <sub>2</sub> -eq	0.240	± 0.021	1.16	0.590
Depletion potential of stratospheric ozone layer	kg CFC 11-eq	8.14E-06	± 1.41E-06	4.40E-06	-6.13E-05
Global warming potential	kg CO <sub>2</sub> -eq	-671	± 7	753	-414
Eutrophication potential	kg PO <sup>(3-)</sup> -eq 4	0.347	± 0.100	0.208	0.109
Formation potential of tropospheric ozone	kg Ethene-eq	0.00682	± 0.00068	0.00843	-0.0153

#### Waste and output flows

Other environmental information describing waste categories and output flows	Unit	Production		End of life	Credits
		[A1-A3]		[C2-C4]	[D]
Hazardous waste disposal	kg	0.0592	± 0.0066	0	0
Non-hazardous waste disposal	kg	0.0295	± 0.0078	0	0
Radioactive waste disposal	kg	0	± 0	0	0
Components for re-use	kg	0	± 0		0
Materials for recycling	kg	0.168	± 0.017		0
Materials for energy recovery	kg	0	± 0	470	0
Exported energy, heat	MJ	0	± 0	5990	0
Exported energy, electricity	kWh	0	± 0	0	0

#### 4 Additional information

Additional technical information	Parameter	Unit	Result
Product stage; A1 Raw material supply	Origin of wood	Countries	Austria, Czech Republic, Slovenia, Slovakia, Poland, Germany, Hungary
	Stored biogenic carbon	kg CO <sub>2</sub>	-731
End of life stage; C2–C4 Transport, waste processing and disposal	Transport of CLT waste to processing	km	50
	Sorting and chipping of the waste CLT	kg	470
	Heat from waste wood chips	MJ	5990
	Stored biogenic carbon release	kg CO <sub>2</sub>	731
Benefits and loads beyond system boundary; D Credits	Heat from waste wood chips substituting equivalent heat quantity produced from natural gas.		

#### 5 References

EN 15804:2012 + A1:2014 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.

Sulca 4.2 - Sustainability tool for Ecodesign, Footprints & LCA. VTT Technical research centre of Finland Ltd

Ecoinvent database. <http://www.ecoinvent.org/>

Lipasto database. <http://lipasto.vtt.fi/en/index.htm>