

REPORT

Contract No.:	255/2012/8 – BB	27/02/2012 DEA/GOH
Customer:	Stora Enso WP Bad St. Leonhard GmbH Wisperndorf 4 AT-9462 Bad St. Leonhard	
Subject:	Ecological balance sheet of the product Stora Enso CLT within the scope of the EcoTimber project	
Date of contract:	29/06/2010 (funding agreement)	
Date of first data delivery:	05/05/2011	
Date/Period of testing:	October 2011	
Period of validity:	--	
Pages:	4	
Enclosures:	4	

1. Assignment

By transmitting the data acquisition sheet for their product Stora Enso CLT on 05/05/2011, the company Stora Enso WP Bad St. Leonhard GmbH, AT-9462 Bad St. Leonhard confirmed their participation in the EcoTimber project and therewith assigned Holzforschung Austria with the generation of a life cycle inventory analysis.

This report is based on the calculation in Simapro on the basis of the enclosed life cycle inventory analysis.

2. Method / Principles

ÖNORM EN ISO 14040 Environmental management – Life cycle assessment – Principles and framework (01/11/2009)

ÖNORM EN ISO 14044 Environmental management – Life cycle assessment – Requirements and instructions (01/10/2006)

ÖNORM fprEN 15804 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products (01/07/2011)

CML 2001: Centre of Environmental Science, Leiden University et al.: Life Cycle Assessment: An operational guide to the ISO standards. Final Report, May 2001.

Hischier et al.: Implementation of Life Cycle Impact Assessment Methods, Data v2.1, St. Gallen, May 2009

Frischknecht et al.: Overview and Methodology, Data v2.0, Dübendorf, December 2007

Calculation program Simapro 7.3.2 with implemented database Ecoinvent.

System limits: Semi-finished product from production at the same site up to product ready for delivery

3. Data acquisition

3.1. Documents

Material flow analysis of 05/05/2011

E-mail – correspondence

Protocol of the factory visit of 23/10/2011

3.2. Data quality

Data quality for materials balance: very good

Data quality for energy balance: data plausible

Data quality for emissions: no emissions measurement available

Factory visit was undertaken

3.3. Further comments

The balance does not contain any infrastructures.

An emissions measurement for the external combined heat and power plant, which supplies the factory with heat, was not available.

For calculation of the life cycle inventory analysis, recalculation to the atro densities deposited in Simapro is undertaken.

The life cycle inventory analysis refers to 1 kg of the main product, wherein the results are always stated incl. allocation.

4. Results

4.1. Result of the life cycle inventory analysis in indicators referring to 1 kg of the end product

Table 1: Indicators

Indicator	Unit	CLT, incl. allocation per kg
Global warming potential (GWP100)	kg CO ₂ eq.	0.39
Global warming potential (GWP100) with CO ₂ storage	kg CO ₂ eq.	-1.77
Acidification potential (AP)	kg SO ₂ eq.	0.0017
Eutrophication potential (EP)	kg PO ₄ --- eq.	0.0005
Ozone depletion potential (ODP)	kg CFC-11 eq.	0.00000005
Photo-smog potential (POCP)	kg C ₂ H ₄ eq.	0.0007
Primary energy contents not renewable, total	MJ eq.	6.53
Primary energy contents renewable	MJ eq.	9.04
Feedstock biomass	MJ eq.	18.85

5. Comments

The adhesives are transported to the factory over 800 – 1800 km.

Transport distances, above all by truck, are among the main contributors to the environmental impact, which could be clearly reduced by selecting the right means of transport.


The maximum possible CO₂ storage within the scope of the GWP amounts to -1.81 kg CO₂ eq. per kg of product.

6. Validity

With each modification in the manufacture of the above-stated product, either materials used, additives or production processes, the validity of this document is no longer given.

This document does not represent a complete environmental product declaration. For that, further product characteristics must still be acquired and stated.

HOLZFORSCHUNG AUSTRIA


DI A. Deutsch
Technical consultant
DI Dr. M. Teibinger
Head of Unit

4 Enclosures

Life cycle inventory analysis CLT per m³

Life cycle inventory analysis CLT, incl. allocation per m³

Life cycle inventory analysis CLT, incl. allocation per kg

Graphic: Characterisation of the indicators

In case of dispute the original German version prevails. This translation is for information purposes only.

SimaPro 7.3
Projekt

Prozess
ECOTIMBER

Datum: 28.02.2012 Zeit:

14:58

Comment

Datenbasis 2009; Dichten lt. Tabelle Ecoinvent, daher m3 umgerechnet (430/450kg/m3),
bei gleicher atro-Tonnage Holz.
Transportkilometer in kg/m3 frisch; Müll prozentuell aufgeteilt nach Prozessschritten; keine Emissionsmessung vorhanden;

Products

STORA ENSO CLT (2011)	23404,71 m3	99,9356 430kg/m3/450kg/m3
STORA ENSO SÄGESPÄNE CLT (2011)	602,745 m3	0,0214 430kg/m3/450kg/m3
STORA ENSO HACKSCHNITZEL CLT (2011)	1183,75 m3	0,0421 430kg/m3/450kg/m3
STORA ENSO SONSTIGES CLT (2011)	23,53 m3	0,0009 430kg/m3/450kg/m3

Inputs

Materials/fuels		
STORA ENSO HOBELWARE verified iA (2011)	25214,72 m3	26387,5m3 *430/450
PUR 1K	130611,8 kg	1,1kg/l*118738l
Basismodul: Transport, LKW 32t/ RER S	102269039,4 kgkm	783km
EPI - POLYMER ISOCYANAT	20584,278 kg	1,287kg/l*15994l
Basismodul: Transport, LKW 32t/ RER S	40057004,99 kgkm	1946km
Tap water, at user/RER U	5136000 kg	8560*0,6*1000
Synthetic rubber, at plant/RER U	12 kg	Reifen klein; 120*0,1
Basismodul: Transport, LKW 32t/ RER S	2280 kgkm	120*0,1*190
Lubricating oil, at plant/RER U	18787,5 kg	Maschinenöl; 93937,75*0,2
Basismodul: Transport, LKW 32t/ RER S	1747242,15 kgkm	93937,75*0,2*93
Chemicals organic, at plant/GLO U	340 kg	Schmierfette; 1700*0,2
Basismodul: Transport, LKW 32t/ RER S	85000 kgkm	1700*0,2*250
SCHLEIFPAPIER 60	161,65 kg	Annahme: 0,305kg/m2*530m2
Basismodul: Transport, LKW 32t/ RER S	25864 kgkm	Annahme: 161,65*160 (Firma Bohr)
Lubricating oil, at plant/RER U	1895,33 kg	Logistik: Motoröl; 9476,65*0,2
Basismodul: Transport, LKW 32t/ RER S	360112,7 kgkm	9476,65*0,2*190
INITIAL BRILLIANT KRAFTREINIGER	150 kg	1000*0,5*0,3; 150
INITIAL BRILLIANT TWIN	150 kg	1000*0,5*0,3; 150
Basismodul: Transport, LKW 32t/ RER S	68100 kgkm	1000*0,5*0,3*227; 68100
Electricity/heat		
Diesel, burned in building machine/GLO U	1558959,2 MJ	0,1*436247*0,833*42,9
Basismodul: Transport, LKW 32t/ RER S	2543756,3 kgkm	0,1*436247*0,833*70
STORA ENSO Elektrizität	2500920 kWh	
STORA ENSO Elektrizität	49066 kWh	Licht, Absaugung ...;

Waste to treatment

Process-specific burdens, municipal waste incin	4991,118 kg
Recycling cardboard/RER U	430,5 kg
Recycling mixed plastics/RER U	430,5 kg

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Projekt

Prozess
ECOTIMBER

Datum: 28.02.2012 Zeit:

14:57

Comment

Datenbasis 2009; Dichten lt. Tabelle Ecoinvent, daher Umrechnung (430kg/m3/450kg/m3)
bei gleicher atro-Tonnage Holz.
Verpackung etc. ermittelt durch Faktor 1/23407,71 m3. Transportkilometer in kg/m3 feucht;
Müll prozentuell aufgeteilt nach Prozessschritten; keine Emissionsmessung vorhanden;

Products

STORA ENSO CLT inkl.Allokation per m3 (2011)

100 u=12% bei Dichte 450 kg/m3!

1 m3

Inputs

Materials/fuels

STORA ENSO CLT (2011)

Packaging film, LDPE, at plant/RER U

Basismodul: Transport, LKW 32t/ RER S

PP-FOLIE

Basismodul: Transport, LKW 32t/ RER S

Chemicals organic, at plant/GLO U

Basismodul: Transport, LKW 32t/ RER S

INITIAL BRILLIANT KRAFTREINIGER

INITIAL BRILLIANT TWIN

Basismodul: Transport, LKW 32t/ RER S

Softwood, allocation correction, 1/RER U

1 m3

0,6194 kg

893,1977 kgkm

0,573 kg

588,4535 kgkm

0,2811 kg

288,7326 kgkm

0,0064 kg

0,0064 kg

2,9097 kgkm

-0,07114 m3

Trioplast; 14498kg

14498*1442

PP-Folie; 44700*0,3

Annahme: (1442+612)*0,5*44700*0,3

Kunststoffgurte; 32900kg*0,2

Annahme: (1442+612)*0,5*32900*0,2

1000*0,5*0,3

1000*0,5*0,3

1000*0,5*0,3*2*227

0,92822 - 0,99356

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SimaPro 7.3
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Prozess Datum: 28.02.2012 Zeit: 14:56:34
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Comment

Datenbasis 2009; Dichten lt. Tabelle Ecoinvent, daher m³ umgerechnet (430/450kg/m³),
bei gleicher atro-Tonnage Holz.
Müll prozentuell aufgeteilt nach Prozeßschritten; keine Emissionsmessung vorhanden;

Products

STORA ENSO CLT inkl.Allokation per kg (2011)

100

1 kg

Inputs

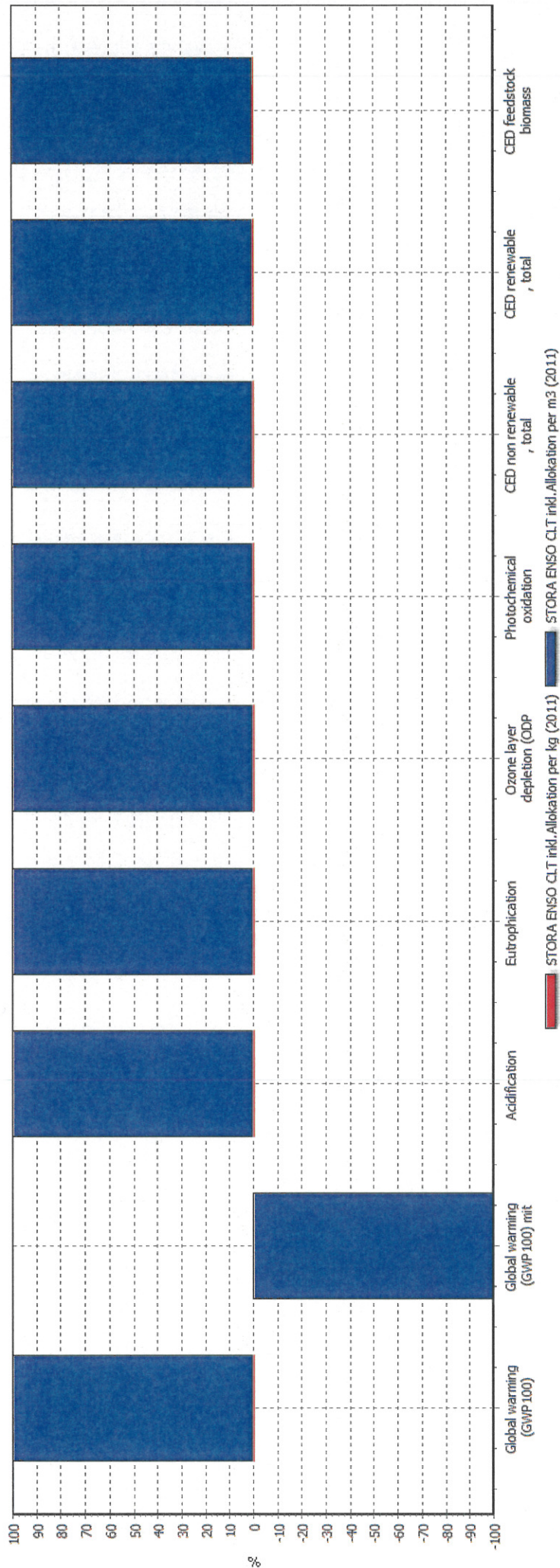
Materials/fuels

STORA ENSO CLT inkl.Allokation per m³ (2011)

0,0019841 m³

1kg /(430kg/m³ * 1,12 * (450/430) kg/m³)

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1 kg STORA ENSO CLT m3 (2011) analysieren; Methode: CML 2 bl 2000 mit KEA e-rne, 6 WK (POCP adaptiert) V2.05 / World, 1990 / Charakterisierung

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