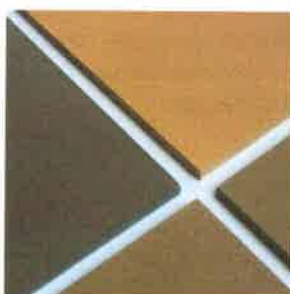


Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 for:

Cement-bonded particleboards CETRIS®
CIDEM Hranice, a.s.



Programme: **National Eco-labeling Programme**
www.cenia.cz

National operator: **CENIA - Czech Environmental Information Agency**

EPD registration number: **3013EPD-15-0346**

Approval date: **2015-10-13**

Valid until: **2020-10-12**

Revision date:

Geographical scope: **Europe, Global**



Company

CETRIS Division is a producer of board material marketed under the **CETRIS® cement-bonded particleboard** trademark.

The construction of a plant for manufacturing cement bonded particleboards in the Czech Republic was initiated in 1987 and the plant was commissioned in 1991. In 2011, it has been a full 20 years since the material was launched onto the market.

During the first years of production the range was basically limited to the basic CETRIS® BASIC board without surface finish. Gradually, the product portfolio expanded, including a variety of services, such as cutting, milling, grinding, drilling, surface finish, etc. At present, we offer 11 types of cement bonded particleboards and are constantly developing new types in order to satisfy the needs and requirements of our customers.

CIDEM Hranice, a.s. - CETRIS division is currently the largest producer of cement bonded particleboards in Europe. The production line capacity is 55,000 m³ per year.



Product

Declared unit
1 m³ of Cement-bonded particleboards

UN CPC375
**375 Articles of concrete, cement and plaster
3752 Boards, blocks and similar articles of vegetable
fibre, straw or wood waste agglomerated with mineral
binders**

This EPD is valid for following products of CIDEM Hranice, a.s. cement bonded particle boards:

cement bonded particle board CETRIS® - **basic**
cement bonded particle board CETRIS® - **custom-made**
cement bonded particle board CETRIS® - **painting, without
other services**
cement bonded particle board CETRIS® - **painting, with other
services**

SYSTEM BOUNDARY and PRODUCTION PROCESS

The system boundary covers the production of raw materials, all relevant transport down to factory gate and manufacturing by CIDEM Hranice, a.s. The review framework comprises the following details:

- Raw materials acquisition and transport,
- Further processing of raw materials,
- Production operations,
- Energy and water consumption,
- Waste management; and
- Packaging of the final product for delivery.

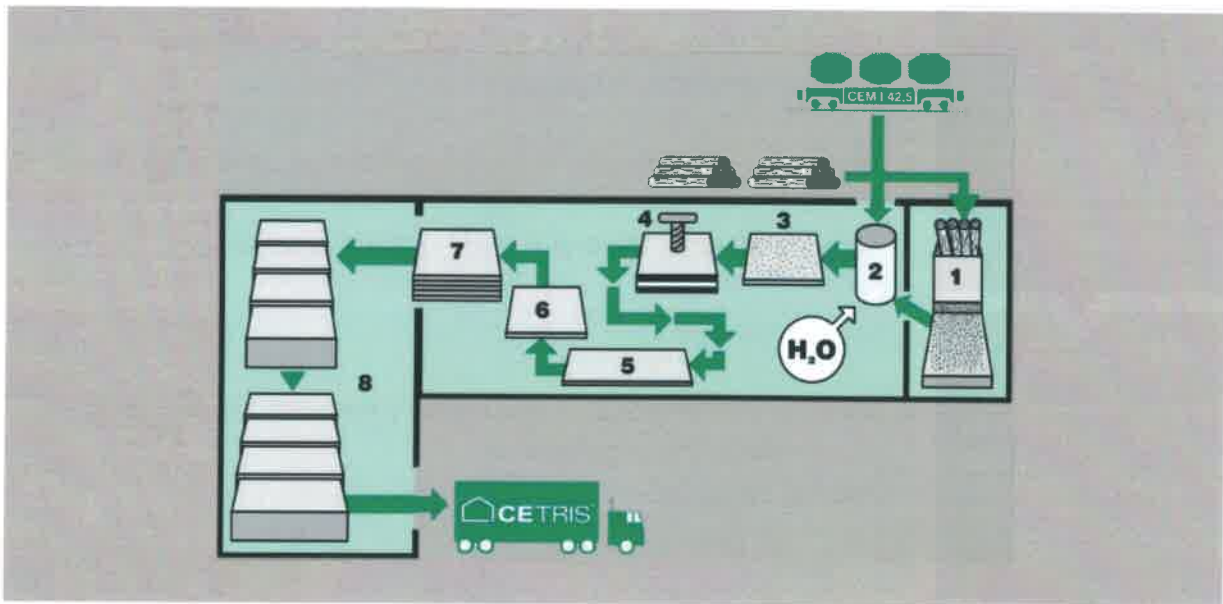
The system boundary of the LCA study conducted on the CIDEM Hranice, a.s. cement-bonded particleboards is shown including packaging of the final product for delivery.



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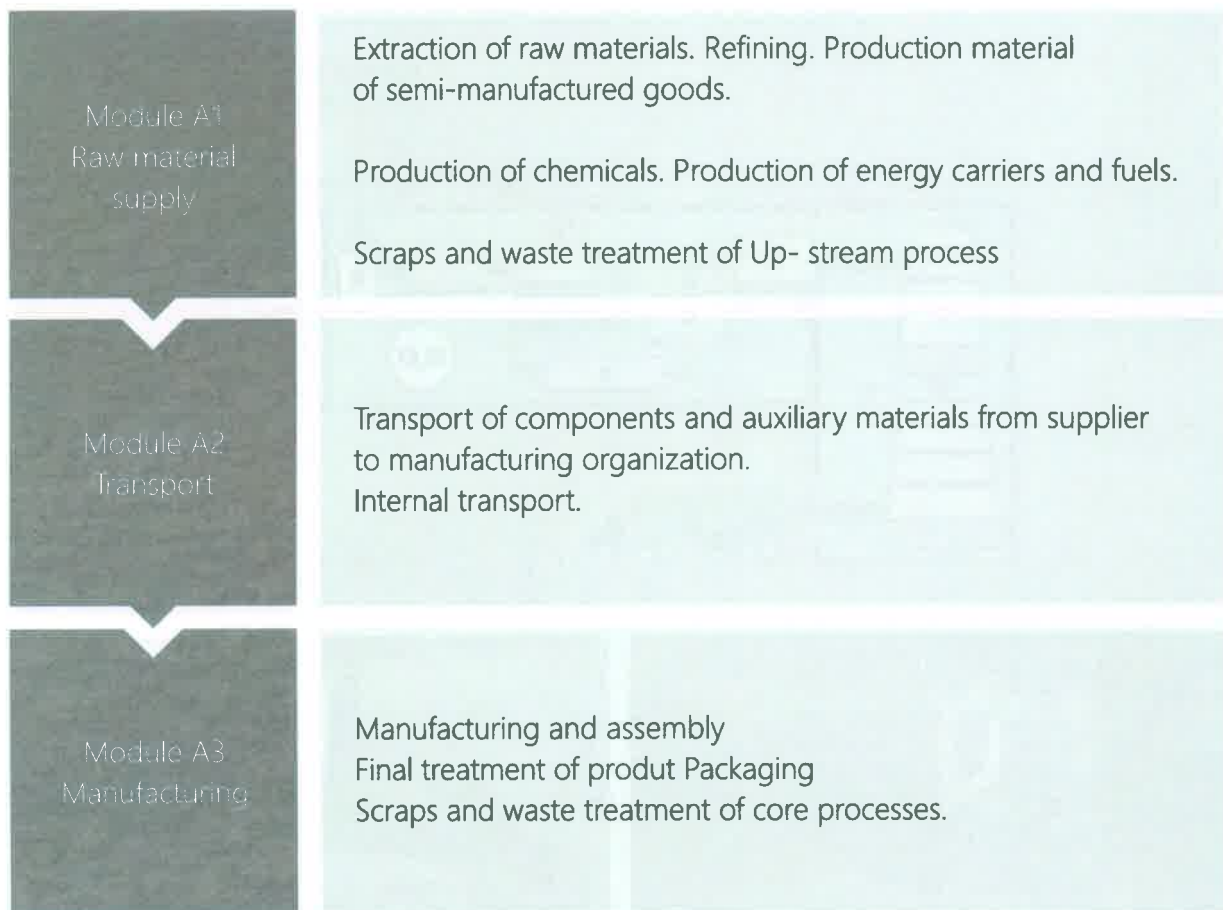
Production flow-chart of CIDEM Hranice, a.s
Cement bonded particleboards:

- | | |
|--------------------------|--------------|
| 1 spilling | 5 drying |
| 2 preparation of mixture | 6 formatting |
| 3 layering of boards | 7 storage |
| 4 pressing | 8 transport |



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System Boundary of the LCA study conducted on CIDEM Hranice, a.s
cement bonded particleboards



Description of the system boundary (D = Declared, Included in LCA, MND = Module Not Declared)

A1 - A3 Product stage	Raw material supply	A1	D
	Transport	A2	D
	Manufacturing	A3	D
A4 - A5 Construction process	Transport from the gate to the site	A4	MND
	Assembly	A5	MND
B1 - B7 Use stage	Use	B1	MND
	Maintenance	B2	MND
	Repair	B3	MND
	Replacement	B4	MND
	Refurbishment	B5	MND
	Operational water use	B6	MND
	Operational energy use	B7	MND
C1 - C4 End of life stage	De-construction	C1	MND
	Transport	C2	MND
	Waste processing	C3	MND
	Disposal	C4	MND
D Benefits and loads beyond the system boundaries	Reuse- Recycling - Recovery Potential	D	MND

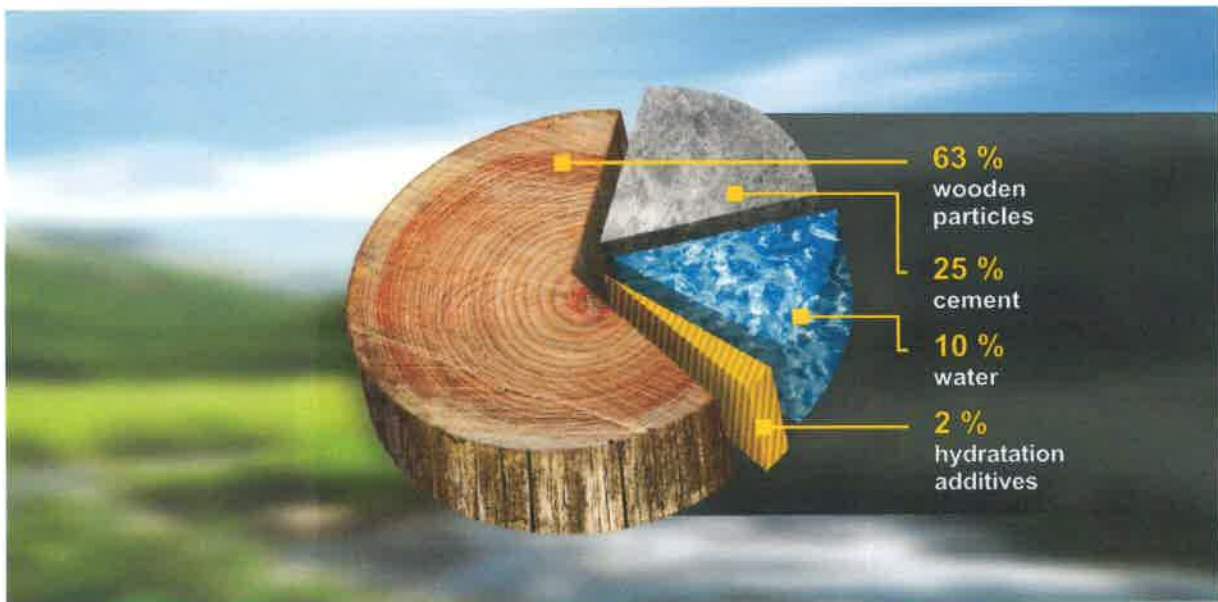


Content declaration

The CIDEM Hranice, a.s cement bonded particleboards consists of Portland cement and mixture of wooden chips. All of the constituents of cement-bonded particleboards are not classified as harmful.

Product content declaration

All materials/components	Substances	Volume %	CAS number	Environmental class	Health class
Mixture of wood chips	-	63	-	No	No
Portland cement	-	25	-	No	No
Water	-	10	-	No	No
Hydration additives	-	2	-	No	No



Environmental performance

Environmental indicators shown below are calculated according to ISO 14025 and EN15804. Results per declared unit – 1 m3 of cement-bonded particleboards are presented. The values represent summarization of production modules A1 – A3.

Use of resources

Life Cycle Inventory Analysis indicators describing the use of resources as summarization of modules A1 – A3.

Resource consumption	Unit	CETRIS Basic	CETRIS custom made	CETRIS painted, without other services	CETRIS painted, with other services
Crude oil	MJ	869	898	1302	1331
Hard coal	MJ	900	908	1267	1273
Lignite	MJ	1600	1615	2350	2358
Natural gas	MJ	693	706	1380	1392
Soil	Kg	126	130	134	138
Clay	Kg	47	55	48	57
Gravel	Kg	108	108	108	108
Inert rock	Kg	1890	1910	2840	2850
Limestone (calcium carbonate)	Kg	1376	1376	1412	1412
Natural Aggregate	Kg	90,8	98,3	92,3	99,8



Parameter	Unit	CETRIS			
		Basic	custom made	painting, without other services	painting, with other services
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	12537	12545	12788	12794
Use of renewable primary energy resources used as raw materials	MJ	6723	6722	6722	6723
Total use of renewable primary energy resources	MJ	19260	19267	19510	19517
Use of non - renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	4939	5013	7648	7709
Use of non - renewable primary energy resources used as raw materials	MJ	4	4	4	4



Parameter	Unit	CETRIS Basic	CETRIS custom made	CETRIS painted, without other services	CETRIS painted, with other services
Total use of non-renewable primary energy resources	MJ	4943	5017	7652	7713
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 ³	278	282	442	445



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Potential environmental impacts

Following from A1, A2 and A3 modules aggregated data are per D.U. expressed.

	Unit	CETRIS Basic	CETRIS custom made	CETRIS painted, without other services	CETRIS painted, with other services
Abiotic depletion potential (elements)	kg Sb eq.	0,0015	0,0015	0,0016	0,0017
Abiotic depletion potential (fossils)	MJ	4062	4127	6299	6355
Acidification potential	kg SO ₂ e	2,31	2,34	3,58	3,61
Eutrophication potential	kg PO ₄ ³⁻ e	0,288	0,292	0,372	0,375
Global warming potential	kg CO ₂ e (GWP100)	-103	-97	84	89
Biogenic carbon stored in product [kg CO ₂ -Equiv.]	kg CO ₂ e (GWP100)	1000*	850**	1000*	850**
Ozone Layer Depletion Potential	kg CFC11e	7,11E-06	7,11E-06	7,19E-06	7,19E-06
Photochemical oxidant creation potential	kg C ₂ H ₄ e	0,326	0,328	0,401	0,403

* estimated value

** shape dependent, value estimate based on year average shapes

The environmental indicators used for these calculations are based on CML Baseline V4.2 April 2013.

Other indicators describing waste categories

	Unit	CETRIS Basic	CETRIS custom made	CETRIS painted, without other services	CETRIS painted, with other services
Non-hazardous waste	kg	111	314	111	314
Hazardous waste	kg	0,10	0,10	0,10	19,48
Radioactive waste	kg	0	0	0	0

Release of dangerous substances during the use stage
No health and environmental impacts during use is observed.

Additional information

In CIDEM Hranice, a.s. - CETRIS division a continuous attention is paid to the quality of our products. Already back in 1996 we obtained the EU ISO 9002 quality certificate awarded by the international accredited certification body, Lloyd's Register Quality Assurance. After a new standard was published this system was recertified in 2003 pursuant to the new ISO 9001 standard. The production of CETRIS® cement-bonded particleboards is further supervised by authorized and notified entities. As the company exports the products to all of Europe, the cement-bonded particleboards are certified not only pursuant to European harmonised standards, but also pursuant to the national standards.

Company has established and applied a combined management system for development, production, sales and services of its products. An audit was performed, Report N. PRA 0003857/0012. Proof has been furnished that the requirements according to DIN EN ISO 9001:2000 are fulfilled.

Obtained certificates EN ISO 9001, and the commitment of whole company's staff to quality give the customers a guarantee of a standard quality of products.

For recommended use of cement bonded particleboards follow <http://www.cidem.cz>. After the end of life it is possible to deposit particle boards as common non-hazardous waste.

Positive attitude to environment of CIDEM Hranice is declared also by certificate of PEFC obtained according to TD CFCS 2002:2013 ensuring that all wood matter used in CIDEM Hranice originated from verified resources.



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Programme-related information and verification

See PCR for detailed requirements.

Programme:	National Eco-labeling Programme Czech Environmental Information Agency CENIA www.cenia.cz
EPD registration number:	3013EPD-15-0346
Published:	2015-10-13
Valid until:	2020-10-12
Revision date:	
Product Category Rules:	PCR 2012:01. Product group classification: Multiple UN CPC Codes, Construction products and construction services. Version 2.0
Product group classification:	375 Articles of concrete, cement and plaster 3752 Boards, blocks and similar articles of vegetable fibre, straw or wood waste agglomerated with mineral binders
Reference year for data	2014
Geographical scope	Europe, Global



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Czech Republic, Prazska 810/16, 102 21 Praha 10 info@vupa.cz www.vupa.cz

Product category rules (PCR):

EPD International AB, Sweden

PCR moderator:

Martin Erlandsson, IVL Swedish Environmental Research Institute, Sweden, martin.erlandsson@ivl.se

PCR review was conducted by:

The International EPD® System Technical Committee

Independent verification of the declaration and data, according to ISO 14025:2006:

EPD Process Certification (internal)

EPD Verification (external)

Third party verifier:

Barbora Vlasatá, Certification Body for EPD no. 3013

VÚPS – Certifikační společnost, s.ro.

Pražská 16, 102 21 Praha 10, Czech Republic

www.vups.cz

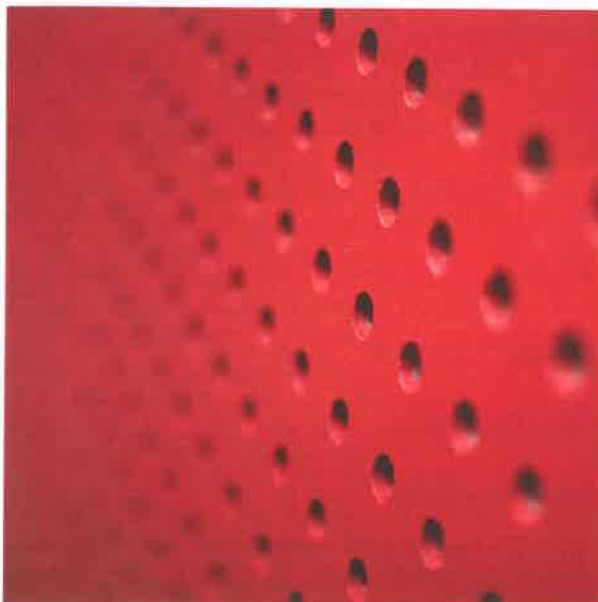


Independent verification was carried out on July 16th 2015 in accordance with the ISO 14025:2006 and EN 15804:2013. Results of the verification of the Final Report no. P-3013EPD-15-0346 of October 13th 2015, including a statement of an independent verifier and conditions of verification.



Accredited by:

Český institut pro akreditaci, www.cia.cz



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Mandatory statements

The LCA for this EPD is conducted according to the guidelines of ISO 14040-44, the requirements given in the Product Category Rules (PCR) document for Construction Products and CPC 54 Construction Services (PCR 2012:01 Version 2.0, 2015-03-03), EN 15804+ A1:2013 Sustainability of Construction Works: Environmental Product Declarations core rules for the product category of construction products and the general program instructions by The International EPD System in accordance with ISO 14025 standards.

The inventory for the LCA study is based on the 2014 production. Production plant is located in Hranice, Czech Republic. For development of this declaration GaBi software with the latest version characterization factors (April 2013) and the Ecoinvent database was used.

EPD of construction products may not be comparable if they do not comply with EN 15804.

This EPD covers the Cradle to Gate stage.

The EPD certificate, its background data and the results will be used for business-to-business communications and is expected to be a reliable document for green building designers, architectures, manufacturers of construction products and the other stakeholders in the construction sector to understand the potential environmental impacts caused by in CIDEM Holding.

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

EPD owner:

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Programme operator:

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(Czech Environmental Information Agency)
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Web site: www.cenia.cz
E-mail: info@cenia.cz
IČO (Company registration number): 45249130
DIČ (Company tax number): CZ45249130

References

EN 15804+A1:2013 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2013.

General Programme Instructions of the International EPD® System. Version 2.5.

PCR 2012:01. Product group classification: Multiple UN CPC Codes, Construction products and construction services. Version 2.0



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