

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	SKONTO PREFAB SIA
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2062-930-EN
Registration number:	NEPD-2062-930-EN
ECO Platform reference number:	-
Issue date:	05.03.2020
Valid to:	05.03.2025

Precast Concrete One-Layer Elements

Skonto Prefab SIA

www.epd-norge.no



member of



General information

Product:

Precast concrete one-layer elements

Program operator:

The Norwegian EPD Foundation
 Post Box 5250 Majorstuen, 0303 Oslo
 Phone: +47 97722020
 e-mail: post@epd-norge.no

Declaration number:

NEPD-2062-930-EN

ECO Platform reference number:
This declaration is based on Product Category Rules:

CEN Standard EN 15804 serves as core PCR
 The NPCR 020 version 2.0. PCR - Par B for concrete and concrete elements.

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence.
 EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

Production of 1 ton of prefabricated concrete elements

Declared unit with option:
Functional unit:
Verification:

The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO14025:2010

internal external

Third party verifier:

Michael M. Jenssen
 Michael M. Jenssen, Asplan Viak AS
 (Independent verifier approved by EPD Norway)

Owner of the declaration:

SKONTO PREFAB SIA
 Contact person: Inna Tuzika
 Phone: + (371) 67256829
 e-mail: info@skontoprefab.lv

Manufacturer:

SKONTO PREFAB SIA
 33/4 Granita street, Acone, Salaspils area, Latvia
 Phone: + (371) 67256829
 e-mail: info@skontoprefab.lv

Place of production:

33/4 Granita street, Acone, Salaspils area, Latvia

Management system:

ISO 9001:2015
 ISO 14001:2015

Organisation no:

LV40003610650

Issue date: 05.03.2020

Valid to: 05.03.2025

Year of study:

2018

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

The EPD has been worked out by:

Bureau Veritas Latvia SIA
 Iveta Lazdiņa




Approved

Håkon Hauan
 Håkon Hauan
 Managing Director of EPD-Norway

Product

Product description:

Precast concrete one-layer elements of different types are included in this EPD:

1. Precast concrete massive wall
2. Precast concrete massive plate slabs
3. Precast concrete balcony

Precast concrete one-layer elements are load-bearing and non-load bearing products used in construction of different building types - starting from single-story and high rise residential buildings to extensive administrative and public buildings and complexes. The wide range of complexity of precast concrete one-layer elements produced by SKONTO PREFAB allows to decrease construction time of one object significantly.

Technical data:

- Length – up to 14 m, Width – up to 4 m, Thickness – up to 0.6 m
- Average weight around 3 T
- Density 2180 kg/m³
- Average Specific surface 5 cm²/g
- Surface density 0.2 kg/m²

Precast concrete one-layer elements are produced in accordance with EN 13369 and EN 14992. Compressive strength and exposure class is provided according to project documentation.

Product specification:

Composition: Concrete, reinforced steel, plastic, additives.

Market:

Nordic countries

Product	Massive Walls		Massive Slabs		Balconies	
	kg	%	kg	%	kg	%
Stone	435	43	408	41	435	44
Sand	303	30	312	31	277	28
Cement	158	16	155	16	158	16
Water	40	4	41	4	66	7
Steel	61	6	40	4	59	6
Additives	1	<1	1	<1	2	<1

Reference service life, product:

50

Reference service life, building:

50

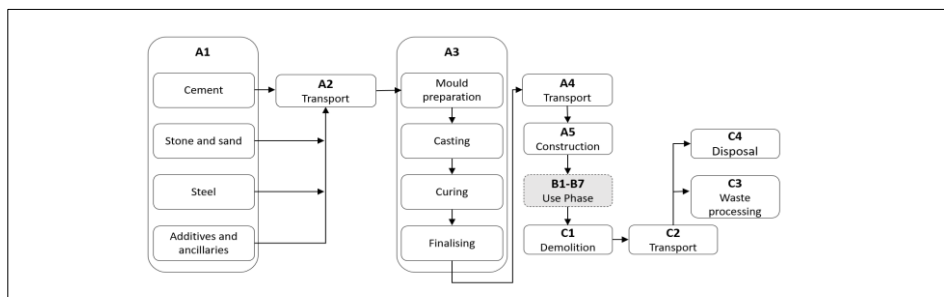
LCA: Calculation rules

Declared unit:

Production of 1 ton of prefabricated concrete elements

System boundary:

LCA is made in "Cradle-to-gate with options" form. All major materials, production energy use and waste are included for phases A1, A2, A3, A4, A5, C1, C2, C4. Use stage B1-B7 is not relevant for this type of product and is not declared. All life cycle impacts are included, see flowchart above.



Data quality:

The production data are from 2018, the database data are from 2011 – 2018 i.e. no data is older than 10 years.

Database used: Ecoinvent 3.5. The LCA software used is SimaPro 9.0

Cut-off criteria:

All major raw materials and all the essential energy is included. The process for raw materials and energy flows that are with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transportation from SKONTO PREFAB production sites in Latvia to customer in Sweden, Stockholm. Product is shipped without return of transport.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	46 %	Lorry, >32t, EURO4	214	0,019 l/tkm	4,066
Boat	46 %	Ferry	333	0,003 l/tkm	0,999

Construction installation on construction site for typical concrete product. Only fossil fuel use during installation and additional cement mortar with reinforcing steel is included.

Assembly (A5)

	Unit	Massive walls	Massive slabs	Balconies
Auxiliary	kg	4	2	4
Water consumption	m ³	-	-	-
Electricity consumption	kWh	-	-	-
Other energy carriers	MJ	42	42	42
Material loss	kg	-	-	-
Output materials from waste treatment	kg	-	-	-
Dust in the air	kg	0,012	0,012	0,012

No significant interaction with the environment in use stage modules, because there is no need for maintenance, repair or refurbishment in the use stage.

The waste is separated on site and therefore waste processing stage C3 has no activity, as waste processing takes place in C1. Energy for material separation is included in C1. 99% of steel and 90% concrete is recycled and sent to local landfill for disposal.

End of Life (C1, C3, C4)	Unit	Value	Value	Value
Hazardous waste disposed	kg	0	0	0
Collected as mixed construction waste	kg	0	0	0
Reuse	kg	0	0	0
Recycling	kg	927	864	865
Energy recovery	kg	0	0	0
To landfill	kg	73	136	135

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	46 %	Lorry, 16-32t	15	0,36 l/tkm	0,54

Modules describing the use stage of product B6-B7 are not relevant according to NPCR020 and are not included. Module D describing Reuse-Recovery-Recycling potential are not included. The life cycle starts by extracting raw materials used for the products, which is defining the boundary towards the nature.

Carbonation is not taken into account in the calculations. Carbonation is a natural process occurring when carbon dioxide is emitted during cement production is rebound to the concrete during use and end of life stages of a building.

Additional technical information

Heat, electricity and other energy use as well as waste in production are calculated as a weight average per produced tonne of all products using yearly production data and rate for 2018. For manufacturing processes and raw materials respective country mix of heat and electricity was considered. For less important flows of materials generic data have been used from Ecoinvent 3.5 database.

LCA: Results

Results for 1 ton of prefabricated concrete element

System boundaries (X=included, MND= module not declared, MNR=module not relevant)

Product stage		Assembly stage			Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MNR	MNR	X	X	X	X	MND

Environmental impact of prefabricated steel reinforced concrete massive wall

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO ₂ -eqv	2,28E+02	1,81E+01	4,40E+01	7,30E+00	1,06E+00	7,44E+00	7,66E-02
ODP	kg CFC11-eqv	1,29E-05	3,34E-06	2,53E-06	1,36E-06	1,95E-07	1,32E-06	1,43E-08
AP	kg SO ₂ -eqv	6,58E-01	1,20E-01	1,31E-01	6,41E-02	3,11E-03	6,83E-02	3,69E-04
EP	kg PO ₄ ³⁻ -eqv	1,15E-01	1,30E-02	1,87E-02	1,08E-02	4,66E-04	1,10E-02	5,97E-05
POCP	kg C ₂ H ₄ -eqv	6,18E-01	1,01E-01	1,29E-01	9,05E-02	3,33E-03	8,65E-02	4,54E-04
ADPM	kg Sb-eqv	5,43E-04	3,55E-08	2,87E-05	1,67E-07	2,07E-09	1,91E-07	1,52E-10
ADPE	MJ	1,55E+03	2,58E+02	2,75E+02	1,06E+02	1,51E+01	1,09E+02	1,10E+00

Environmental impact of prefabricated steel reinforced concrete massive slab

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO ₂ -eqv	2,28E+02	1,81E+01	2,38E+01	7,30E+00	1,06E+00	7,59E+00	1,43E-01
ODP	kg CFC11-eqv	1,34E-05	3,34E-06	1,36E-06	1,36E-06	1,95E-07	1,35E-06	2,67E-08
AP	kg SO ₂ -eqv	6,75E-01	1,20E-01	7,00E-02	6,41E-02	3,11E-03	6,91E-02	6,88E-04
EP	kg PO ₄ ³⁻ -eqv	1,16E-01	1,30E-02	9,80E-03	1,08E-02	4,66E-04	1,11E-02	1,11E-04
POCP	kg C ₂ H ₄ -eqv	6,43E-01	1,01E-01	6,92E-02	9,05E-02	3,33E-03	8,75E-02	8,47E-04
ADPM	kg Sb-eqv	5,11E-04	3,55E-08	1,08E-05	1,67E-07	2,07E-09	1,92E-07	2,82E-10
ADPE	MJ	1,59E+03	2,58E+02	1,47E+02	1,06E+02	1,51E+01	1,11E+02	2,06E+00

Environmental impact of prefabricated steel reinforced concrete balcony

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO ₂ -eqv	2,52E+02	1,81E+01	4,40E+01	5,24E+00	1,06E+00	7,59E+00	1,42E-01
ODP	kg CFC11-eqv	1,52E-05	3,34E-06	2,53E-06	9,91E-07	1,95E-07	1,35E-06	2,65E-08
AP	kg SO ₂ -eqv	7,80E-01	1,20E-01	1,31E-01	5,26E-02	3,11E-03	6,91E-02	6,83E-04
EP	kg PO ₄ ³⁻ -eqv	1,51E-01	1,30E-02	1,87E-02	8,92E-03	4,66E-04	1,11E-02	1,10E-04
POCP	kg C ₂ H ₄ -eqv	7,33E-01	1,01E-01	1,29E-01	7,60E-02	3,33E-03	8,75E-02	8,40E-04
ADPM	kg Sb-eqv	9,36E-04	3,55E-08	2,87E-05	1,62E-07	2,07E-09	1,92E-07	2,80E-10
ADPE	MJ	1,81E+03	2,58E+02	2,75E+02	7,70E+01	1,51E+01	1,11E+02	2,04E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use for prefabricated steel reinforced concrete massive wall

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,02E+02	3,99E-01	1,03E+01	2,79E-01	2,36E-02	4,81E+00	1,73E-03
RPEM	MJ	1,71E+02	2,33E-01	1,97E+00	6,23E-02	1,51E-02	7,85E+00	1,10E-03
TPE	MJ	2,72E+02	6,32E-01	1,23E+01	3,41E-01	3,87E-02	1,27E+01	2,84E-03
NRPE	MJ	1,70E+03	2,59E+02	2,90E+02	1,07E+02	1,52E+01	1,12E+02	1,11E+00
NRPM	MJ	2,34E-02	1,19E-04	3,27E-04	4,68E-05	7,16E-06	9,95E-04	5,25E-07
TRPE	MJ	1,70E+03	2,59E+02	2,90E+02	1,07E+02	1,52E+01	1,12E+02	1,11E+00
SM	kg	7,49E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m ³	4,92E+01	5,96E-01	3,01E+01	3,82E-01	2,98E-02	5,31E-01	2,19E-03

Resource use for prefabricated steel reinforced concrete massive slab

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,01E+02	3,99E-01	5,11E+00	2,79E-01	2,36E-02	4,83E+00	3,23E-03
RPEM	MJ	1,70E+02	2,33E-01	8,67E-01	6,23E-02	1,51E-02	7,86E+00	2,06E-03
TPE	MJ	2,71E+02	6,32E-01	5,98E+00	3,41E-01	3,87E-02	1,27E+01	5,29E-03
NRPE	MJ	1,73E+03	2,59E+02	1,54E+02	1,07E+02	1,52E+01	1,14E+02	2,07E+00
NRPM	MJ	2,33E-02	1,19E-04	1,49E-04	4,68E-05	7,16E-06	9,97E-04	9,77E-07
TRPE	MJ	1,73E+03	2,59E+02	1,54E+02	1,07E+02	1,52E+01	1,14E+02	2,07E+00
SM	kg	6,31E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m ³	5,00E+01	5,96E-01	1,62E+01	3,82E-01	2,98E-02	5,38E-01	4,08E-03

Resource use for prefabricated steel reinforced concrete balconies

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,33E+02	3,99E-01	1,03E+01	1,22E-01	2,36E-02	4,83E+00	3,20E-03
RPEM	MJ	1,84E+02	2,33E-01	1,94E+00	3,60E-02	1,51E-02	7,86E+00	2,04E-03
TPE	MJ	3,17E+02	6,32E-01	1,22E+01	1,58E-01	3,87E-02	1,27E+01	5,25E-03
NRPE	MJ	2,12E+03	2,75E+02	3,08E+02	8,21E+01	1,61E+01	1,22E+02	2,18E+00
NRPM	MJ	2,51E-02	1,19E-04	3,20E-04	3,35E-05	7,16E-06	9,97E-04	9,70E-07
TRPE	MJ	2,12E+03	2,75E+02	3,08E+02	8,21E+01	1,61E+01	1,22E+02	2,18E+00
SM	kg	7,75E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m ³	6,24E+01	5,96E-01	3,01E+01	2,62E-01	2,98E-02	5,38E-01	4,05E-03

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste for prefabricated steel reinforced concrete massive wall

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
HW	kg	1,37E-03	4,77E-05	1,72E-04	2,11E-05	2,74E-06	3,81E-05	2,01E-07
NHW	kg	2,16E-04	4,93E-05	1,74E-04	1,87E-05	2,70E-06	1,89E-05	1,98E-07
RW	kg	7,12E-03	1,88E-03	1,49E-03	7,65E-04	1,10E-04	7,21E-04	8,05E-06

End of life - Waste for prefabricated steel reinforced concrete massive slab

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
HW	kg	1,40E-03	4,77E-05	8,50E-05	2,11E-05	2,74E-06	3,87E-05	3,75E-07
NHW	kg	2,21E-04	4,93E-05	8,59E-05	1,87E-05	2,70E-06	1,93E-05	3,68E-07
RW	kg	7,37E-03	1,88E-03	7,95E-04	7,65E-04	1,10E-04	7,37E-04	1,50E-05

End of life - Waste for prefabricated steel reinforced concrete balconies

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
HW	kg	1,68E-03	4,77E-05	1,72E-04	1,44E-05	2,74E-06	3,87E-05	3,72E-07
NHW	kg	2,44E-04	4,93E-05	1,74E-04	1,37E-05	2,70E-06	1,92E-05	3,65E-07
RW	kg	8,39E-03	1,88E-03	1,49E-03	5,56E-04	1,10E-04	7,37E-04	1,49E-05

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life - Output flow for prefabricated steel reinforced concrete massive wall

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
CR	kg	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	2,32E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,27E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

End of life - Output flow for prefabricated steel reinforced concrete massive slab

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
CR	kg	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	2,32E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,63E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

End of life - Output flow for prefabricated steel reinforced concrete balconies

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
CR	kg	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	2,32E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,63E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: $9,0 \text{ E-}03 = 9,0 \cdot 10^{-3} = 0,009$

Additional Norwegian requirements

Greenhouse gas emission from the use of electricity in the manufacturing phase

Latvian electricity mix is used for production site. The main electricity sources are heat and power cogeneration (27%) from natural gas, hydro power (24%), imports from Estonia (23%) and Russia (12%), small scale biomass (10%) and biogas (3%) cogeneration plants and wind energy (1%). Data are based on TSO statistics for 2018.

Data source	Amount	Unit
TSO statistics for 2018	0,475	CO ₂ -eqv/kWh

Dangerous substances

- ☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- ☐ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- ☐ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- ☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskriften, Annex III), see table.

Indoor environment






The product meets the requirements for low emissions (M1) according to EN15251: 2007 Appendix E.

Carbon footprint

Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010	<i>Environmental labels and declarations - Type III environmental declarations - Principles and procedures</i>
ISO 14044:2006	<i>Environmental management - Life cycle assessment - Requirements and guidelines</i>
EN 15804:2012+A1:2013	<i>Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products</i>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
<i>The NPCR 020 version 2 .0.</i>	<i>PCR - Part B for concrete and concrete elements.</i>
<i>LCA report no. 281019-1</i>	<i>LCA report for Skonto Prefab SIA, Precast concrete products, Bureau Veritas Latvia, Report No. 281019-1</i>

 epd-norge.no The Norwegian EPD Foundation	Program operator The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo Norway	Phone: +47 97722020 e-mail: post@epd-norge.no web: www.epd-norge.no
 epd-norge.no The Norwegian EPD Foundation	Publisher The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo Norway	Phone: +47 97722020 e-mail: post@epd-norge.no web: www.epd-norge.no
member of  SKONTO GROUP  SKONTO PREFAB	Owner of the declaration Skonto Prefab SIA Granita street 33 k-4, Acone, Salaspils Latvia LV-2119	Phone: (371) 67256829 Fax e-mail: info@skontoprefab.lv web: www.skontoprefab.lv
 BUREAU VERITAS	Author of the Life Cycle Assessment Bureau Veritas Latvia SIA Duntes street 17a, Riga Latvia LV-1005	Phone: 37167323246 Fax e-mail: riga@lv.bureauveritas.com web: www.bureauveritas.lv