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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the Declaration:	Moelven Modus AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
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Valid to:	21.01.2020

Uni Wall room partition system (UniWall 98/122 mm dp)

Moelven Modus AS

www.epd-norge.no

General information

Product

Uni Wall room partition system (UniWall 98/122 mm dp)

Owner of the declaration

Moelven Modus AS/AB
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Declaration number:

NEPD-298-164-EN Updated

Place of production:

Jessheim (Norway), Kumla (Sweden)

This declaration is based on Product Category Rules:

CEN Standard EN 15804 serve as core PCR
PCR for room partition systems, v. 1.2, by the Institut Bauen und Umwelt. Date of PCR version 1.2: 03-04-2013

Management system:

According to ISO 9001
According to ISO 14001

Org. No:

951 269 778

Declared unit:

1 m² of the fullwall element of the Uni Wall partition system, including the associated fixing components and sealants at the interfaces with the stationary wall, floor and ceiling.

Issue date

21.01.2015

Functional unit:

Providing room partition and acoustic insulation on 1 m² with an acoustic resistance of 48 Rw dB and with a reference service life of 60 years.

Valid to

21.01.2020

The EPD has been worked out by:

Martyna Mikusinska

SWECO
Sustainable engineering and design

Comparability:

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

Year of study:

2013-14

Verification:

Independent verification of data, other environmental information and EPD has been carried out in accordance with ISO14025, 8.1.3 and 8.1.4

externally ☑ internally ☐

PhD Andreas Brekke
(Independent verifier approved by EPD Norway)

Approved

Dagfinn Malnes
Managing Director of EPD-Norway

Key environmental indicators	Unit	Cradle to gate A1 - A3	Transport *
Global warming	kg CO_2 -eqv	24,56	0
Energy use	MJ	458,70	0
Dangerous substances	%	0	-
Recycled materials	%	56	-
Materials for recycling	%	97	-

* Transport from production site to central warehouse in Norway. The warehouses in both Norway and Sweden are situated at the production unit.

Product

Product description:

Uni Wall is built as a modular system where the joint between modules is a discreet v-joint. This gives the wall a traditional and sober appearance.

This EPD refers to Uni Wall 98 mm dp and Uni Wall 122 mm dp. Both products have the same function and material composition. The only difference is that Uni Wall 122 mm dp contains an air gap which provides better sound insulation.

The design of the partition wall makes it easy to disassemble, move and put together again without breaking any parts. Thus, during its lifetime the UniWall can be moved several times to conform with changes in the indoor layout of the building.

Product specification

The frame is constructed of steel and is lined with coated and painted plasterboards. Only the visible steel parts are paint coated. Plasterboards can be coated with two alternative materials, vinyl wallpaper or weaved fiberglass fabric.

Market:

Nordic

Reference service life:

60 years

Materials	kg	%
Plasteboards, whereof:	30,91	90,3
Gypsum	*29,3*	*85,6*
Cardboard	*1,33*	*3,9*
Additives	*0,28*	*0,8*
Steel, zinc/paint coated	2,13	6,2
Paint	0,44	1,3
Insulation	0,36	1,1
Glue	0,19	0,6
Wallpaper	0,13	0,4
Screw	0,06	0,2
Sealing strip	0,004	<0,01
Sum	34,23	100

Technical data:

Dimensions and weight of a standard module:

Width: 3 600 mm
Height: 2 700 mm
Thickness: 98/122 mm
Area: 9,72 m^2
Weight: 343 kg

Sound insulation index R in [dB] = 48 dB. Fire resistance classification: K210/B-s1,d0 (no certification performed)

LCA: Calculation rules

Functional unit:

Providing room partition and acoustic insulation on 1 m² with an acoustic resistance of 48 Rw dB and with a reference service life of 60 years.

System boundary:

Cradle to Grave - the following stages have been declared: A1-3, A4-5, B1, B5-B7, C1-4. See flowsheet on the right.

Cut-off criteria:

All major raw materials and all the essential energy is included. Production processes for raw materials and energy flows which represent very small amounts (<1 %) have been excluded. This cut-off rule does not apply for hazardous materials and substances.

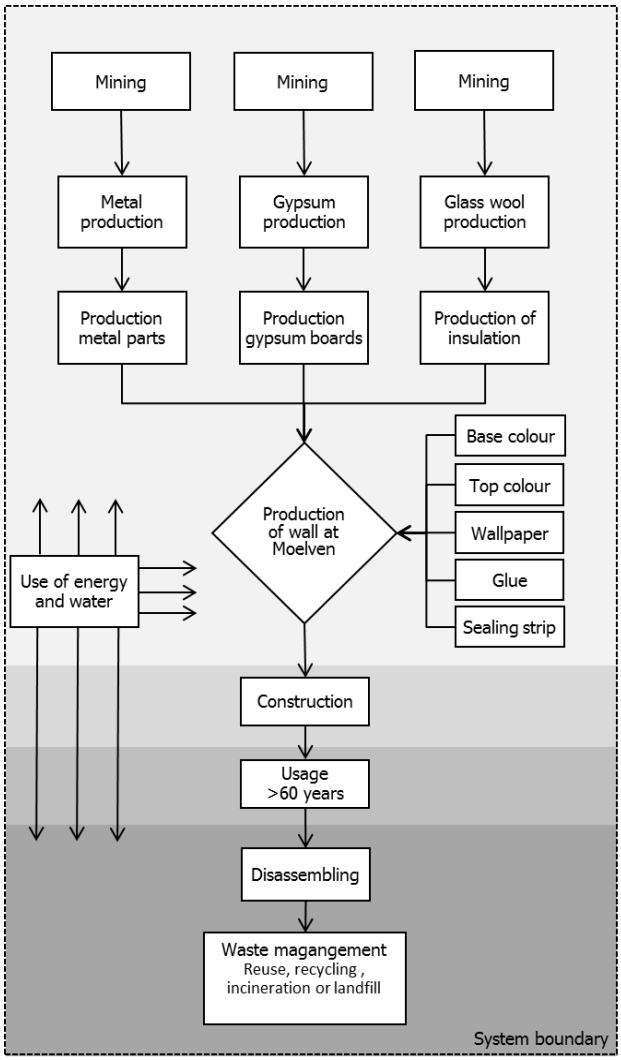
Allocation:

The allocation is made in accordance with the provisions of EN 15804. Principally allocation is avoided by subdivision of included processes. When subdivision is no option, incoming energy- and material flows are allocated among all products made in the given process through mass allocation.

Moelven's production in Sweden and Norway include the same activities and require basically corresponding energy- and water consumption. Data for the Swedish production has been used to represent these parameters in both countries. For parameters in the production that are different for the two countries (plasterboards, transport distances etc.), averaging of data based on each country's proportion of the total production of Uni Wall was used.

Data quality:

Specific data for usage of energy and materials have been used for 97 % of the products mass. Background data have been modelled with generic data from the Ecoinvent 2.2 database. The data is representative according to temporal, geographical and technological requirements. Background data are from 2003 or later, and updated within the last 4 years.



LCA: Scenarios and additional technical information

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

Reference service life:
The RSL of 60 years is defined for a scenario with standard use in an office environment, which could involve moving of the partition wall to conform to changes in the office space. Accidents or other types of unexpected changes of environment are not taken into account for the RSL.

Production of Uni Wall at Moelven Modus (A3)
The manufacture of Uni Wall at Moelven Modus comprises coating of gypsum boards with wallpaper and two layers of paint. Further studs are cut into fitting sizes according to order and sealing strips re glued on to ceiling rails and wall connectors.
All of the components are then packed for transportation to the building site.
Transport from production place to user (A4)
The estimation of average distance between the production unit and construction site is based on actual distances between the production units and main cities within Sweden and Norway.

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Lorry		Diesel, 16-32 ton, Euro4	290	0,09 l/tkm	

Installation in the building (A5)
The installation of the Uni Wall room partition system does not require any use of materials or energy. The walls are fitted and installed manually with the use of basic building tools. Usage of manual tools have not been included in this assessment. During the installation of the components, packagings are sorted and disposed of. The waste management of packagings is the only flow reported in module A5.

Use phase (B1-B7)
The usage of the Uni Wall room partition system does generally not entail any specific maintenance. Modules B1 and B5-B7 have been assessed as non-relevant as the Uni Wall does not require any materials or energy for usage or refurbishment. Modules B2-B4 have been excluded from the study due to uncertainties and inablility to control how the product is managed by final user.

End of Life (C1, C3, C4)

Plasterboards with wallpaper are separated and the gypsum goes to recycling. The metal parts are also sorted out and recycled. The recyclable materials constitute approximately 97 % of the products weight. The remaining 3 % (dust and mixed waste) is delivered to an approved landfill or sent to incineration. The quantities presented in the table below include production spillage.

Waste type	Unit	Value
Hazardous waste disposed	kg	-
Collected as mixed construction waste	kg	0,9
Reuse	kg	-
Recycling	kg	32,0
Energy recovery	kg	-
To landfill	kg	1,4

Transport to waste processing (C2)
The distance to disposal site is assumed to be 50 km.

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Waste collection lorry		Diesel, 21 ton	50	0,4 l/tkm	

LCA: Results

The software used for modelling the life cycle and assesment of the environmental impacts is SimaPro 8.0. For calculation of environmental impacts the LCIA method CML-IA baseline was applied, with certain modification of charachterisation factors according to EN 15804.

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

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	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	MNR	MND	MND	MND	MNR	MNR	MNR	x	x	x	x	MND

Environmental impact

Parameter	Unit	A1	A2	A3	A4	A5	C2	C3	C4
GWP	kg CO_2 -eqv	2,10E+01	2,76E+00	7,70E-01	1,72E+00	1,46E-01	2,24E+00	0,00E+00	2,61E+00
ODP	kg CFC11-eqv	5,56E-06	4,37E-07	9,91-08	2,72E-07	2,19E-08	3,36E-07	0,00E+00	1,66E-07
POCP	kg C_2H_4 -eqv	7,50E-03	3,37E-04	1,57E-04	2,10E-04	2,51E-05	3,85E-04	0,00E+00	1,50E-04
AP	kg SO_2 -eqv	9,70E-02	1,06E-02	3,89E-03	6,60E-03	6,45E-04	9,89E-03	0,00E+00	3,79E-03
EP	kg PO_4^{3-}-eqv	2,86E-02	2,82E-03	1,42E-03	1,76E-03	1,48E-04	2,28E-03	0,00E+00	2,39E-03
ADPM	kg Sb-eqv	1,11E-01	7,62E-06	4,23E-06	4,75E-06	6,88E-08	1,06E-06	0,00E+00	2,37E-06
ADPE	MJ	3,15E+02	4,05E+01	9,95E+00	2,55E+01	1,93E+00	2,97E+01	0,00E+00	1,29E+01

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

This EPD is representative for the Uni Wall partition system with two different types of coatings; glass-fibre fabric or vinyl wallpaper. The glass-fibre fabric has been used for the assessment of environmental impacts presented in this EPD. A separate assessment of the vinyl wallpaper has been conducted to ensure that the variance in environmental impact depending on choice of wall coating lies within recommended value. Results from the assessment show that, when comparing the life cycle of Uni Wall with the two types of coatings, the highest deviation within the considered environmental impact categories is 3 % (within the category eutrophication potential).

Resource use

Parameter	Unit	A1	A2	A3	A4	A5	C2	C3	C4
RPEE	MJ	3,28E+01	5,90E-01	2,94E+01	3,70E-01	1,15E-02	1,80E-01	0,00E+00	2,43E-01
RPEM	MJ	2,82E+01	0,00E+00	1,05E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,10E-02
TPE	MJ	6,10E+01	5,90E-01	3,04E+01	3,70E-01	1,15E-02	1,80E-01	0,00E+00	2,54E-01
NRPE	MJ	3,24E+02	4,59E+01	2,45E+01	2,84E+01	2,13E+00	3,27E+01	0,00E+00	1,48E+01
NRPM	MJ	0,00E+00	0,00E+00	9,70E-01	0,00E+00	0,00E+00	3,30E-01	0,00E+00	0,00E+00
TRPE	MJ	3,24E+02	4,59E+01	2,55E+01	2,84E+01	2,13E+00	3,30E+01	0,00E+00	1,48E+01
SM	kg	2,27E+01	0,00E+00	9,00E-02	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	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	1,90E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	6,22E+00	2,86E-05	5,90E-03	1,73E-04	1,86E-04	2,86E-03	0,00E+00	6,07E-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									
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C2**	**C3**	**C4**
HW	kg	1,10E-01	4,33E-05	7,98E-06	2,68E-05	0,00E+00	1,34E-05	0,00E+00	0,00E+00
NHW	kg	1,04E+01	2,71E-01	3,58E-01	1,70E-01	0,00E+00	2,87E-02	0,00E+00	2,25E+00
RW	kg	1,30E-03	3,65E-05	1,91E-04	2,25E-05	0,00E+00	1,39E-05	0,00E+00	0,00E+00

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

End of life - Output flow									
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C2**	**C3**	**C4**
CR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	4,50E-01	3,10E-02	4,63E+00	1,90E-02	2,22E+00	3,80E-03	3,20E+01	0,00E+00
MER	kg	3,47E-03	3,00E-03	0,00E+00	1,88E-03	1,02E-02	1,85E-03	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	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	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 E-03 = $9,0*10^{-3}$ = 0,009

Additional Norwegian requirements

Electricity

In accordance with the PCR for partition walls, in the case of production facilities in several European countries, the applicable country-specific power mixes have been assessed for each country. The emissions are based on data originally collected in 2008 and updated in 2014, for the low voltage grid in both countries (Ecoinvent 2.2 database, low voltage country mixes), and calculated with the IPCC 2013 method for climate change factors with a timeframe of 100 years.

Sweden: 0,051 kg CO_2eq/kWh
Norway: 0,018 kg CO_2eq/kWh

Dangerous substances

None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern or substances on the Norwegian Priority list, substances on the A20 Checklist of BREEAM NOR or substances that lead to the product being classified as hazardous waste. The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations.

Transport

Transport from production site to central warehouse in Norway is: 0 km.
The warehouses in both Norway and Sweden are situated at the production unit. No additional transport is necessary.

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 14025:2006	*Environmental labels and declarations - Type III environmental declarations - Principles and procedures*
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012	*Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products*
ISO 21930:2007	*Sustainability in building construction - Environmental declaration of building products*
PCR, Institut Bauen und Umwelt	*Product Category Rules for Building-Related Products and Services;* *Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the project report* *Part B: Requirements on the EPD for Room partition systems*
LCI/LCA Report	*Background report for Uni Wall 98/122 mmdp. Report number: LCA-report Sweco 2014-1*
ECHA, 2014	*ECHA: "Candidate List of Substances of Very High Concern for authorisation".* *Available at http://www.echa.europa.eu/web/guest/candidate-list-table* *Last update: 16 June 2014*
Norwegian Environment Agency, 2013	*List of Priority Substances* *Available at http://www.environment.no/en/Tema/Kjemikalier/Kjemikalielister/Prioritetslisten/* *Last update: 12 September 2013*

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