

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

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weber rex light fix

Saint-Gobain Finland Oy



www.epd-norge.no



Product

Product description:

Weber rex light fix is a low dust, light weight cementitious tile adhesive for attaching ceramic tiles and suitable natural stones on various substrates including cement based plasters and gypsum plaster and other suitable construction boards.

Weber rex light fix is suitable for applications like:

- wall and floor tiling indoors and outdoors
- bathroom, toilet and laundry room tiling

Weber rex light fix has long open time, it is anti-sagging and flexible.

Product specification

The composition of the product is described in the following table:

Materials	
Binder	30-50%
Aggregate	30-45%
Filler	10-15%
Additives	4-8%
Packaging	3,84%

Technical data:

Weber rex light fix is designed, produced and CE marked according to EN 12004:2007 + A1:2012 Adhesives for tiles. Requirements, evaluation of conformity, classification and designation.

Market:

Nordic and Baltic countries

Reference service life, product

The reference service life of the product is similar to the service life of the building.

Reference service life, building

60 years.

LCA: Calculation rules

Declared unit:

1 kg weber rex light fix

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

Data quality:

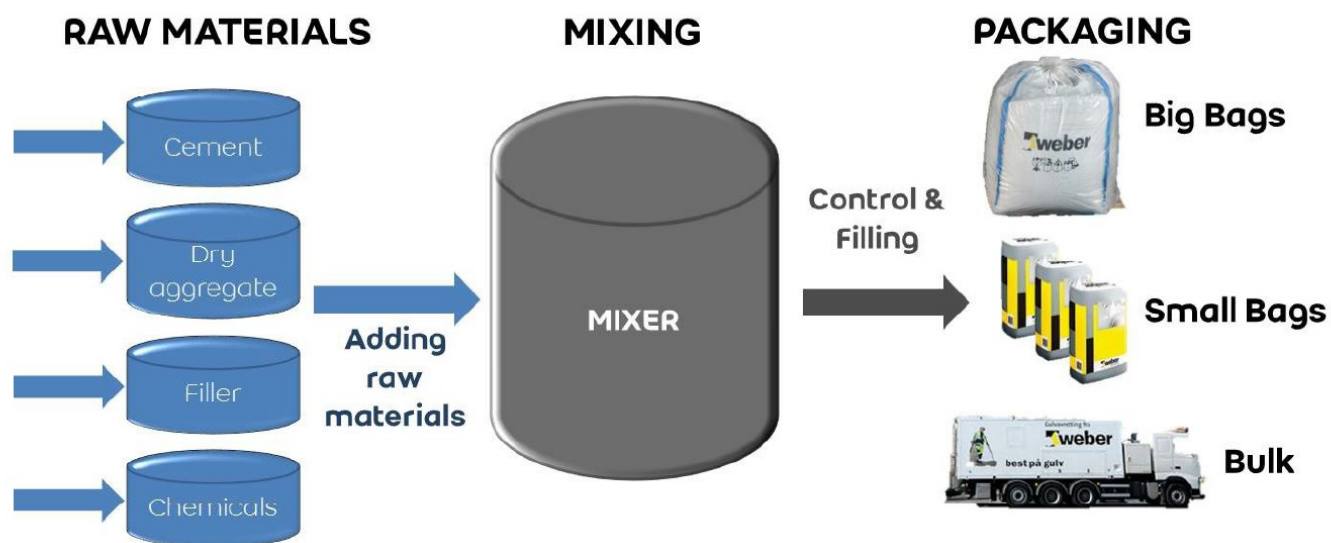
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Plant manufacturing data is collected for 2017. Raw materials and production volumes are based on the data from September - December 2018 and production plans for the 2019. The whole year data is not available, since products are new.

Materials	Source	Data quality	Year
Chemicals	Chemicals below cut-off	No data	0
Additives	Østfoldforskning	Database	2013
Aggregate	ecoinvent 3.4	Database	2017
Binder	ecoinvent 3.4	Database	2017
Filler	ecoinvent 3.4	Database	2017
Packaging	ecoinvent 3.4	Database	2017
Packaging	Modified ecoinvent 3.4	Database	2017
Binder	Finnsementti	Environmental Data Sheet	2017

System boundary:

All processes from raw material extraction to product transport to the construction site are included in the analysis (A1 - A4). The flow chart below illustrates the system boundaries for the A1 to A3 part of the analysis.



Additional technical information:

The density of the product is 1,49 kg/dm³.

LCA: Scenarios and additional technical information

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

Transport to market (A4) is calculated based on the default distance of 300 km from NPCR 009. Additional information is given in the table below regarding distances to other relevant markets and calculation factors for converting GWP/A4 to the specific market.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	55,0 %	Truck, lorry over 32 tonnes, EURO 5	300	0,022823	l/tkm	6,85
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Additional A4 information	Unit/Range	Value
Tullinge, Sweden (truck / ro-ro boat / truck to jobsite: 658 km)	Multiplication factor GWP/A4	1.61
Lilleström, Norway (truck / ro-ro boat / truck to jobsite: 1135km)	Multiplication factor GWP/A4	3.11
Karlsunde, Denmark (truck / ro-ro boat / truck to jobsite: 1312 km)	Multiplication factor GWP/A4	3.67
Tallinn, Estonia (truck / ro-ro boat / truck to jobsite: 563 km)	Multiplication factor GWP/A4	1.57
Riga, Latvia (truck / ro-ro boat / truck to jobsite: 869 km)	Multiplication factor GWP/A4	2.54
Vilnius, Lithuania (truck / ro-ro boat / truck to jobsite: 1162 km)	Multiplication factor GWP/A4	3.47

Assembly (A5)

	Unit	Value
Auxiliary	kg	
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials from waste treatment	kg	
Dust in the air	kg	
VOC emissions	kg	

Use (B1)

	Unit	Value

Maintenance (B2)/Repair (B3)

	Unit	Value
Maintenance cycle*		
Auxiliary		
Other resources		
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

Replacement (B4)/Refurbishment (B5)

	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts		

* Described above if relevant

Operational energy (B6) and water consumption (B7)

	Unit	Value
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

End of Life (C1, C2)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling		
Energy recovery		
To landfill	kg	

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck					l/tkm	
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

LCA: Results

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

Product stage				Construction installation stage	User 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	.	MND

Environmental impact

Parameter	Unit	A1	A2	A3	A4
GWP	kg CO ₂ -eq	4,03E-01	2,19E-02	3,72E-03	2,62E-02
ODP	kg CFC11 -eq	5,35E-09	2,27E-10	4,68E-10	5,10E-09
POCP	kg C ₂ H ₄ -eq	7,19E-05	6,73E-06	2,24E-06	4,23E-06
AP	kg SO ₂ -eq	8,54E-04	1,77E-04	3,31E-05	8,51E-05
EP	kg PO ₄ ³⁻ -eq	2,39E-04	2,39E-05	1,22E-05	1,43E-05
ADPM	kg Sb -eq	6,73E-07	4,36E-08	2,59E-08	5,91E-08
ADPE	MJ	4,12E+00	3,27E-01	2,37E-02	4,11E-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

Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009

*INA Indicator Not Assessed

Resource use

Parameter	Unit	A 1	A 2	A 3	A 4
RPEE	MJ	9,37E-01	5,99E-03	4,36E-01	7,42E-03
RPEM	MJ	6,25E-01	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	1,56E+00	5,99E-03	4,36E-01	7,42E-03
NRPE	MJ	4,55E+00	3,37E-01	2,44E-02	4,23E-01
NRPM	MJ	2,82E-01	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	4,83E+00	3,37E-01	2,44E-02	4,23E-01
SM	kg	2,32E-02	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	1,04E-01	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	1,68E-01	0,00E+00	0,00E+00	0,00E+00
W	m ³	6,23E-03	7,15E-05	1,30E-05	9,98E-05

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

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

*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A 1	A 2	A 3	A 4
HW	kg	2,77E-05	1,40E-07	6,66E-07	2,25E-07
NHW	kg	2,79E-02	1,88E-02	1,96E-02	3,84E-02
RW	kg	INA*	INA*	INA*	INA*

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

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

*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A 1	A 2	A 3	A 4
CR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	2,20E-04	0,00E+00	3,76E-04	0,00E+00
MER	kg	0,00E+00	0,00E+00	6,00E-04	0,00E+00
EEE	MJ	INA*	INA*	INA*	INA*
ETE	MJ	INA*	INA*	INA*	INA*

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 = $9,0 \cdot 10^{-3}$ = 0,009

*INA Indicator Not Assessed

Additional Norwegian requirements

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

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Renewable electricity with Guarantee of Origin from LOS (kWh)	Modified ecoinvent 3.4	60,20	g CO ₂ -ekv/kWh
District heating, Parainen (kWh)	Modified ecoinvent 3.4	20,54	g CO ₂ -ekv/kWh

Dangerous substances

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.

Name	CASNo	Amount
Portland Cement	65997-15-1	25-50%

Indoor environment

Regarding indoor air quality Weber rex light fix has M1 indoor emission classification granted by the Finnish Building Information Foundation (Suomen Rakennustietosäätiö, RTS).

Bibliography

ISO 14025:2010 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+A1:2013 Environmental product declaration - Core rules for the product category of construction products.

ISO 21930:2017 Sustainability in buildings and civil engineering works. Core rules for environmental product declarations of construction products.

ecoinvent v3, Alloc Rec, Swiss Centre of Life Cycle Inventories.

Iversen et al., (2018) eEPD v3.0 - Background information for EPD generator system.

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