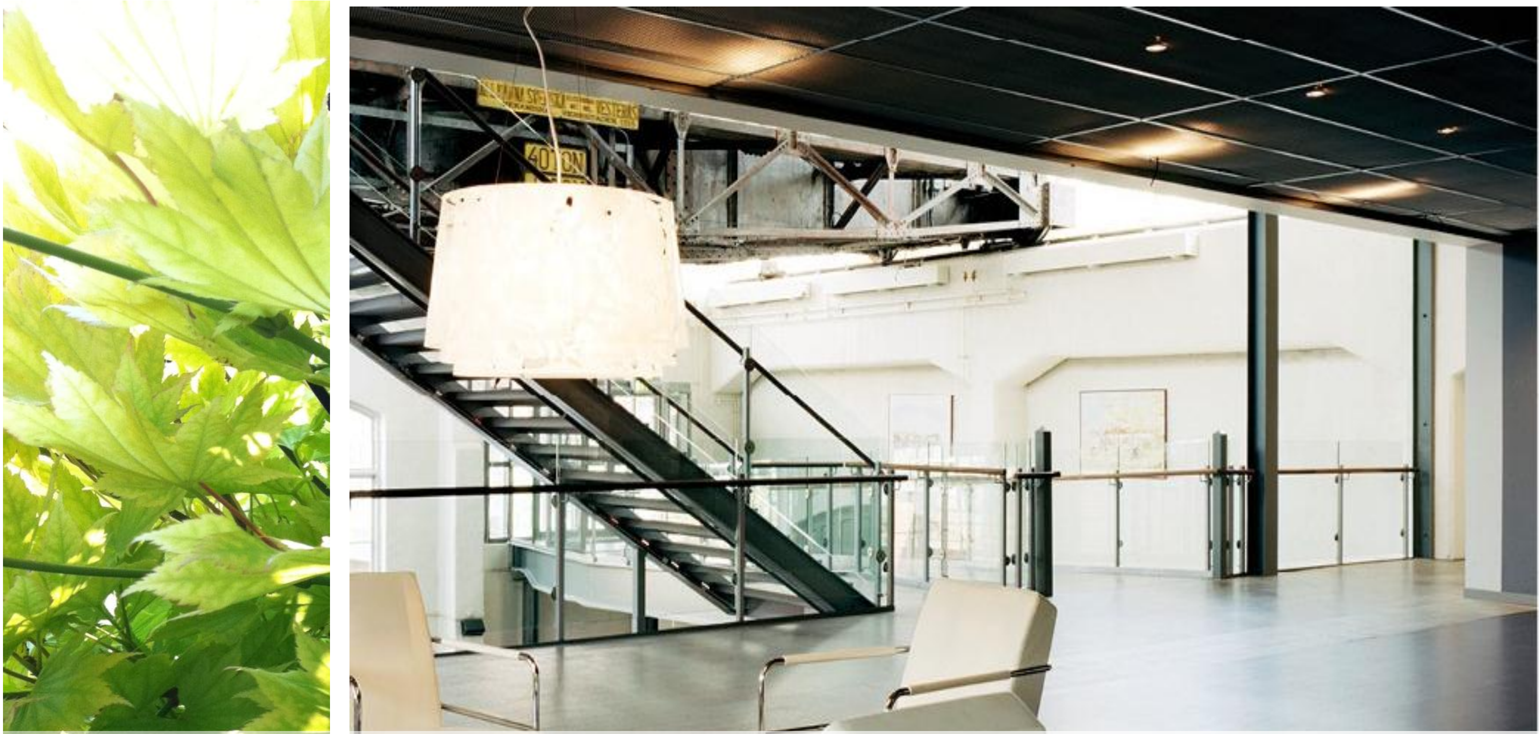


ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804 and ISO 14025

Weber
Multipurpose floor leveling

Realization date : 2013-08-30
Version : 1.0

The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.

EPD®

VERIFICATION N°

S-P-00126

DNV

weber SAINT-GOBAIN

General information

Manufacturer: Saint-Gobain Byggprodukter AB
Organisation №: SE 556241-2592
ISO 14001 №: 1098M, issued April, 1998.
Box 415
SE-191 24 Sollentuna
Production Site: Lyttersta, Vingåker

PCR identification: EN 15804 as the core PCR + International EPD System Product Category Rule, PCR for constructions products and construction services, PCR 2012:01, version 1.2, 2013-03-15, with the appendix 'Mortars applied to a surface'.

Product / product family name and manufacturer represented:
This EPD covers a range of cement based multipurpose screeds for floor leveling, with similar contents, produced under similar conditions and for similar use, though designed to meet a variety of requirements for application and long term conditions.
The products considered are:

	Pumpable	Self levelling	Rapid curing	Fibre reinforced	Intended layer thickness
Floor 4150 fine flow	X	X	-	-	4-30 mm
Floor 4160 fine flow rapid	X	X	X	-	2-30 mm
Floor 4310 fibre floor	X	-	-	X	5-50 mm
Floor 4320 fibre floor rapid	X	-	X	X	4-50 mm
Floor 4350 fibre base flow	X	-	-	X	20-80 mm
Floor 4360 base flow rapid	X	-	X	-	10-80 mm

EPD Program	The international EPD® System For more information — www.environdec.com
Registration No	S-P-00126
Date of publication	2013-08-30
EPD validity	3 years
EPD valid within the following geographical area	Scandinavia
PCR review conducted by	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com.
Independent verification of the declaration and data, according to ISO 14025	DNV Certification AB
Accredited or approved by	Swedac

Product description

Product description and description of use: The products covered by this assessment are a family of pumpable floor screeds for indoor use, aimed for leveling and as a ground for further surface covering, such as carpet, parquet or tiling.
The pumpability enables the products to be fed through bulk, big bags or handy bags, via designated equipment requiring no manual mixing, and allowing continuous application in various size areas.

Product standard: The floor screeds are designed, produced and CE marked according to EN 13813.

Physicals characteristics: The products are supplied from production in dry form, premixed in respect of all contents but water. Water is added at the workplace, in a defined amount and technique, to produce a floor screed of high performance.
For specific physical properties, we refer to the CE-declaration (--2013-06-30) or Declaration of Performance (2013-07-01--) alternatively.

Description of the main product components and or materials:
All raw materials contributing more than 5% to any environmental impact are listed in the following table. The screeds are free from substances of very high concern (SVHC).

Component		Amount	EG-nr/ CAS-nr	Classification	Comment
Aggregate	Natural silica sand	30-60%	-.	-	Respirable quartz content <0.1% (particles <5µm)
Filler	Dolomite	5-35%	CAS 16389-88-1	-	-
Binder	Aluminate cement	5-25%	CAS 65997-16-2	-	
Binder	Portland cement	1-5 %	CAS 65997-15-1	Xi, R37/38-41	
Binder	Gypsum	2,5-10%	CAS 7778-18-9	-	
Polymer binder	PVAC co-polymer	0,1-5 %	-	-	
Additives	Various	0,4-0,8%	-	-	Fibres, Plasticizer

LCA calculation information

FUNCTIONAL UNIT	1m², quantity used of 34 kg equivalent to 20 mm thickness
SYSTEM BOUNDARIES	Cradle to Grave
REFERENCE SERVICE LIFE (RSL)	60 years
ALLOCATIONS	Based on mass repartition
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scandinavia, 2011

According to EN 15804, EPD of construction products may not be comparable if they do not comply with this standard. EPD might not be comparable if different reference thickness is used.

Functional Unit

This EPD describes the environmental impact of 1m2 of floor screed.
In this analysis, the quantity used was 34 kg/m2, equivalent to 20 mm thickness and might be used to recalculate the LCA (functional unit) result to a declared unit in kg.

Cut-off rules

In the assessment, all significant parameters from gathered production data are considered, i.e. raw material used per formulation, used thermal energy, internal fuel and electric power consumption, direct production waste. This study also takes into account some material flows of less than 1.
It is assumed that the total sum of omitted processes does not exceed 1% of the GWP or energy impact.
Machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

Reference service life (RSL)

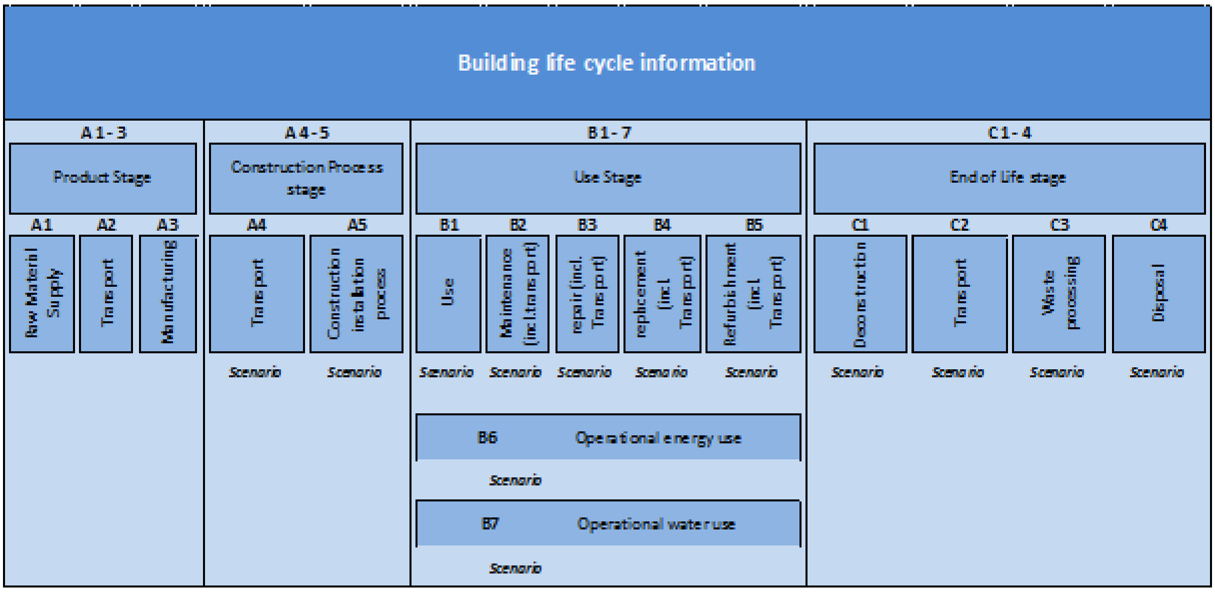
The family of products covered by this declaration are aimed for leveling and ground for further surface covering. If properly installed, the service life time of the screed is equal to the lifetime of the building, and 60 years as a default.

Year of study:

Production data, Transport and Raw material data: 2011.

Life cycle stages

Flow diagram of the Life Cycle



Product stage, A1-A3

Description of the stage and additional technical information:

Raw material-A1

The raw material supply covers sourcing (quarry) and production of all binder components and additives, e.g. sand, cement, rheology agent and other additives.

Transport to manufacturer-A2

Data on transport of the different raw materials to the manufacturing plant are collected for each plant. Means of transport include truck, train and ship.

Manufacture-A3

Manufacture covers all processes linked to production, which comprises various related operations besides on-site activities, including drying, storing, mixing, packing and internal transportation.

The manufacturing process also yields data on the combustion of refinery products, such as diesel and gasoline, related to the production process.

Use of electricity, fuels and auxiliary materials in the floor screed production is taken into account too. The environmental profile of these energy carriers is modeled for local conditions.

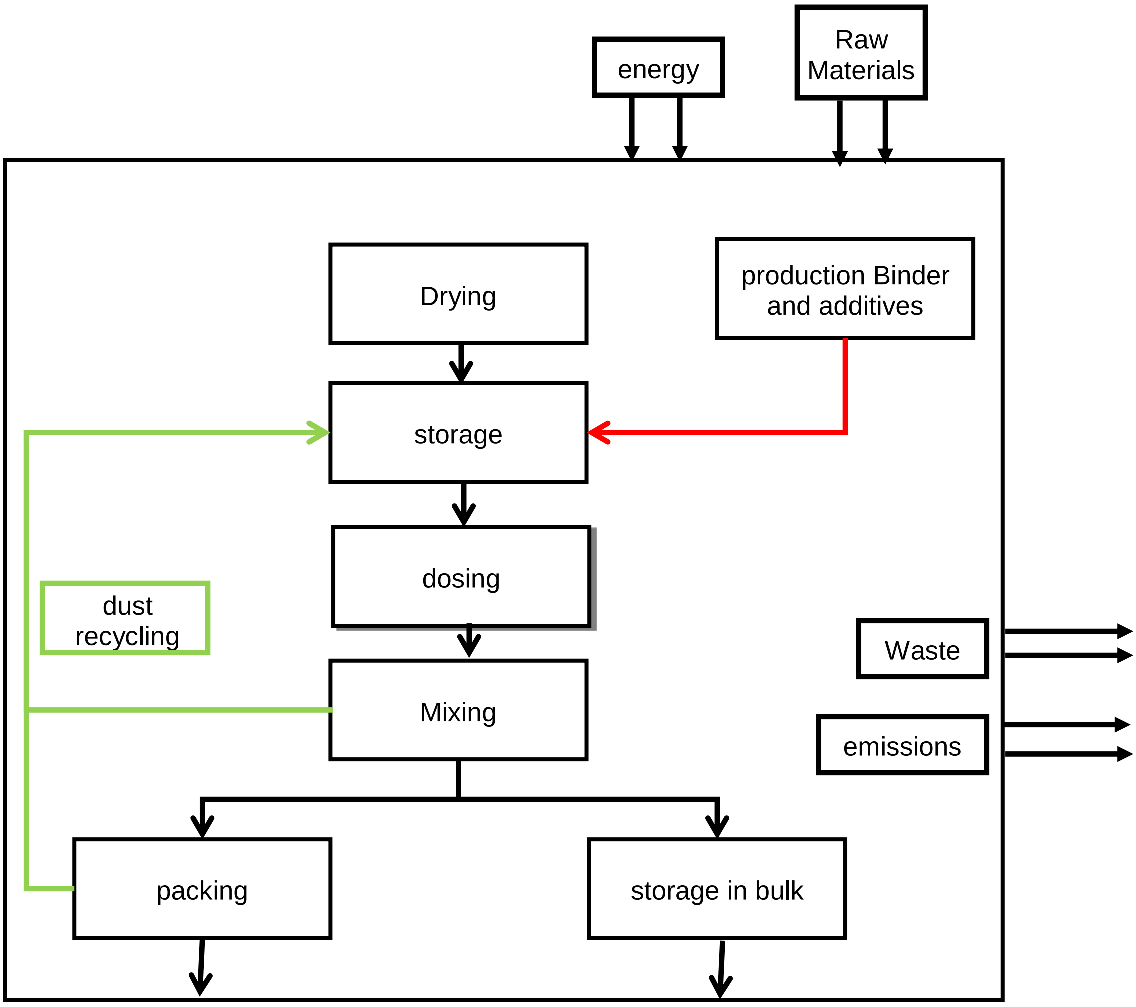
Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module, i.e. wooden pallets, paper sack and PE-LD film (cradle-to-gate).

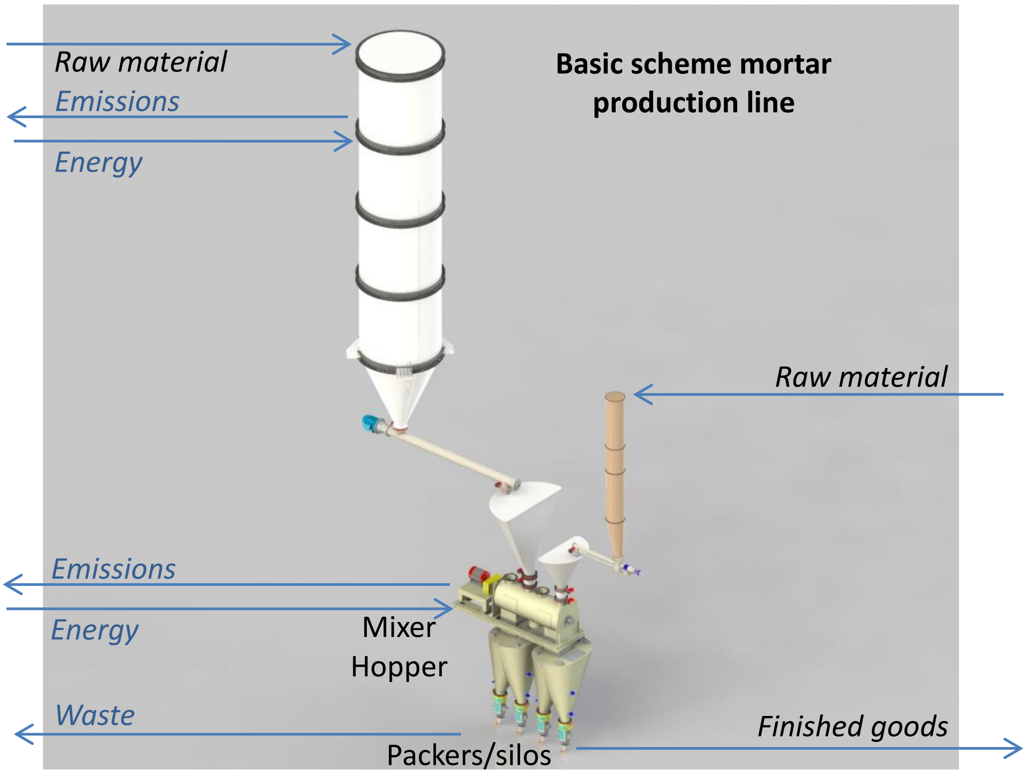
Apart from production of packaging material, the supply and transport of packaging material are also considered in the LCA model. They are reported and allocated to the module where the packaging is applied. Data on packaging waste created during this step are then generated.

It is assumed that packaging waste generated in the course of production and up-stream processes is 100% collected and either recycled or incinerated with energy recovery, related to material and quality, in ratios according to the local material handling companies.

Electricity:
Bought electricity used for manufacturing/mixing of the final product is 79 kJ electricity/kg, representing 2,7 MJ/FU.

Manufacturing process flow diagram





Construction process stage, A4-A5

Description of the stage and additional technical information:

The construction stage is divided into **transportation to the construction site** and the **installation process.**

Transport-A4

Based on the location of the plant and the size of the main markets being in Stockholm, Goteborg, Malmo/Copenhagen and Oslo areas, the average distance to deliver the product to customer is set to 350 km.

Construction installation process-A5

For the implementation of the product, mixer pump equipment is generally used for high volume purposes. Smaller volumes are mixed and applied according to local circumstances. A pump is generally used. The energy to run different equipment has been accounted for in relation to the product type and different uses.

During installation and construction, 1% of the material amount is estimated to be wasted through excess preparation and cleaning processes. The losses are considered as landfilled. Within module A5, site-related packaging waste processing is included in the LCA.

End-of-life of packaging materials is reported and allocated to the module where it arises.

As no factual data on waste treatment of packaging materials and leftovers of installation products from construction sites are available, they are considered 100% collected and incinerated without energy recovery. Wooden pallets are considered recycled in established systems.

Transport to the building site:

PARAMETER	VALUE (expressed per functional/declared unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	38l/100 km for 24t load 48l/100 km for 40t load
Distance	350 km
Capacity utilisation (including empty returns)	25% for pallets transportation lorries, 100% for tanker lorry
Bulk density of transported products	1.7 t / m^3
Volume capacity utilisation factor	1

Installation in the building:

PARAMETER	VALUE (expressed per functional/declared unit)
Ancillary materials for installation (specified by materials)	NA
Water use	0.006 m^3
Other resource use	NA
Quantitative description of energy type (regional mix) and consumption during the installation process	1.8 kWh
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	0.34 kg of manufactured product
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal (specified by route)	Packaging is sent to incineration or partly recycled for the pallets
Direct emissions to ambient air, soil and water	NA

Use stage (excluding potential savings), B1-B7

Description of the stage and additional technical information:

The use stage is divided into the following modules:

- Use -B1
- Maintenance -B2
- Repair -B3
- Replacement-B4
- Refurbishment -B5
- Operational water and energy use – B6 and B7

Once installed and in place during the use phase, the product does not require any energy or material input to keep it in working order. Furthermore, it is not exposed to the indoor atmosphere of the building, nor is it in contact with circulating water or the ground.

The floor screeds covered by this declaration do not require any maintenance as they are aimed for a top surface covering. In addition, due to the product's durability and difficulty accessing it once installed, any maintenance, repair, replacement or restoration are irrelevant in the specified applications. Declared product performances (under CE marking) therefore assume a working life that equals the building's lifetime. For this reason, no environmental loads are attributed to any of the modules between B1 and B5. Once in place, the screeds require no energy or water for its "operation".

End-of-life stage C1-C4

Description of the stage and additional technical information:

For the end-of-life stage, landfill is considered to be the worst case scenario.

Product end-of-life includes the following modules:

Deconstruction-C1

The possibility to selectively dismantle floor screed products varies depending on the type of building element. The contribution of floor screed to environmental loads resulting from deconstruction and/or dismantling is assumed to be negligible in comparison to deconstruction of the building.

Transport-C2

Transport is calculated on the basis of a scenario with an average truck trailer carrying a 27 t payload.

Transport distances of the final product to landfill are 50 km.

Waste processing-C3

Floor screed waste is classified as 'non-hazardous waste' in the European list of waste products, to be coded depending on each specific waste generating project.

Disposal-C4

The impact of landfill is taken into account according to available data.

End-of-life:

PARAMETER	VALUE (expressed per functional/declared unit) / DESCRIPTION
Collection process specified by type	34 kg collected screed material/m^2
Recovery system specified by type	0 kg
Disposal specified by type	34 kg non-hazardous waste
Assumptions for scenario development (e.g. transportation)	50 km to landfill

Reuse/recovery/recycling potential, D

Post-consumer recycling scenarios are not considered within this EPD.

LCA results

Resume of the LCA data results are detailed on the following tables in this order:

- The 4150 and 4310 LCA results are gathered in the tables pages 10 to 13.
- The 4160 and 4320 LCA results are gathered in the tables pages 14 to 17.
- The 4350 and 4360 LCA results are gathered in the tables pages 18 to 21.

Summary interpretation of the overall impacts:

- The 4150 and 4310: page 22.
- The 4160 and 4320: page 23.
- The 4350 and 4360: page 24.

ENVIRONMENTAL IMPACTS (for 4150 and 4310)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Global Warming Potential (GWP) - ***kg CO2equiv/FU***	7,3E+00	5,8E-01	5,6E-03	-	-	-	-	-	-	-	-	8,3E-02	-	0	-
	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.														
Ozone Depletion (ODP) ***kg CFC 11 equiv/FU***	1,9E-06	4,0E-07	5,3E-10	-	-	-	-	-	-	-	-	5,8E-08	-	0	-
	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbonsor halons), Which break down when they reach the stratosphere and then catalytically destroy ozone molecules.														
Acidification potential (AP) ***kg SO2equiv/FU***	4,0E-02	3,5E-03	2,6E-05	-	-	-	-	-	-	-	-	5,0E-04	-	0	-
	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.														
Eutrophication potential (EP) ***kg (PO4)3-equiv/FU***	3,1E-03	8,4E-04	1,6E-06	-	-	-	-	-	-	-	-	1,2E-04	-	0	-
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.														
Photochemical ozone creation (POPC) ***Etheneequiv/FU***	2,5E-03	7,9E-05	2,1E-06	-	-	-	-	-	-	-	-	1,1E-05	-	0	-
	Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.														
Abiotic depletion potential for non-fossil resources (ADP-elements) - ***kg Sbequiv/FU***	1,1E-06	7,6E-11	5,1E-1	-	-	-	-	-	-	-	-	1,1E-11	-	0	-
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - ***MJ/FU***	7,7E+01	7,1E+00	4,4E-02	-	-	-	-	-	-	-	-	1,0E+00	-	0	-
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

RESOURCE USE (for 4150 and 4310)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - *MJ/FU*	7,2E+00	1,2E-02	3,1E-01	-	-	-	-	-	-	-	-	4,3E-06	-	-	-
Use of renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) *MJ/FU*	7,2E+00	1,2E-02	3,1E-01	-	-	-	-	-	-	-	-	4,3E-06	-	-	-
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw	9,7E+01	7,2E+00	7,4E-01	-	-	-	-	-	-	-	-	1,0E+00	-	-	-
Use of non-renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/FU*	9,7E+01	7,2E+00	7,4E-01	-	-	-	-	-	-	-	-	1,0E+00	-	-	-
Use of secondary material *kg/FU*	2,3E-01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable secondary fuels- *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels - *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water - *m3/FU*	2,0E-02	6,8E-04	7,4E-03	-	-	-	-	-	-	-	-	9,7E-05	-	-	-

WASTE CATEGORIES (for 4150 and 4310)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Hazardous waste disposed *kg/FU*	1,7E-02	1,6E-04	3,9E-06	-	-	-	-	-	-	-	-	2,3E-05	-	0	-
Non-hazardous waste disposed *kg/FU*	3,0E+00	4,2E-04	5,1E-01	-	-	-	-	-	-	-	-	5,9E-05	-	34	-
Radioactive waste disposed *kg/FU*	7,3E-04	1,2E-04	8,4E-06	-	-	-	-	-	-	-	-	1,6E-05	-	0	-

OUTPUT FLOWS (for 4150 and 4310)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Components for re-use *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials for recycling *kg/FU*	8,1E-02	2,4E-06	5,5E-02	-	-	-	-	-	-	-	-	2,8E-07	-	-	-
Materials for energy recovery *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exported energy, detailed by energy carrier *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL IMPACTS (for 4160 and 4320)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Global Warming Potential (GWP) - ***kg CO2equiv/FU***	8,6E+00	5,8E-01	2,5E-03	-	-	-	-	-	-	-	-	8,3E-02	-	0	-
	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.														
Ozone Depletion (ODP) ***kg CFC 11 equiv/FU***	2,1E-06	4,0E-07	2,4E-10	-	-	-	-	-	-	-	-	5,8E-08	-	0	-
	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbonsor halons), Which break down when they reach the stratosphere and then catalytically destroy ozone molecules.														
Acidification potential (AP) ***kg SO2equiv/FU***	4,8E-02	3,5E-03	1,2E-05	-	-	-	-	-	-	-	-	5,0E-04	-	0	-
	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.														
Eutrophication potential (EP) ***kg (PO4)3-equiv/FU***	3,7E-03	8,4E-04	7,3E-07	-	-	-	-	-	-	-	-	1,2E-04	-	0	-
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.														
Photochemical ozone creation (POPC) ***Etheneequiv/FU***	3,0E-03	7,9E-05	9,4E-07	-	-	-	-	-	-	-	-	1,1E-05	-	0	-
	Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.														
Abiotic depletion potential for non-fossil resources (ADP-elements) - ***kg Sbequiv/FU***	1,5E-06	7,6E-11	2,3E-12	-	-	-	-	-	-	-	-	1,1E-11	-	0	-
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - ***MJ/FU***	1,0E+02	7,1E+00	2,0E-02	-	-	-	-	-	-	-	-	1,0E+00	-	0	-
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

RESOURCE USE (for 4160 and 4320)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials *- MJ/FU*	1,1E+01	1,2E-02	1,4E-01	-	-	-	-	-	-	-	-	4,3E-06	-	-	-
Use of renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) *MJ/FU*	1,1E+01	1,2E-02	1,4E-01	-	-	-	-	-	-	-	-	4,3E-06	-	-	-
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw	1,3E+02	7,2E+00	3,3E-01	-	-	-	-	-	-	-	-	1,0E+00	-	-	-
Use of non-renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) *- MJ/FU*	1,3E+02	7,2E+00	3,3E-01	-	-	-	-	-	-	-	-	1,0E+00	-	-	-
Use of secondary material *kg/FU*	2,8E-01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable secondary fuels- *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels *- MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water *- m3/FU*	2,7E-02	6,8E-04	6,8E-03	-	-	-	-	-	-	-	-	9,7E-05	-	-	-

WASTE CATEGORIES (for 4160 and 4320)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed *kg/FU*	3,0E-02	1,6E-04	1,7E-06	-	-	-	-	-	-	-	-	2,3E-05	-	0	-
Non-hazardous waste disposed *kg/FU*	3,1E+00	4,2E-04	6,4E-01	-	-	-	-	-	-	-	-	5,9E-05	-	34	-
Radioactive waste disposed *kg/FU*	7,8E-04	1,2E-04	3,8E-06	-	-	-	-	-	-	-	-	1,6E-05	-	0	-

OUTPUT FLOWS (for 4160 and 4320)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Components for re-use *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials for recycling *kg/FU*	1,0E-01	2,4E-06	2,7E-02	-	-	-	-	-	-	-	-	2,8E-07	-	-	-
Materials for energy recovery *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exported energy, detailed by energy carrier *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL IMPACTS (for 4350 and 4360)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Global Warming Potential (GWP) - ***kg CO2equiv/FU***	5,9E+00	5,8E-01	5,8E-03	-	-	-	-	-	-	-	-	8,3E-02	-	0	-
	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.														
Ozone Depletion (ODP) ***kg CFC 11 equiv/FU***	1,9E-06	4,0E-07	5,6E-10	-	-	-	-	-	-	-	-	5,8E-08	-	0	-
	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbonsor halons), Which break down when they reach the stratosphere and then catalytically destroy ozone molecules.														
Acidification potential (AP) ***kg SO2equiv/FU***	3,5E-02	3,5E-03	2,7E-05	-	-	-	-	-	-	-	-	5,0E-04	-	0	-
	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.														
Eutrophication potential (EP) ***kg (PO4)3-equiv/FU***	2,7E-03	8,4E-04	1,7E-06	-	-	-	-	-	-	-	-	1,2E-04	-	0	-
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.														
Photochemical ozone creation (POPC) ***Etheneequiv/FU***	2,1E-03	7,9E-05	2,2E-06	-	-	-	-	-	-	-	-	1,1E-05	-	0	-
	Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.														
Abiotic depletion potential for non-fossil resources (ADP-elements) - ***kg Sbequiv/FU***	1,0E-06	7,6E-11	5,3E-12	-	-	-	-	-	-	-	-	1,1E-11	-	0	-
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - ***MJ/FU***	5,0E+01	7,1E+00	4,6E-02	-	-	-	-	-	-	-	-	1,0E+00	-	0	-
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

RESOURCE USE (for 4350 and 4360)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials ***- MJ/FU***	6,4E+00	1,2E-02	3,3E-01	-	-	-	-	-	-	-	-	4,3E-06	-	-	-
Use of renewable primary energy used as raw materials ***MJ/FU***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) ***MJ/FU***	6,4E+00	1,2E-02	3,3E-01	-	-	-	-	-	-	-	-	4,3E-06	-	-	-
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw	6,6E+01	7,2E+00	7,8E-01	-	-	-	-	-	-	-	-	1,0E+00	-	-	-
Use of non-renewable primary energy used as raw materials ***MJ/FU***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) ***- MJ/FU***	6,6E+01	7,2E+00	7,8E-01	-	-	-	-	-	-	-	-	1,0E+00	-	-	-
Use of secondary material ***kg/FU***	2,2E-01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable secondary fuels- ***MJ/FU***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels ***- MJ/FU***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water ***- m3/FU***	1,7E-02	6,8E-04	6,9E-03	-	-	-	-	-	-	-	-	9,7E-05	-	-	-

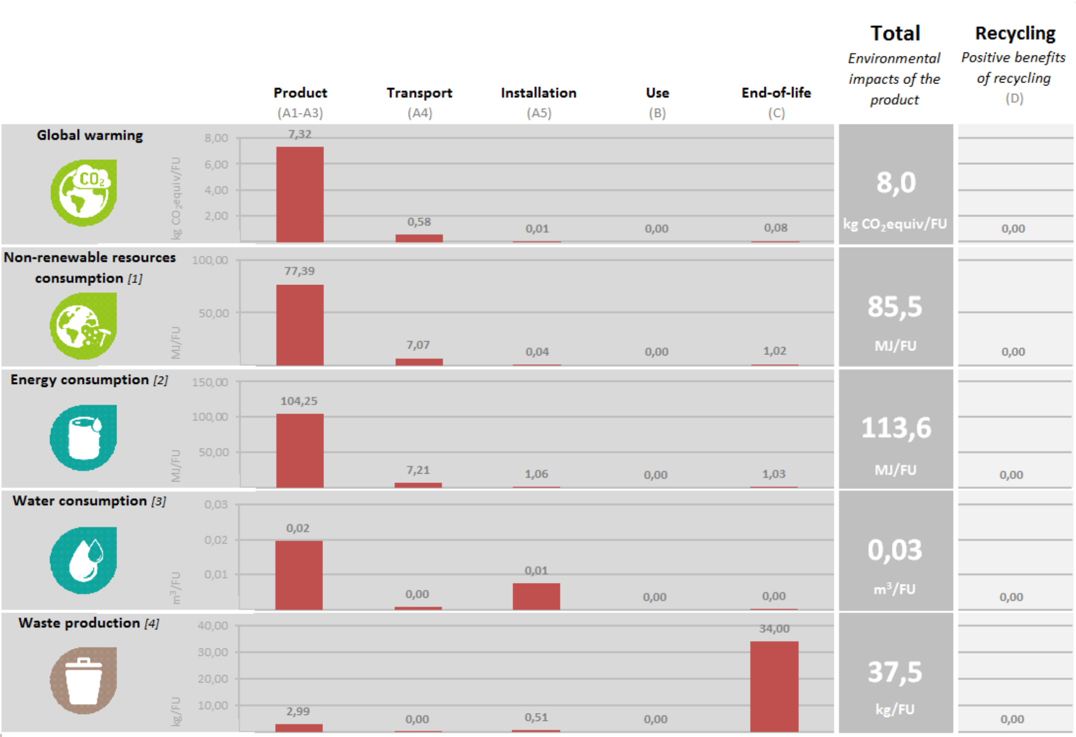
WASTE CATEGORIES (for 4350 and 4360)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Hazardous waste disposed ***kg/FU***	4,8E-03	1,6E-04	4,1E-06	-	-	-	-	-	-	-	-	2,3E-05	-	0	-
Non-hazardous waste disposed ***kg/FU***	2,7E+00	4,2E-04	5,1E-01	-	-	-	-	-	-	-	-	5,9E-05	-	34	-
Radioactive waste disposed ***kg/FU***	6,1E-04	1,2E-04	8,8E-06	-	-	-	-	-	-	-	-	1,6E-05	-	0	-

OUTPUT FLOWS (for 4350 and 4360)

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Components for re-use *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials for recycling *kg/FU*	7,6E-02	2,4E-06	6,2E-02	-	-	-	-	-	-	-	-	2,8E-07	-	-	-
Materials for energy recovery *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exported energy, detailed by energy carrier *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LCA results interpretation for 4150 and 4310

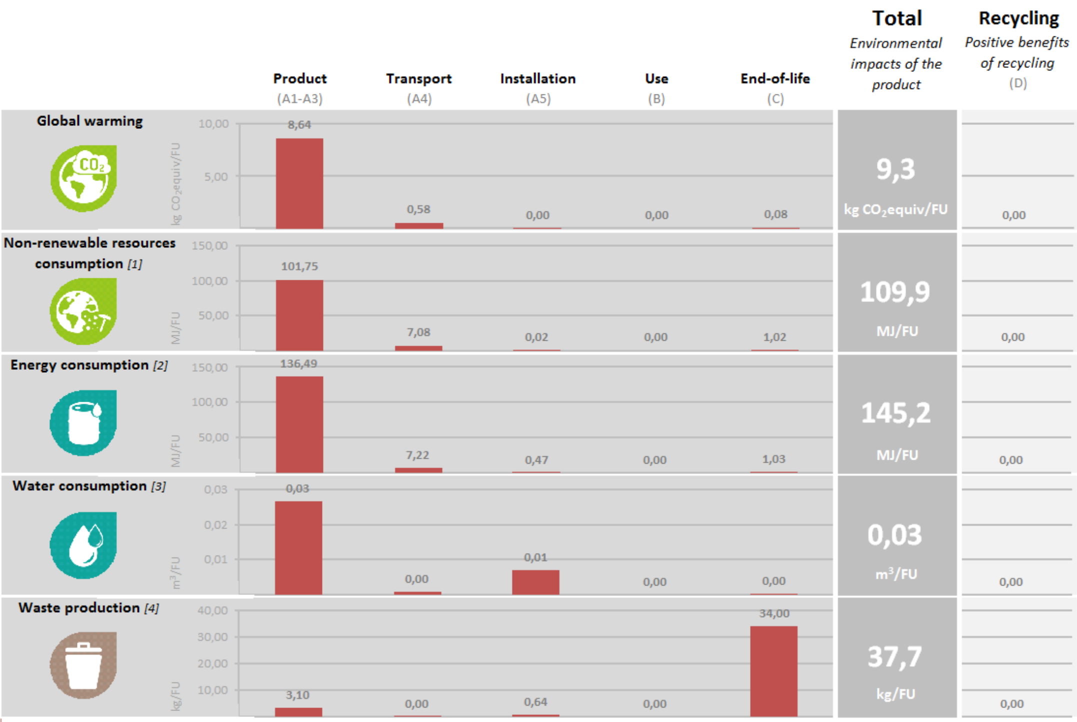


[1] This indicator corresponds to the ***abiotic depletion potential of fossil resources****.*
[2] This indicator corresponds to the total use of primary energy.
[3] This indicator corresponds to the use of net fresh water.
[4] This indicator corresponds to the ***sum*** *of hazardous, non-hazardous and radioactive waste disposed.*

Comments:

- The major environmental impacts of the product life cycle come from extraction and processing of raw materials.
- The majority of waste comes from demolition of final construction at the end of life.
- Water is added at installation.
- The formula mix and distribution pattern have identifiable impacts on the total.

LCA results interpretation for 4160 and 4320

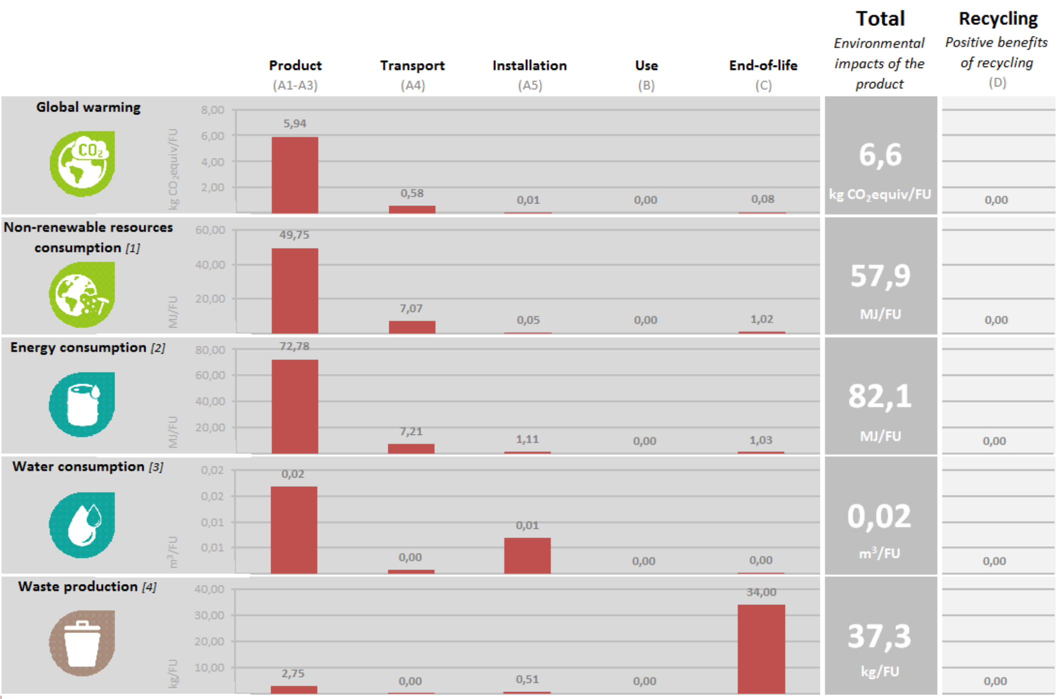


[1] This indicator corresponds to the ***abiotic depletion potential of fossil resources****.*
[2] This indicator corresponds to the total use of primary energy.
[3] This indicator corresponds to the use of net fresh water.
[4] This indicator corresponds to the ***sum*** *of hazardous, non-hazardous and radioactive waste disposed.*

Comments:

- The major environmental impacts of the product life cycle come from extraction and processing of raw materials.
- The majority of waste comes from demolition of final construction at the end of life.
- Water is added at installation.
- The formula mix and distribution pattern have identifiable impacts on the total.

LCA results interpretation for 4350 and 4360



*[1] This indicator corresponds to the **abiotic depletion potential of fossil resources**.*
[2] This indicator corresponds to the total use of primary energy.
[3] This indicator corresponds to the use of net fresh water.
*[4] This indicator corresponds to the **sum** of hazardous, non-hazardous and radioactive waste disposed.*

Comments:

- The major environmental impacts of the product life cycle come from extraction and processing of raw materials.
- The majority of waste comes from demolition of final construction at the end of life.
- Water is added at installation.
- The formula mix and distribution pattern have identifiable impacts on the total.

Health characteristics

See safety data sheet

Data quality

Geographical coverage: Scandinavia

Period: 2011

Background information is taken from the Deam or Ecoinvent database, trade association or suppliers data.

RM	generic database, trade association and supplier data
Production	own specific data
Transport	generic and specific
Application	generic and specific
Life in use	generic
End of life	generic
Energy	generic average Sweden or Europe The electricity used in the calculation model is extracted from a database and represent the Swedish electricity in 2008

References

1. PCR for constructions products and construction services, PCR 2012:01, version 1.2 (2013)
2. Appendix to PCR 2012:01 'Mortars applied to a surface' (2013)
3. EN 15804, Sustainability of construction works – Environmental product declaration – Core rules of the product category of construction products (2012)
4. ISO 14025: Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures (2006)
5. ISO 14040: Environmental management-Life Cycle Assessment-Principles and framework (2006)
6. ISO 14044: Environmental management-Life Cycle Assessment-Requirements and guidelines (2006)
7. General program instructions for the International EPD® system. Version 2.0 dated 2013
8. LCA report, Saint-Gobain Weber Multipurpose floor leveling screed products Sweden, Saint-Gobain Byggprodukter AB, Sweden (2013)