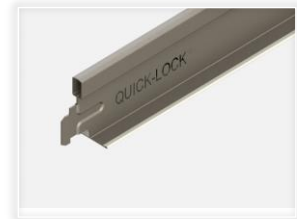




ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804 and ISO 14025

Quick-Lock® 24/38 HE



Programme: The International EPD® System, www.environdec.com
Programme operator: EPD International AB
Version: 1.0
Registration number: S-P05285

Date of publication (issue): 01/02/2022
Date of revision: 09/12/2021
Date of validity: 09/12/2026
In accordance with ISO 14025, ISO 21930 and EN 15804



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.

Summary Environmental product declaration

Content summary	
Verified by (external third-party verifier)	Martin Erlandsson, IVL Swedish Environmental Research Institute
Programme used	The International EPD System. For more information see www.environdec.com
Registration No	SP-05285
Owners declaration by	Saint-Gobain API BV P.O Box 1 3840 AA Harderwijk The Netherlands
Declaration as construction products	<p>The products to be verified herein are metallic grid profiles for ceiling suspension systems.</p> <p>The present environmental product declaration complies with standard ISO 14025 and describes the environmental impact. Its purpose is to promote compatible and sustainable environmental development of related construction methods.</p> <p>Reference PCR document: EN 15804 as the core PCR + International EPD System Product Category Rules - PCR for constructions products and construction services, Acoustical systems solutions (sub-oriented PCR; appendix to PCR 2012:01) - previously Acoustic ceilings. EPD of construction products may not be comparable if they do not comply with EN 15804.</p>
Validity	09/12/2026
Content of the declaration	<p>This is an environmental product declaration containing environmental information of the product in the family Quick-Lock® 24/38 HE. The values presented in this EPD are represented for the following products: T24/38 HE MB 3600, T24/38 HE CT 300, T24/38 HE CT 600, T24/38 HE CT 900, T24/38 HE CT 1200, T24/38 HE CT 1500, T24/38 HE CT 1800, T24/38 HE CT 2400</p> <p>Supplemental product information can be found at www.api.nl</p>
Issued date	09/12/2021

Product responsible:



Thomas Roul
Product Engineering & Development Manager
Saint-Gobain Ceilings

Independent third party verifier:



Martin Erlandsson
LCA Business Development Manager
IVL

Product description

Product description and description of use:

This Environmental Product Declaration (EPD) describes the environmental impact of 1 linear meter (1 lm) of installed steel profile with the intended use to suspend acoustic ceiling tiles.

The production site of Saint-Gobain API (The Netherlands) manufactures ceiling grid systems in different sizes. Cold rolled steel is shaped into a “body” through a process called roll forming. A cap of steel (“capping”) is added on the body to make the grid visually appealing. Multiple holes are then punched in the body to allow installation. The finished grids are then packed in cardboard boxes.

The grids provide excellent mechanical characteristics to suspend acoustic ceiling tiles, which contribute to a better health by their sound absorption capabilities. There is no maintenance needed for the grids except for normal room surface cleaning and there is no ageing, hence the grid system can last for the building lifetime.

Description of the main product components and materials for 1 m of product:

Parameter	Value
Product height	38 mm
Product width	24 mm
Hot-dip galvanized steel	100wt%
Plastic wrapping	0 g

Total weights								
Product	T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
Total weight [kg]	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

All raw materials contributing more than 5% to any environmental impact are listed in the table above. The profiles are free from substances of very high concern (SVHC). The product contains no substances from the REACH Candidate list (of 13.07.2021).

If there in future occur production changes that generate an increased impact larger than 10% the EPD will be updated and re-verified.

Other environmental indicators

Regarding the indoor environment, the Quick-Lock® 24/38 HE products are certified for or fulfil regulations according to the following table:

Certificate and Regulations

French VOC A+

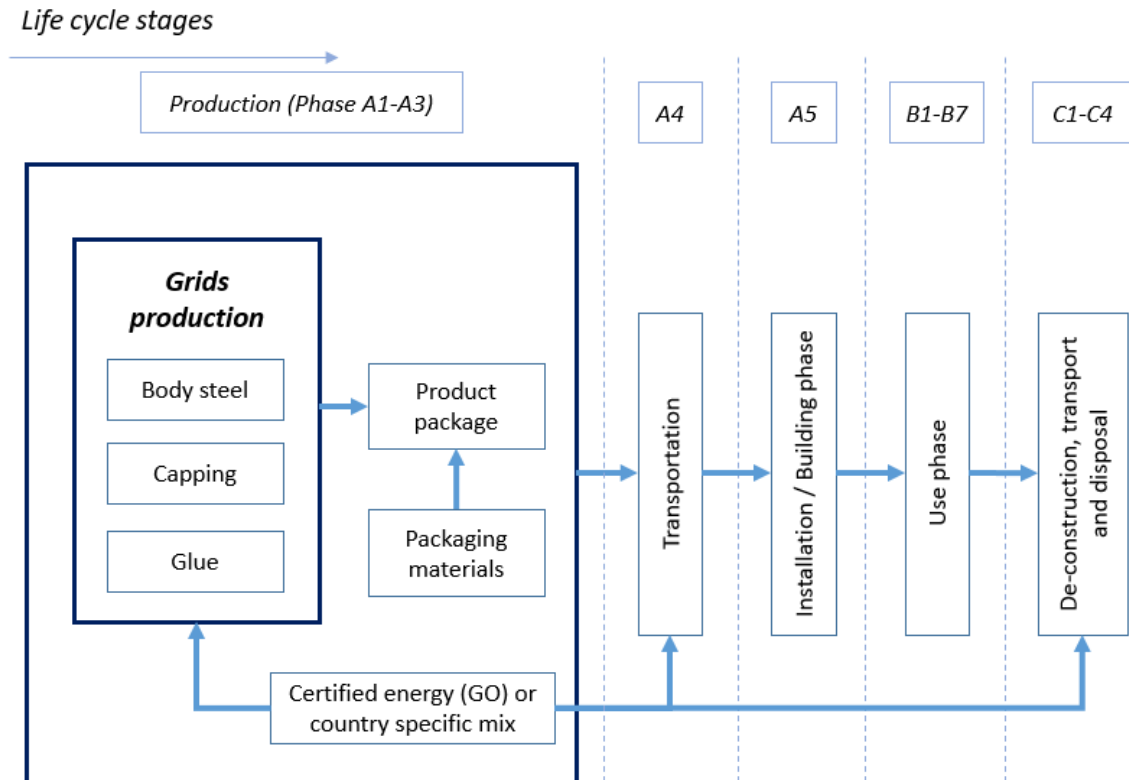
LCA calculation information

Declared unit	1 lm of installed steel profile
System boundaries	Cradle to grave: Mandatory stages = A1-3, A4-5, B1-7, C1-4 and optional stage = D This EPD covers the environmental impact only of the ceiling profiles.
Reference Service Life (RSL)	50 years
Cut-off rules	<p>The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%).</p> <p>Flows related to human activities such as employee transport are excluded.</p> <p>Biogenic carbon has not been included in calculations.</p> <p>The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.</p>
Allocations	Allocation criteria are based on mass.
Geographical coverage and time period	<p>For A1-A3: Global</p> <p>For A4 : European covering (2019)</p>

According to EN 15804, EPD of construction products might not be comparable if they do not comply with this standard. According to ISO 21930, EPD's might not be comparable if they are from different EPD administrating schemes.

Life Cycle stages

Flow diagram of the Life Cycle



Product stage, A1-A3

Description of the stage:

The product stage of the profiles is divided into 3 modules: A1 "Raw material and supply", A2 "Transport to the manufacturer" and A3 "Manufacturer". The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15804 standard. This rule is applied in this EPD.

A1 Raw material supply

This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process.

Specifically, the steel material supply covers production of the cold rolled steel and eventual coating. Packaging production and glue are also accounted in the calculation. All electricity is taken account for in country specific mix.

A2 Transport to the manufacturer

The raw materials are transported to the manufacturing site. In our case, the modelling includes: road, boat or train transportations (average values) of each raw material.

A3 Manufacturing

The profiles are manufactured on a continuous process. The steel coils are essentially unwrapped, shaped and cut to the desired length.

Manufacturing covers all processes linked to production, which comprises various related operations besides on-site activities such as, packaging and internal transportation. The manufacturing process also yields data on the combustion of refinery products, such as natural gas, diesel and gasoline, related to the production process.

The environmental profile of these energy carriers is modelled 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, cardboard and PE-film. 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 is 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.

Construction process stage, A4-A5

Description of the stage:

The construction process is divided into 2 modules: A4 "Transport to the building site" and A5 "Installation in the building."

Description of scenarios and additional technical information:

A4 Transport to the building site

This module includes transport from the production gate to the building site. Transport is calculated on the basis of a scenario with the parameters described in the following table.

Parameter	Value
Fuel type, consumption of fuel and vehicle or vehicle type used for transport	Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km
Distance	630 km (based on transports in 2019)
Capacity utilisation (including empty returns)	90% of the capacity in volume 100% of empty returns
Bulk density of transported products (if available)	0.1-0.8 kg/m
Volume capacity utilisation factor (if available)	0.45

The transport distance has been calculated from a European average transport for API in 2019 from the parameters in the table above.

A5:1 Installation in the building

This module includes waste of products during the implementation, i.e. the additional production processes to compensate the loss and the waste processing which occur in this stage.

Scenarios used for quantity of product wastage and waste processing are:

Parameter	Value
Waste of materials on the building site before waste processing, generated by the product's installation	5%
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal	Packaging waste is 100 % collected and modelled as material for recycling Grid waste is recycled.

A5:2 Energy usage

As a general figure the time to install 1 m² ceiling is considered to be 20 minutes. During this time the installer is considered to use handheld appliances for about 5% of this time which in this case results in 1 minute. A handheld device such as a cordless screwdriver is considered to have a power of 0.7 kilowatt. Therefore, in one minute it will consume a total energy of 0.7*60 = 4.2 kilojoule = 0.0042 MJ, per m² ceiling. In this context it is a negligible contribution and will not be part of the LCA calculation (lower than 0.1% of the total energy consumption).

Use stage (excluding potential savings), B1-B7

Description of the stage:

The use stage is divided into 7 modules, B1 "Use", B2 "Maintenance", B3 "Repair", B4 "Replacement", B5 "Refurbishment", B6 "Operational energy use", B7 "Operational water use"

Description of scenarios and additional technical information:

Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore, acoustic ceiling panels have no impact (excluding potential energy savings) on this stage.

End-of-life stage C1-C4

Description of the stage:

The end-of life stage is divided into 4 modules; C1 "De-construction, demolition", C2 "Transport to waste processing", C3 "Waste processing for reuse, recovery and/or recycling", C4 "Disposal".

Description of scenarios and additional technical information:

C1, De-construction, demolition

The dismantling of grid system takes part during renovation or demolition of the building. In this case, the environmental impact is assumed to be very small and can be neglected.

C2, Transport to waste processing

The model for transportation (see A4, Transportation to the building site) is applied.

C3, Waste processing for reuse, recovery and/or recycling;

The product is considered to be recycling.

C4, Disposal;

The product is assumed to be 100% recycled.

Parameter	Value/description
Collection process specified by type	0,1 - 0,8 kg of steel grid (collected as sorted metal)
Recovery system specified by type	Grid collected as sorted metal
Disposal specified by type	0,2 - 0,35 kg of grid to recycling
Assumptions for scenario development (e.g. transportation)	Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km
	50 km (distance to landfill)

Reuse/recovery/recycling potential, D

Not declared.

LCA results

LCA model, aggregation of data and environmental impact are calculated through the GaBi Professional software. Secondary data is mainly taken from Ecoinvent 3.6 with some GaBi datasets.

Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plants of Saint-Gobain API in 2019.

Modules declared, geographical scope, share of specific data, and variation between sites (last two percentages given in GWP indicator) are stated in the following table.

	Product phase			Construction process phase		Use phase							End of life phase				Resource recovery phase
	Raw material and supply	Transport to the manufacturer	Manufacturing	Transport to the building site	Installation in the building	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport to waste processing	Waste processing	Disposal	Reuse-Recovery/Recycling potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND
Geography	NL, EU, GLO	NL, EU, GLO	NL	EU, GLO	EU, GLO								EU, GLO	EU, GLO	EU, GLO	EU, GLO	-
Specific data	<10 %			-													-
Variation sites	One site			-													-

Summary of the LCA results are detailed in the tables below.









All results in the EPD are written in logarithmic base of ten. Reading example:
 $5.2E-03 = 5.2 \cdot 10^{-3} = 0,0052$.

MND (module not declared), is equal to MNA (module not assessed).




Environmental impact.

		Environmental impacts							
Parameters		T24/38 HEMB 3600	T24/38 HE-CT 300	T24/38 HE-CT 600	T24/38 HE-CT 900	T24/38 HE-CT 1200	T24/38 HE-CT 1500	T24/38 HE-CT 1800	T24/38 HE-CT 2400
 Global Warming Potential (GWP) - kg CO ₂ equiv/FU	A1-A3	1.09E+00	1.11E+00	1.08E+00	1.09E+00	1.08E+00	1.09E+00	1.08E+00	1.10E+00
	A4	1.94E-02	2.02E-02	2.01E-02	1.89E-02	1.92E-02	1.89E-02	1.92E-02	1.93E-02
	A5	5.45E-02	5.54E-02	5.41E-02	5.44E-02	5.37E-02	5.44E-02	5.40E-02	5.47E-02
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	1.16E+00	1.19E+00	1.16E+00	1.16E+00	1.15E+00	1.16E+00	1.15E+00	1.17E+00
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	A1-A3	1.50E-09	2.72E-09	2.51E-09	6.73E-10	1.07E-09	7.03E-10	1.18E-09	1.32E-09
	A4	4.42E-18	4.61E-18	4.58E-18	4.30E-18	4.36E-18	4.31E-18	4.38E-18	4.40E-18
	A5	7.51E-11	1.36E-10	1.26E-10	3.37E-11	5.34E-11	3.51E-11	5.90E-11	6.60E-11
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	3.27E-19	3.27E-19	3.27E-19	3.27E-19	3.27E-19	3.27E-19	3.27E-19	3.27E-19
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	1.58E-09	2.86E-09	2.64E-09	7.07E-10	1.12E-09	7.38E-10	1.24E-09	1.39E-09
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 (chlorofluorocarbons or halogens), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.									
 Acidification potential (AP) kg SO ₂ equiv/FU	A1-A3	2.42E-03	2.50E-03	2.45E-03	2.38E-03	2.38E-03	2.39E-03	2.39E-03	2.42E-03
	A4	2.63E-05	2.74E-05	2.72E-05	2.56E-05	2.59E-05	2.56E-05	2.60E-05	2.61E-05
	A5	1.21E-04	1.25E-04	1.22E-04	1.19E-04	1.19E-04	1.19E-04	1.19E-04	1.21E-04
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	1.94E-06	1.94E-06	1.94E-06	1.94E-06	1.94E-06	1.94E-06	1.94E-06	1.94E-06
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	2.57E-03	2.65E-03	2.60E-03	2.52E-03	2.52E-03	2.53E-03	2.53E-03	2.57E-03
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 (PO ₄) ³⁻ equiv/FU	A1-A3	3.66E-04	3.92E-04	3.79E-04	3.51E-04	3.52E-04	3.52E-04	3.57E-04	3.64E-04
	A4	5.56E-06	5.79E-06	5.75E-06	5.40E-06	5.48E-06	5.41E-06	5.50E-06	5.53E-06
	A5	1.83E-05	1.96E-05	1.89E-05	1.76E-05	1.76E-05	1.76E-05	1.78E-05	1.82E-05
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	4.11E-07	4.11E-07	4.11E-07	4.11E-07	4.11E-07	4.11E-07	4.11E-07	4.11E-07
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	3.91E-04	4.17E-04	4.04E-04	3.75E-04	3.76E-04	3.76E-04	3.80E-04	3.89E-04
Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.									
 Photochemical ozone creation (POPC) kg Ethene equiv/FU	A1-A3	4.09E-04	4.17E-04	4.07E-04	4.07E-04	4.02E-04	4.07E-04	4.04E-04	4.10E-04
	A4	-7.86E-06	-8.19E-06	-8.13E-06	-7.64E-06	-7.75E-06	-7.65E-06	-7.78E-06	-7.81E-06
	A5	2.04E-05	2.08E-05	2.04E-05	2.03E-05	2.01E-05	2.03E-05	2.02E-05	2.05E-05
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	-5.81E-07	-5.81E-07	-5.81E-07	-5.81E-07	-5.81E-07	-5.81E-07	-5.81E-07	-5.81E-07
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	4.21E-04	4.29E-04	4.18E-04	4.19E-04	4.14E-04	4.19E-04	4.16E-04	4.22E-04
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 Sb equiv/FU	A1-A3	5.20E-06	5.24E-06	5.14E-06	5.20E-06	5.14E-06	5.20E-06	5.16E-06	5.21E-06
	A4	7.15E-10	7.45E-10	7.40E-10	6.95E-10	7.05E-10	6.96E-10	7.07E-10	7.11E-10
	A5	2.60E-07	2.62E-07	2.57E-07	2.60E-07	2.57E-07	2.60E-07	2.58E-07	2.61E-07
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	5.28E-11	5.28E-11	5.28E-11	5.28E-11	5.28E-11	5.28E-11	5.28E-11	5.28E-11
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	5.46E-06	5.50E-06	5.40E-06	5.46E-06	5.40E-06	5.46E-06	5.42E-06	5.47E-06
 Abiotic depletion potential for fossil resources (ADP-fossil fuels) - MJ/FU	A1-A3	1.08E+01	1.10E+01	1.08E+01	1.07E+01	1.06E+01	1.07E+01	1.06E+01	1.08E+01
	A4	2.67E-01	2.78E-01	2.76E-01	2.60E-01	2.63E-01	2.60E-01	2.64E-01	2.66E-01
	A5	5.38E-01	5.49E-01	5.38E-01	5.33E-01	5.29E-01	5.34E-01	5.32E-01	5.38E-01
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	1.97E-02	1.97E-02	1.97E-02	1.97E-02	1.97E-02	1.97E-02	1.97E-02	1.97E-02
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	1.16E+01	1.19E+01	1.16E+01	1.15E+01	1.14E+01	1.15E+01	1.14E+01	1.16E+01
Consumption of non-renewable resources, thereby lowering their availability for future generations.									





Resource use

Parameters		Environmental impacts									
		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400		
 Use of renewable primary energy excludng renewable primary energy resources used as raw materials - MJ / FU	A1-A3	6.08E+01	6.32E+01	6.22E+01	5.94E+01	5.96E+01	5.94E+01	6.00E+01	6.06E+01		
	A4	6.51E+03	6.78E+03	6.74E+03	6.35E+03	6.42E+03	6.34E+03	6.44E+03	6.47E+03		
	A5	3.04E+02	3.16E+02	3.11E+02	2.97E+02	2.98E+02	2.97E+02	3.00E+02	3.03E+02		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	6.46E+01	6.71E+01	6.60E+01	6.31E+01	6.33E+01	6.31E+01	6.37E+01	6.43E+01		
 Use of renewable primary energy used as raw materials - MJ / FU	A1-A3	3.49E+01	6.12E+01	5.67E+01	1.71E+01	2.56E+01	1.78E+01	2.80E+01	3.10E+01		
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A5	-3.49E+01	-6.12E+01	-5.67E+01	-1.71E+01	-2.56E+01	-1.78E+01	-2.80E+01	-3.10E+01		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) - MJ / FU	A1-A3	9.57E+01	1.24E+02	1.19E+02	7.65E+01	8.52E+01	7.72E+01	8.80E+01	9.16E+01		
	A4	6.51E+03	6.78E+03	6.74E+03	6.35E+03	6.42E+03	6.34E+03	6.44E+03	6.47E+03		
	A5	-3.19E+01	-5.80E+01	-5.36E+01	-1.41E+01	-2.26E+01	-1.48E+01	-2.50E+01	-2.80E+01		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04	4.81E+04		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	6.46E+01	6.71E+01	6.60E+01	6.31E+01	6.33E+01	6.31E+01	6.37E+01	6.43E+01		
 Use of non-renewable primary energy excludng non-renewable primary energy resources used as raw materials - MJ /FU	A1-A3	1.14E+01	1.16E+01	1.14E+01	1.13E+01	1.12E+01	1.13E+01	1.13E+01	1.14E+01		
	A4	2.70E+01	2.81E+01	2.79E+01	2.63E+01	2.66E+01	2.63E+01	2.67E+01	2.68E+01		
	A5	5.69E+01	5.82E+01	5.70E+01	5.65E+01	5.60E+01	5.65E+01	5.64E+01	5.70E+01		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	1.23E+01	1.25E+01	1.23E+01	1.22E+01	1.20E+01	1.22E+01	1.22E+01	1.23E+01		
 Use of non-renewable primary energy used as raw materials - MJ / FU	A1-A3	3.25E+02	3.49E+02	3.44E+02	3.09E+02	3.17E+02	3.10E+02	3.19E+02	3.22E+02		
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A5	-2.80E+03	-5.15E+03	-4.74E+03	-1.21E+03	-1.97E+03	-1.27E+03	-2.18E+03	-2.45E+03		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - MJ / FU	A1-A3	1.14E+01	1.16E+01	1.14E+01	1.13E+01	1.12E+01	1.13E+01	1.13E+01	1.14E+01		
	A4	2.70E+01	2.81E+01	2.79E+01	2.63E+01	2.66E+01	2.63E+01	2.67E+01	2.68E+01		
	A5	5.66E+01	5.77E+01	5.65E+01	5.64E+01	5.58E+01	5.64E+01	5.62E+01	5.68E+01		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02	-2.97E+02		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	1.23E+01	1.25E+01	1.23E+01	1.22E+01	1.20E+01	1.22E+01	1.22E+01	1.23E+01		
 Use of secondary material Kg / FU	A1-A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
 Use of renewable secondary fuels MJ / FU	A1-A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
 Use of non-renewable secondary fuels - MJ / FU	A1-A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
 Use of net fresh water m³ / FU	A1-A3	7.15E+03	7.26E+03	7.12E+03	7.12E+03	7.05E+03	7.12E+03	7.09E+03	7.16E+03		
	A4	1.65E+06	1.72E+06	1.71E+06	1.60E+06	1.63E+06	1.61E+06	1.63E+06	1.64E+06		
	A5	3.57E+04	3.63E+04	3.56E+04	3.56E+04	3.53E+04	3.56E+04	3.54E+04	3.58E+04		
	B1-B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C2	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07	1.22E+07		
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	D	MND	MND	MND	MND	MND	MND	MND	MND		
	Total AC	7.51E+03	7.63E+03	7.48E+03	7.48E+03	7.41E+03	7.48E+03	7.45E+03	7.52E+03		

Waste categories

Environmental impacts									
Parameters		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
 Hazardous waste disposed kg / FU	A1 -A3	8.16E-09	8.19E-09	8.04E-09	8.19E-09	8.08E-09	8.19E-09	8.11E-09	8.19E-09
	A4	2.88E-12	3.00E-12	2.98E-12	2.80E-12	2.83E-12	2.80E-12	2.85E-12	2.86E-12
	A5	4.08E-10	4.10E-10	4.02E-10	4.10E-10	4.04E-10	4.10E-10	4.06E-10	4.10E-10
	B1 -B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	2.12E-13	2.12E-13	2.12E-13	2.12E-13	2.12E-13	2.12E-13	2.12E-13	2.12E-13
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	8.58E-09	8.61E-09	8.45E-09	8.61E-09	8.49E-09	8.61E-09	8.52E-09	8.61E-09
 Non-hazardous waste disposed - kg / FU		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
	A1 -A3	8.88E-02	9.03E-02	8.35E-02	9.03E-02	8.54E-02	9.03E-02	8.67E-02	9.03E-02
	A4	7.26E-06	7.56E-06	7.50E-06	7.05E-06	7.15E-06	7.06E-06	7.18E-06	7.21E-06
	A5	4.44E-03	4.51E-03	4.18E-03	4.51E-03	4.27E-03	4.51E-03	4.34E-03	4.51E-03
	B1 -B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND
 Radioactive waste disposed kg / FU		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
	A1 -A3	1.81E-06	1.81E-06	1.80E-06	1.80E-06	1.80E-06	1.80E-06	1.80E-06	1.81E-06
	A4	3.17E-07	3.30E-07	3.27E-07	3.08E-07	3.12E-07	3.08E-07	3.13E-07	3.15E-07
	A5	9.02E-08	9.04E-08	9.02E-08	9.01E-08	9.00E-08	9.01E-08	9.01E-08	9.02E-08
	B1 -B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	2.34E-08	2.34E-08	2.34E-08	2.34E-08	2.34E-08	2.34E-08	2.34E-08	2.34E-08
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND

Output flow

Environmental impacts									
Parameters		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
 Components for re-use kg/FU	A1 -A3	-	-	-	-	-	-	-	-
	A4	-	-	-	-	-	-	-	-
	A5	-	-	-	-	-	-	-	-
	B1 -B7	-	-	-	-	-	-	-	-
	C1	-	-	-	-	-	-	-	-
	C2	-	-	-	-	-	-	-	-
	C3	-	-	-	-	-	-	-	-
	C4	-	-	-	-	-	-	-	-
	D	MND	MND	MND	MND	MND	MND	MND	MND
	Total AC	-	-	-	-	-	-	-	-
 Materials for recycling kg/FU		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
	A1 -A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	A5	3.95E-02	5.58E-02	5.30E-02	2.84E-02	3.37E-02	2.88E-02	3.52E-02	3.71E-02
	B1 -B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	3.56E-01	3.56E-01	3.56E-01	3.56E-01	3.56E-01	3.56E-01	3.56E-01	3.56E-01
	D	MND	MND	MND	MND	MND	MND	MND	MND
 Materials for energy recovery - kg/FU		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
	A1 -A3	-	-	-	-	-	-	-	-
	A4	-	-	-	-	-	-	-	-
	A5	-	-	-	-	-	-	-	-
	B1 -B7	-	-	-	-	-	-	-	-
	C1	-	-	-	-	-	-	-	-
	C2	-	-	-	-	-	-	-	-
	C3	-	-	-	-	-	-	-	-
	C4	-	-	-	-	-	-	-	-
	D	MND	MND	MND	MND	MND	MND	MND	MND
 Exported energy MJ/FU		T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
	A1 -A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	B1 -B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	D	MND	MND	MND	MND	MND	MND	MND	MND

Summary

Aggregation of results from A1 to C4 in selected impact categories.

	T24/38 HE MB 3600	T24/38 HE CT 300	T24/38 HE CT 600	T24/38 HE CT 900	T24/38 HE CT 1200	T24/38 HE CT 1500	T24/38 HE CT 1800	T24/38 HE CT 2400
Global warming  kg CO ₂ equiv/FU	1.16	1.19	1.16	1.16	1.15	1.16	1.15	1.17
Non-renewable resources consumption [1]  MJ/FU	12	12	12	11.51	11.41	11.51	11.41	11.63
Energy consumption [2]  MJ/FU	13	13	13	12.78	12.68	12.78	12.79	12.91
Water consumption [3]  m ³ /FU	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Waste production [4]  kg/FU	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

[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.

Reference list

Reach: EU REACH Regulation (EC) No 1907/2006

LCA report: Project_report_on_API_LCA_2021-12-09

EN 15804:2012+A1:2013: Sustainability of construction works - Environmental product declarations

PCR 2012:01 Construction products and construction services (version 2.33 dated 2020-09-18)

CONTACT INFORMATION

LCA author and EPD owner



Saint-Gobain API BV
P.O Box 1
3840 AA Harderwijk
The Netherlands

Elie Falcand
elie.falcand@saint-gobain.com

Programme operator



EPD International AB
Box 210 60
100 31 Stockholm
Sweden
info@environdedec.com