epddanmark

ECO PLATFORM EPD VERIFIED

Owner: ANRIN GmbH
No.: MD-25093-EN
Issued: 08-08-2025
Valid to: 08-08-2030

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
ANRIN GmbH
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VAT no. DE811843623
www.anrin.com

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

☒ Product specific
☐ Average
☐ Worst Case

Declared product(s)
This EPD considers gratings made of stainless steel, galvanized steel, cast iron and polypropylene, which are produced by several manufacturers for ANRIN GmbH.

Number of declared datasets/product variations: 4

Production sites

Stainless steel grid
Frydlant (Czech); Rovigo (Italy); Beijing (China)

Galvanized steel grid
Frydlant (Czech); Rovigo (Italy); Ense (Germany); Wickede (Germany); Lotte (Germany); Neuenrade (Germany); Lippstadt (Germany)

Cast iron grid
Na Papirne (Czech); Hebei (China); Cangzhou (China)

Polypropylene grid
Geseke (Germany); Rzeszow (Poland)

Use of Guarantees of Origin
☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
1 kg grids made of various materials: stainless steel, galvanized steel, cast iron and polypropylene.

Year of production site data (A3)
2023

EPD version
This EPD is the original version.

Issued: 08-08-2025
Valid to: 08-08-2030

Basis of calculation
This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☒Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Product Category Rules (PCR): Construction products, 2019:14, version 1.3.4

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:
Stefan Emil Danielsson

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (ND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

Product information

Product description

The grids are a cover for the polymer concrete channel sold by ANRIN. The grids are made of 100% stainless steel, galvanized steel, cast iron and polypropylene and offer a wide range of applications from the private to the industrial sector. The surface is highly resistant to the effects of water and easy to clean.

The most important of the respective grid product components are listed in the table below.

Material	Weight (kg)	Weight-% of declared product
Stainless steel sheet	1	100 %

Material	Weight (kg)	Weight-% of declared product
Galvanized steel sheet	1	100 %

Material	Weight (kg)	Weight-% of declared product
Cast iron	1	100 %

Material	Weight (kg)	Weight-% of declared product
Polypropylene granulate	1	100 %

Product packaging:

The grids are placed directly on the polymer concrete channels for transportation and shipped together with them. The same amount of packaging was used for the grids as for the polymer concrete channel intended for this purpose. The conservative approach was chosen in order to also depict a single transport of the grids. The packaging material is recycled after the products have been installed. The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight of packaging material (kg)	Weight-% of packaging
Single-use pallets	0.00416	67
Wood strips	0.00149	24
Steel strip	0.000035	0.5
PET strapping band	0.00030	4.8
PE stretch film	0.0002	3.2
Total	**0.00621**	**100**

Representativity

The grids described here are mainly sold on the European market. The data used here relates to the three different production sites. The locations were weighted accordingly based on the quantities purchased from ANRIN.

The product is available in different sizes. Scaling is possible as the defined unit here is 1 kg.

The product-specific data is based on annual values from calendar year 2023.

The background data is based on data sets from the LCA for Experts (GaBi) software in version 2024.2.

The foreground data used are less than 2 years old. The background data used are less than 6 years. As suitable datasets were not available for all countries and regions, there are discrepancies in terms of geographical and technical data quality. In summary, the data quality can be described as "fair".

Hazardous substances

The grid products do not contain any substances on the "Candidate List of Substances of Very High Concern for Authorization".

(http://echa.europa.eu/candidate-list-table)

Products use

The stainless steel grids (Figure 1) are used in hygienic areas, the food industry or in areas with high humidity such as swimming pools and offer a visually clean solution.

The galvanized steel grids (Figure 2) tend to be used outdoors due to their good weather resistance. The most common areas of application here are driveways, parking lots, garages or paths with vehicle loads.

The cast iron grids (Figure 3) are used in the industrial sector or in heavy-duty applications, as they can withstand heavy weights. For this reason, these grids are also used in public areas such as road drainage.

The polypropylene grids (Figure 4) are used in gardens, terraces, footpaths and light applications as well as indoors where there is little vehicle traffic.

The grids are placed on the already installed polymer concrete channel for installation.

Further information on the products and the areas of application can be found under the following link:

https://www.anrin.com/en/products/overview/

Essential characteristics

Technical information can be requested from the manufacturer or can be found on the manufacturer's website:

https://www.anrin.com/de/downloads/

Reference Service Life (RSL)

According to EN 15804:2012+A2:2019, RSL is only mandatory for EPD's that include either use stage (B) or a functional unit. Therefore, RSL is not applicable in this EPD.

Pictures of products

Figure 1: stainless steel grid

Figure 2: Galvanized steel grid

Figure 3: Cast iron grid

Figure 4: Polypropylene grid

LCA background

Declared unit

The LCI and LCIA results in this EPD refer to 1 kg of various grids, including raw materials, production energies and installation as well as uninstallation with subsequent end-of-life considerations.

Name	Value	Unit
Declared unit	1.00	kg

Functional unit

The functional unit is not defined, therefore a declared unit is used.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804, and PCR 2019:14 Construction products (EN 15804+A2) (version 1.3.4).

Energy modelling principles

Foreground system:
No "guarantees of origin" are used in production. Only LPG is used to heat the PE film for packaging the grids.

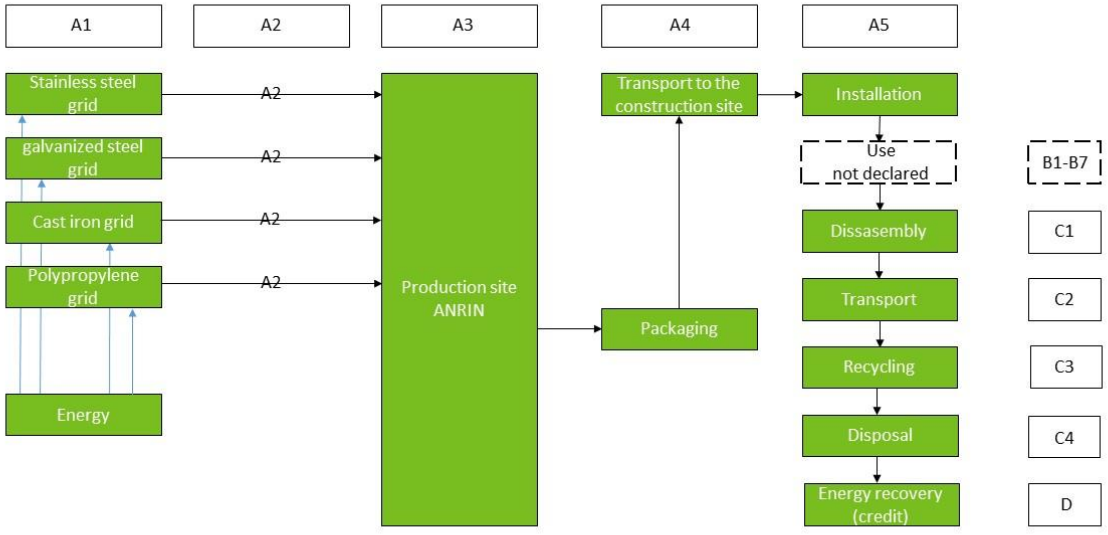
Information about the energy in the foreground system:

Energy	EF	Unit
Liquefied Petroleum Gas	0.089	kg CO_2e/MJ

Background system:
Other processes upstream and downstream of production are modeled with processes from the LCA for experts (GaBi) background database, which is based on average data.

Flowdiagram

The process diagram below shows the life cycle of the products under consideration.



System boundary

This EPD is based on a cradle-to-gate with options LCA, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

The product stage includes the procurement of all raw materials and energy as well as transportation to the production site.

To produce the stainless steel grid and the galvanized steel grid, the corresponding sheets are welded together by a machine and cut to length. There is an additional step in the production of galvanized steel. The desired product is created by immersing the steel in a zinc bath after the hot-dip galvanizing process. The cast iron grid is produced by melting the material, which is then poured into a mold and hardened. The polypropylene grid is produced by injection molding. The granulate is heated and the soft plastic is injected into the intended mold. Corresponding energies are also included in this module.

A2 – Transport to the production site

Transportation from the individual grid production sites to ANRIN is mainly by truck. For longer distances, a container ship with subsequent truck transportation is used.

A3 – Manufacturing processes

The delivered grids are packed at ANRIN in Anröchte and prepared for transportation.

The LCA results for the product stage are given in aggregated form, which means that the sub-modules A1, A2 and A3 are given as one module A1-A3.

Construction process stage (A4-A5) includes:

Transport from the ANRIN company to the construction site is by truck, 20-26 tons, Euro 6 and an assumed distance of 900 km, based on the product under consideration. The distance represents the distance between ANRIN GmbH and the northernmost point in Denmark. The scenario takes into account the impact caused by the operation of the means of transportation (including diesel) depending on the mass to be transported (declared unit).

The installation of the grid is carried out manually. The grids are placed on the already installed polymer concrete channel. The packaging materials are transported away by truck and fed into a treatment process with subsequent recycling.

End of Life (C1-C4) includes:

In all cases, the grid is lifted from the gutter by hand so that no environmental impact occurs in stage C1.
The removed material is transported in a 20-26 t, Euro 6 diesel truck. The transport distance is assumed to be 100 km.
5% of the dismantled grating is disposed of at the landfill. The remaining 95 % of the specified unit is recycled and later it becomes a new raw material in another product system. For the polypropylene grid, a treatment process with subsequent recycling was also taken into account. The energy consumption required for the treatment process with subsequent recycling is taken into account in module C3.

Re-use, recovery and recycling potential (D) includes:

The amount of product at the end of the life cycle that cannot be reused as raw material input is credited to the system.

LCA results - stainless steel grid

The values in the following tables are shown in scientific notation, e.g. 1.04E+02. This value can also be displayed as 1.04*10² or 104. This also applies for numbers with a negative superscript.

ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	3.70E+00	9.14E-02	4.51E-03	0.00E+00	1,02E-02	0.00E+00	1.04E-03	-6.04E-01
GWP-fossil	[kg CO_2 eq.]	3.71E+00	9.23E-02	4.46E-03	0.00E+00	1.03E-02	0.00E+00	1.04E-03	-6.08E-01
GWP-biogenic	[kg CO_2 eq.]	4.87E-03	2.64E-03	4.07E-05	0.00E+00	2.57E-04	0.00E+00	4.07E-06	3.58E-03
GWP-luluc	[kg CO_2 eq.]	5.99E-03	1.72E-03	6.31E-06	0.00E+00	1.68E-04	0.00E+00	4.53E-06	-8.09E-05
ODP	[kg CFC 11 eq.]	1.52E-11	2.82E-14	1.39E-13	0.00E+00	1.47E-15	0.00E+00	3.24E-15	8.16E-13
AP	[mol H^+ eq.]	2.42E-02	1.25E-04	6.85E-06	0.00E+00	1.50E-05	0.00E+00	6.49E-06	-1.49E-03
EP-freshwater	[kg P eq.]	5.15E-06	2.43E-07	2.36E-08	0.00E+00	4.27E-08	0.00E+00	2.11E-09	-1.42E-07
EP-marine	[kg N eq.]	2.67E-03	4.60E-05	2.11E-06	0.00E+00	5.65E-06	0.00E+00	1.57E-06	-2.39E-04
EP-terrestrial	[mol N eq.]	2.98E-02	5.55E-04	2.21E-05	0.00E+00	6.67E-05	0.00E+00	1.73E-05	-2.14E-03
POCP	[kg NMVOC eq.]	8.49E-03	1.22E-04	5.18E-06	0.00E+00	1.49E-05	0.00E+00	4.94E-06	-9.70E-04
ADPm[1]	[kg Sb eq.]	1.14E-04	1.52E-08	8.02E-10	0.00E+00	8.71E-10	0.00E+00	6.98E-11	-3.44E-06
ADPf[1]	[MJ]	4.92E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	-6.04E+00
WDP[1]	[m^3 world eq. deprived]	8.45E-01	6.41E-04	1.21E-04	0.00E+00	1.55E-04	0.00E+00	1.27E-04	-4.10E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	3.72E-07	1.16E-09	5.56E-11	0.00E+00	1.45E-10	0.00E+00	7.51E-11	-1.40E-08
IRP[2]	[kBq U235 eq.]	2.46E-01	1.97E-04	3.75E-04	0.00E+00	3.48E-05	0.00E+00	3.21E-05	1.37E-02
ETP-fw[1]	[CTUe]	1.77E+01	9.11E-01	2.38E-02	0.00E+00	9.78E-02	0.00E+00	1.05E-02	-3.17E-01
HTP-c[1]	[CTUh]	1.56E-06	1.82E-11	1.11E-12	0.00E+00	1.98E-12	0.00E+00	2.29E-13	2.48E-10
HTP-nc[1]	[CTUh]	2.83E-08	7.65E-10	1.91E-11	0.00E+00	8.87E-11	0.00E+00	8.12E-12	1.19E-09
SQP[1]	-	9.11E+00	7.81E-01	3.70E-02	0.00E+00	6.48E-02	0.00E+00	3.17E-03	-7.84E-02
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

RESOURCE USE PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1.18E+01	1.30E-01	5.67E-02	0.00E+00	1.14E-02	0.00E+00	2.56E-03	2.39E-01
PERM	[MJ]	8.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.19E+01	1.30E-01	5.67E-02	0.00E+00	1.14E-02	0.00E+00	2.56E-03	2.39E-01
PENRE	[MJ]	4.92E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	-6.04E+00
PENRM	[MJ]	4.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.93E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	-6.04E+00
SM	[kg]	5.95E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.66E-02	1.21E-04	1.75E-05	0.00E+00	1.26E-05	0.00E+00	3.85E-06	-6.15E-02
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								

WASTE CATEGORIES AND OUTPUT FLOWS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1.72E-08	5.71E-11	1.19E-10	0.00E+00	5.05E-12	0.00E+00	4.11E-12	-4.52E-08
NHWD	[kg]	3.79E-01	1.98E-04	5.36E-05	0.00E+00	2.15E-05	0.00E+00	5.01E-02	7.31E-02
RWD	[kg]	1.61E-03	1.87E-06	3.05E-06	0.00E+00	2.40E-07	0.00E+00	2.34E-07	6.62E-07
CRU	[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
MFR	[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
MER	[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
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
EET	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								

BIOGENIC CARBON CONTENT PER [1 kg]		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0.00E+00
Biogenic carbon centent in accompanying packagaing	[kg C]	2.83E-03
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

LCA results - galvanized steel grid

The values in the following tables are shown in scientific notation, e.g. 1.04E+02. This value can also be displayed as $1.04*10^2$ or 104. This also applies for numbers with a negative superscript.

ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	2.71E+00	9.14E-02	4.51E-03	0.00E+00	1.02E-02	0.00E+00	1.04E-03	-1.56E+00
GWP-fossil	[kg CO_2 eq.]	2.71E+00	9.23E-02	4.46E-03	0.00E+00	1.03E-02	0.00E+00	1.04E-03	-1.57E+00
GWP-biogenic	[kg CO_2 eq.]	-5.39E-04	2.64E-03	4.07E-05	0.00E+00	2.57E-04	0.00E+00	4.07E-06	9.27E-03
GWP-luluc	[kg CO_2 eq.]	1.53E-03	1.72E-03	6.31E-06	0.00E+00	1.68E-04	0.00E+00	4.53E-06	-2.09E-04
ODP	[kg CFC 11 eq.]	5.84E-13	2.82E-14	1.39E-13	0.00E+00	1.47E-15	0.00E+00	3.24E-15	2.11E-12
AP	[mol H^+ eq.]	6.85E-03	1.25E-04	6.85E-06	0.00E+00	1.50E-05	0.00E+00	6.49E-06	-3.85E-03
EP-freshwater	[kg P eq.]	1.45E-06	2.43E-07	2.36E-08	0.00E+00	4.27E-08	0.00E+00	2.11E-09	-3.66E-07
EP-marine	[kg N eq.]	1.56E-03	4.60E-05	2.11E-06	0.00E+00	5.65E-06	0.00E+00	1.57E-06	-6.18E-04
EP-terrestrial	[mol N eq.]	1.69E-02	5.55E-04	2.21E-05	0.00E+00	6.67E-05	0.00E+00	1.73E-05	-5.54E-03
POCP	[kg NMVOC eq.]	5.22E-03	1.22E-04	5.18E-06	0.00E+00	1.49E-05	0.00E+00	4.94E-06	-2.51E-03
ADPm[1]	[kg Sb eq.]	1.02E-05	1.52E-08	8.02E-10	0.00E+00	8.71E-10	0.00E+00	6.98E-11	-8.90E-06
ADPf[1]	[MJ]	2.99E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	-1.56E+01
WDP[1]	[m^3 world eq. deprived]	1.74E+00	6.41E-04	1.21E-04	0.00E+00	1.55E-04	0.00E+00	1.27E-04	-1.06E-01
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	7.55E-08	1.16E-09	5.56E-11	0.00E+00	1.45E-10	0.00E+00	7.51E-11	-3.61E-08
IRP[2]	[kBq U235 eq.]	5.57E-02	1.97E-04	3.75E-04	0.00E+00	3.48E-05	0.00E+00	3.21E-05	3.53E-02
ETP-fw[1]	[CTUe]	4.36E+00	9.11E-01	2.38E-02	0.00E+00	9.78E-02	0.00E+00	1.05E-02	-8.20E-01
HTP-c[1]	[CTUh]	2.04E-09	1.82E-11	1.11E-12	0.00E+00	1.98E-12	0.00E+00	2.29E-13	6.42E-10
HTP-nc[1]	[CTUh]	1.21E-08	7.65E-10	1.91E-11	0.00E+00	8.87E-11	0.00E+00	8.12E-12	3.06E-09
SQP[1]	-	2.13E+00	7.81E-01	3.70E-02	0.00E+00	6.48E-02	0.00E+00	3.17E-03	-2.03E-01
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents. occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

RESOURCE USE PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1.29E+00	1.30E-01	5.67E-02	0.00E+00	1.14E-02	0.00E+00	2.56E-03	6.17E-01
PERM	[MJ]	8.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.37E+00	1.30E-01	5.67E-02	0.00E+00	1.14E-02	0.00E+00	2.56E-03	6.17E-01
PENRE	[MJ]	2.99E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	-1.56E+01
PENRM	[MJ]	4.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.00E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	-1.56E+01
SM	[kg]	4.46E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.27E-02	1.21E-04	1.75E-05	0.00E+00	1.26E-05	0.00E+00	3.85E-06	-1.59E-01
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								

WASTE CATEGORIES AND OUTPUT FLOWS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1.76E-08	5.71E-11	1.19E-10	0.00E+00	5.05E-12	0.00E+00	4.11E-12	-1.17E-07
NHWD	[kg]	9.22E-02	1.98E-04	5.36E-05	0.00E+00	2.15E-05	0.00E+00	5.01E-02	1.89E-01
RWD	[kg]	1.64E-05	1.87E-06	3.05E-06	0.00E+00	2.40E-07	0.00E+00	2.34E-07	1.71E-06
CRU	[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
MFR	[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
MER	[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
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
EET	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								

BIOGENIC CARBON CONTENT PER [1 kg]		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0.00E+00
Biogenic carbon centent in accompanying packagaing	[kg C]	2.83E-03
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

LCA results - cast iron grid

The values in the following tables are shown in scientific notation, e.g. 1.04E+02. This value can also be displayed as $1.04*10^2$ or 104. This also applies for numbers with a negative superscript.

ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	3.06E+00	9.14E-02	4.51E-03	0.00E+00	1.02E-02	0.00E+00	1.04E-03	0.00E+00
GWP-fossil	[kg CO_2 eq.]	3.03E+00	9.23E-02	4.46E-03	0.00E+00	1.03E-02	0.00E+00	1.04E-03	0.00E+00
GWP-biogenic	[kg CO_2 eq.]	2.69E-02	2.64E-03	4.07E-05	0.00E+00	2.57E-04	0.00E+00	4.07E-06	0.00E+00
GWP-luluc	[kg CO_2 eq.]	1.62E-03	1.72E-03	6.31E-06	0.00E+00	1.68E-04	0.00E+00	4.53E-06	0.00E+00
ODP	[kg CFC 11 eq.]	4.25E-11	2.82E-14	1.39E-13	0.00E+00	1.47E-15	0.00E+00	3.24E-15	0.00E+00
AP	[mol H^+ eq.]	9.27E-03	1.25E-04	6.85E-06	0.00E+00	1.50E-05	0.00E+00	6.49E-06	0.00E+00
EP-freshwater	[kg P eq.]	8.70E-06	2.43E-07	2.36E-08	0.00E+00	4.27E-08	0.00E+00	2.11E-09	0.00E+00
EP-marine	[kg N eq.]	3.15E-03	4.60E-05	2.11E-06	0.00E+00	5.65E-06	0.00E+00	1.57E-06	0.00E+00
EP-terrestrial	[mol N eq.]	3.41E-02	5.55E-04	2.21E-05	0.00E+00	6.67E-05	0.00E+00	1.73E-05	0.00E+00
POCP	[kg NMVOC eq.]	8.59E-03	1.22E-04	5.18E-06	0.00E+00	1.49E-05	0.00E+00	4.94E-06	0.00E+00
ADPm[1]	[kg Sb eq.]	3.37E-07	1.52E-08	8.02E-10	0.00E+00	8.71E-10	0.00E+00	6.98E-11	0.00E+00
ADPf[1]	[MJ]	4.00E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	0.00E+00
WDP[1]	[m^3 world eq. deprived]	2.71E-01	6.41E-04	1.21E-04	0.00E+00	1.55E-04	0.00E+00	1.27E-04	0.00E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	2.29E-07	1.16E-09	5.56E-11	0.00E+00	1.45E-10	0.00E+00	7.51E-11	0.00E+00
IRP[2]	[kBq U235 eq.]	2.19E-01	1.97E-04	3.75E-04	0.00E+00	3.48E-05	0.00E+00	3.21E-05	0.00E+00
ETP-fw[1]	[CTUe]	1.11E+01	9.11E-01	2.38E-02	0.00E+00	9.78E-02	0.00E+00	1.05E-02	0.00E+00
HTP-c[1]	[CTUh]	2.96E-09	1.82E-11	1.11E-12	0.00E+00	1.98E-12	0.00E+00	2.29E-13	0.00E+00
HTP-nc[1]	[CTUh]	1.76E-08	7.65E-10	1.91E-11	0.00E+00	8.87E-11	0.00E+00	8.12E-12	0.00E+00
SQP[1]	-	1.48E+01	7.81E-01	3.70E-02	0.00E+00	6.48E-02	0.00E+00	3.17E-03	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

RESOURCE USE PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2.11E+01	1.30E-01	5.67E-02	0.00E+00	1.14E-02	0.00E+00	2.56E-03	0.00E+00
PERM	[MJ]	8.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.12E+01	1.30E-01	5.67E-02	0.00E+00	1.14E-02	0.00E+00	2.56E-03	0.00E+00
PENRE	[MJ]	4.00E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	0.00E+00
PENRM	[MJ]	4.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.01E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	0.00E+00	1.73E-02	0.00E+00
SM	[kg]	1.05E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.25E-02	1.21E-04	1.75E-05	0.00E+00	1.26E-05	0.00E+00	3.85E-06	0.00E+00
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								

WASTE CATEGORIES AND OUTPUT FLOWS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	4.64E-08	5.71E-11	1.19E-10	0.00E+00	5.05E-12	0.00E+00	4.11E-12	0.00E+00
NHWD	[kg]	2.66E-02	1.98E-04	5.36E-05	0.00E+00	2.15E-05	0.00E+00	5.01E-02	0.00E+00
RWD	[kg]	2.36E-03	1.87E-06	3.05E-06	0.00E+00	2.40E-07	0.00E+00	2.34E-07	0.00E+00
CRU	[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
MFR	[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
MER	[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
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
EET	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								

BIOGENIC CARBON CONTENT PER [1 kg]		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0.00E+00
Biogenic carbon centent in accompanying packagaing	[kg C]	2.83E-03
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

LCA results - polypropylene grid

The values in the following tables are shown in scientific notation, e.g. 1.04E+02. This value can also be displayed as $1.04*10^2$ or 104. This also applies for numbers with a negative superscript.

ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	2.61E+00	9.14E-02	4.51E-03	0.00E+00	1.02E-02	2.76E-01	0.00E+00	-8.34E-01
GWP-fossil	[kg CO_2 eq.]	2.60E+00	9.23E-02	4.46E-03	0.00E+00	1.03E-02	2.74E-01	0.00E+00	-8.29E-01
GWP-biogenic	[kg CO_2 eq.]	1.36E-02	2.64E-03	4.07E-05	0.00E+00	2.57E-04	1.85E-03	0.00E+00	-4.22E-03
GWP-luluc	[kg CO_2 eq.]	1.25E-03	1.72E-03	6.31E-06	0.00E+00	1.68E-04	4.67E-05	0.00E+00	-1.97E-04
ODP	[kg CFC 11 eq.]	2.50E-11	2.82E-14	1.39E-13	0.00E+00	1.47E-15	3.62E-12	0.00E+00	-2.75E-12
AP	[mol H^+ eq.]	3.72E-03	1.25E-04	6.85E-06	0.00E+00	1.50E-05	3.75E-04	0.00E+00	-1.13E-03
EP-freshwater	[kg P eq.]	5.84E-06	2.43E-07	2.36E-08	0.00E+00	4.27E-08	2.73E-06	0.00E+00	-1.14E-06
EP-marine	[kg N eq.]	1.06E-03	4.60E-05	2.11E-06	0.00E+00	5.65E-06	9.94E-05	0.00E+00	-3.24E-04
EP-terrestrial	[mol N eq.]	1.12E-02	5.55E-04	2.21E-05	0.00E+00	6.67E-05	1.05E-03	0.00E+00	-3.43E-03
POCP	[kg NMVOC eq.]	4.18E-03	1.22E-04	5.18E-06	0.00E+00	1.49E-05	2.66E-04	0.00E+00	-1.44E-03
ADPm[1]	[kg Sb eq.]	2.97E-07	1.52E-08	8.02E-10	0.00E+00	8.71E-10	6.28E-08	0.00E+00	-6.96E-08
ADPf[1]	[MJ]	7.81E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	3.85E+00	0.00E+00	-2.93E+01
WDP[1]	[m^3 world eq. deprived]	1.32E-01	6.41E-04	1.21E-04	0.00E+00	1.55E-04	5.44E-02	0.00E+00	-4.46E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	3.31E-08	1.16E-09	5.56E-11	0.00E+00	1.45E-10	3.20E-09	0.00E+00	-1.02E-08
IRP[2]	[kBq U235 eq.]	1.12E-01	1.97E-04	3.75E-04	0.00E+00	3.48E-05	8.77E-02	0.00E+00	-2.07E-02
ETP-fw[1]	[CTUe]	3.96E+01	9.11E-01	2.38E-02	0.00E+00	9.78E-02	1.19E+00	0.00E+00	-1.52E+01
HTP-c[1]	[CTUh]	1.19E-09	1.82E-11	1.11E-12	0.00E+00	1.98E-12	6.27E-11	0.00E+00	-3.50E-10
HTP-nc[1]	[CTUh]	3.48E-08	7.65E-10	1.91E-11	0.00E+00	8.87E-11	1.33E-09	0.00E+00	-1.34E-08
SQP[1]	-	7.84E+00	7.81E-01	3.70E-02	0.00E+00	6.48E-02	1.44E+00	0.00E+00	-9.81E-01
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

RESOURCE USE PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1.13E+01	1.30E-01	5.67E-02	0.00E+00	1.14E-02	2.42E+00	0.00E+00	-1.43E+00
PERM	[MJ]	8.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.14E+01	1.30E-01	5.67E-02	0.00E+00	1.14E-02	2.42E+00	0.00E+00	-1.43E+00
PENRE	[MJ]	7.81E+01	1.17E+00	5.31E-02	0.00E+00	1.32E-01	3.85E+00	0.00E+00	-2.93E+01
PENRM	[MJ]	5.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.29E+02	1.17E+00	5.31E-02	0.00E+00	1.32E-01	3.85E+00	0.00E+00	-2.93E+01
SM	[kg]	4.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.00E-02	1.21E-04	1.75E-05	0.00E+00	1.26E-05	2.10E-03	0.00E+00	-3.14E-03
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								

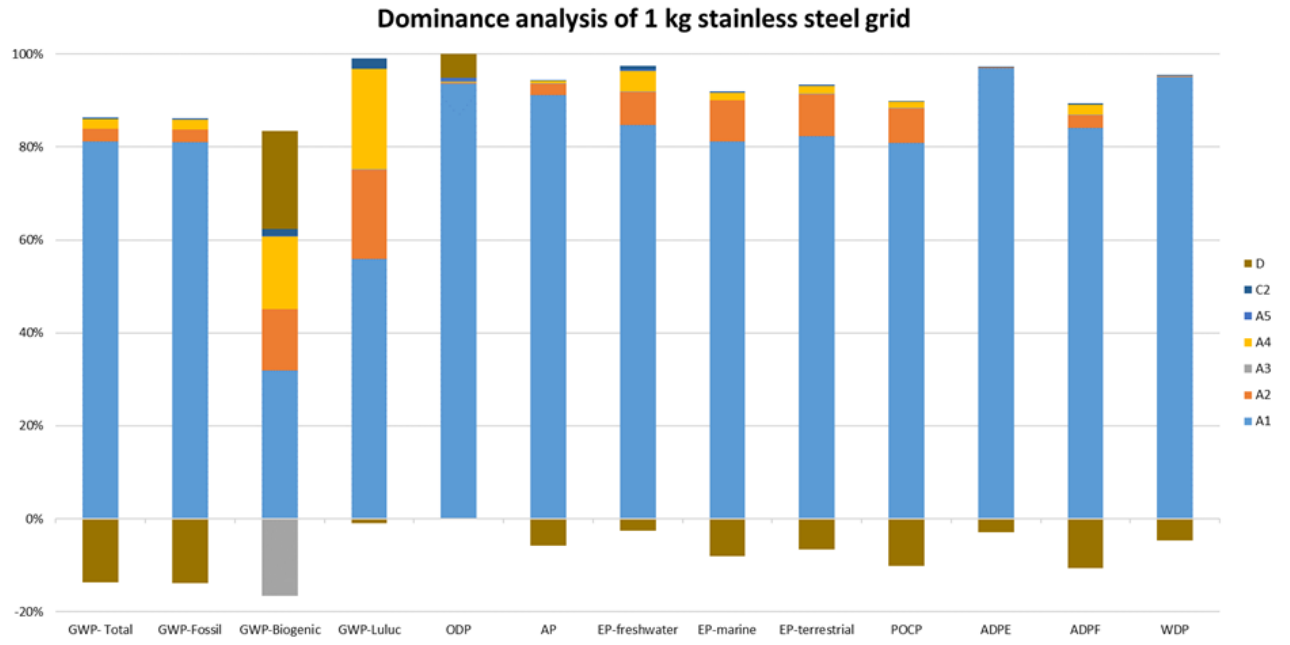
WASTE CATEGORIES AND OUTPUT FLOWS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	2.49E-08	5.71E-11	1.19E-10	0.00E+00	5.05E-12	1.21E-07	0.00E+00	-3.54E-09
NHWD	[kg]	2.45E-02	1.98E-04	5.36E-05	0.00E+00	2.15E-05	1.06E-01	0.00E+00	-6.98E-03
RWD	[kg]	9.27E-04	1.87E-06	3.05E-06	0.00E+00	2.40E-07	5.33E-04	0.00E+00	-1.59E-04
CRU	[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
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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
EET	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								

BIOGENIC CARBON CONTENT PER [1 kg]		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0.00E+00
Biogenic carbon centent in accompanying packagaing	[kg C]	2.83E-03
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

LCA interpretation - stainless steel grid

The majority of the environmental impact of Module A1 is caused by the production of raw materials. This is partly due to the fact that the metal production process is very energy-intensive, despite the use of scrap or secondary materials. Due to the occasionally long transport distances, the transportation of raw materials to ANRIN is clearly visible in some impact categories in terms of diesel consumption. The proportionate credit appears as a negative value in almost all categories. A graphic representation with the percentage contributions of the individual life cycle phases to the overall result can be found in the following diagram.



Technical information on scenarios

Transport from ANRIN to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transport distance	900	km
Capacity utilisation (including empty runs)	61	%

Installation of the product and disposal of the packaging material (A5)

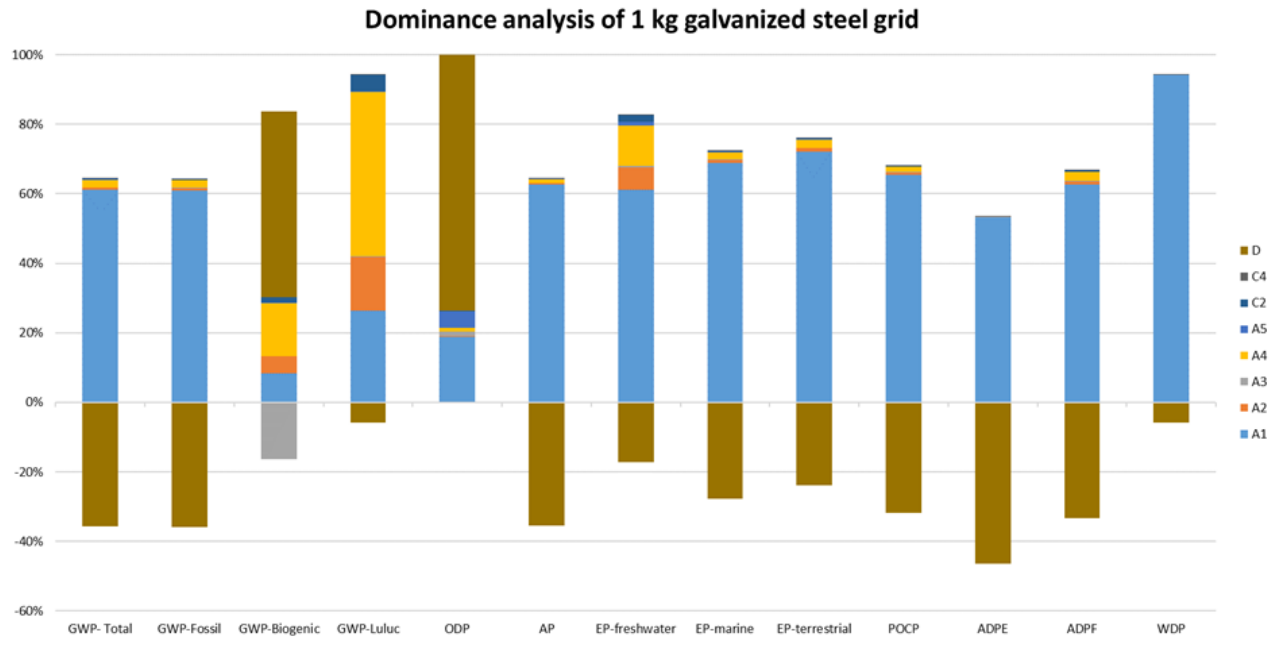
Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 34-40t	-
Transport distance	715	km
Energy consumption recycling	8.70E-03	kWh

End of life (C1-D)

Scenario information	Value	Unit
Collected separately	1	kg
For recycling	0.95	kg
For final disposal (landfill)	0.05	kg
Type of fuel	Diesel	
Vehicle type	Truck Euro 6 A-C 20-26t	
Transportation distance	100	km

LCA interpretation - galvanized steel grid

The majority of the environmental impact of Module A1 is caused by the production of raw materials. This is partly due to the fact that the metal production process is very energy-intensive. The proportion of scrap used in production is not as high as for the other metal grids, meaning that credit D is significantly higher. The diesel consumption for transportation in module A4 is clearly reflected in the GWP categories. A graphical representation with the percentage shares of the individual life cycle phases in the overall result can be found in the following diagram.



Technical information on scenarios

Transport from ANRIN to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transport distance	900	km
Capacity utilisation (including empty runs)	61	%

Installation of the product and disposal of the packaging material (A5)

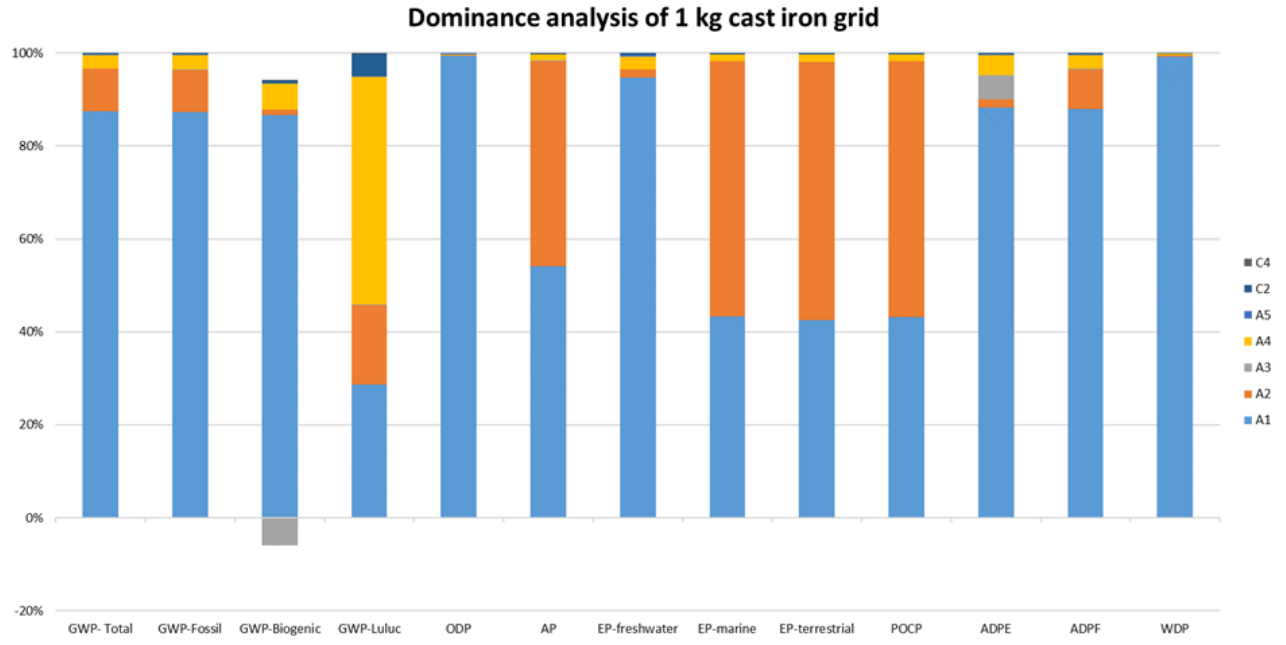
Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 34-40t	-
Transport distance	715	km
Energy consumption recycling	8.70E-03	kWh

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
For recycling	0.95	kg
For final disposal (landfill)	0.05	kg
Type of fuel	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transportation distance	100	km

LCA interpretation - cast iron grid

On the one hand, module A1 plays a major role here. One reason for this is that the metal production process is very energy-intensive, despite the use of scrap or secondary materials. In the production of cast iron grids, the raw material has to be melted again in order to be poured in liquid form into the corresponding mold. The liquefaction step is very energy-intensive and can therefore be clearly seen in the diagram. Production mainly takes place in China, which means that transportation by truck and ship accounts for the largest share in some impact categories. The other modules such as A5, C2 and C4 only account for a small proportion. The following diagrams show the percentage shares of the individual life cycle phases in the overall result.



Technical information on scenarios

Transport from ANRIN to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transport distance	900	km
Capacity utilisation (including empty runs)	61	%

Installation of the product and disposal of the packaging material (A5)

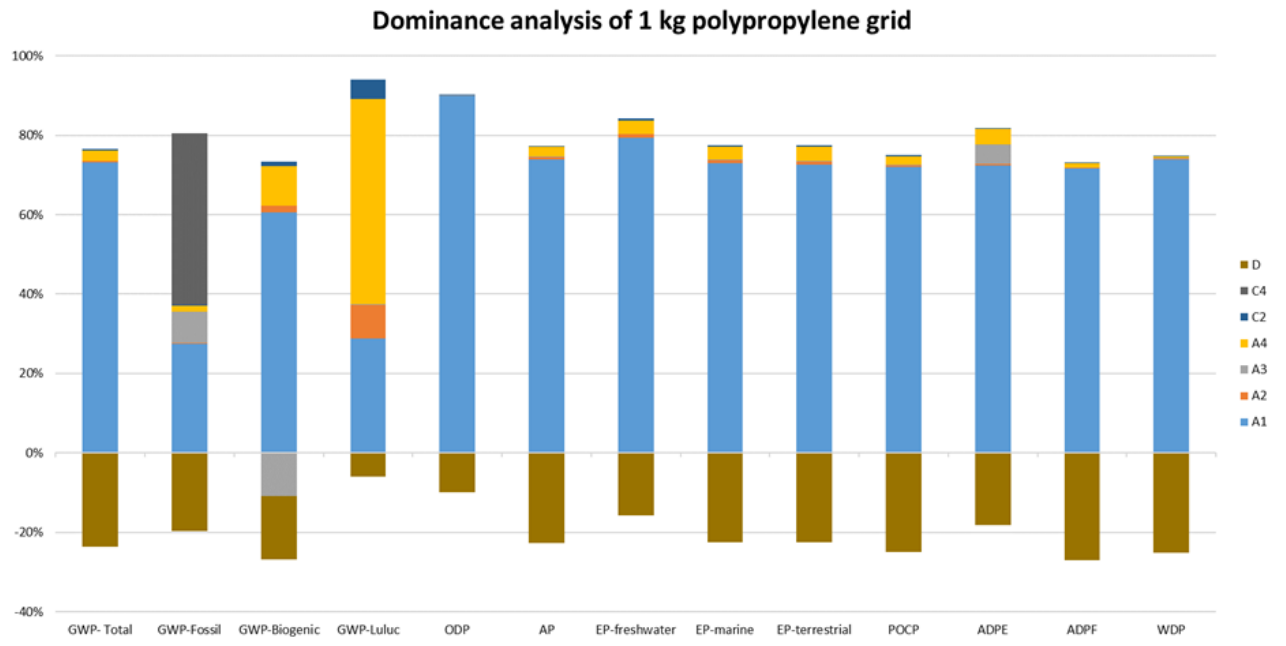
Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 34-40t	-
Transport distance	715	km
Energy consumption recycling	8.70E-03	kWh

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
For recycling	0.95	kg
For final disposal (landfill)	0.05	kg
Type of fuel	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transportation distance	100	km

LCA interpretation – polypropylene grid

The following graphical evaluation shows that there are several modules that are significant in the individual environmental impact categories. Firstly, module A1 is of great importance here. One reason for this is that the production process for the granulate is based on crude oil and is energy-intensive. In the production of polypropylene grids, the raw material has to be melted again in order to be injected into the prepared mold in liquid form. Production takes place in Germany and Poland, so the transportation route by truck is very short and therefore has little impact. The other modules such as A2 and C2 only make up a small proportion. A graphical representation with the percentage shares of the individual life cycle phases in the overall result can be found in the following diagrams.



Technical information on scenarios

Transport from ANRIN to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transport distance	900	km
Capacity utilisation (including empty runs)	61	%

Installation of the product and disposal of the packaging material (A5)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck Euro 6 A-C 34-40t	-
Transport distance	715	km
Energy consumption recycling	8.70E-03	kWh

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
For recycling	0.95	kg
For final disposal (landfill)	0.05	kg
Electricity for recycling process	0.458	kWh
Type of fuel	Diesel	-
Vehicle type	Truck Euro 6 A-C 20-26t	-
Transportation distance	100	km

Indoor air

This information is not relevant for the products considered here. The grids do not release any emissions that affect indoor air if they are installed indoors.

Soil and water

The EPD does not contain any information on the release of hazardous substances into soil and water, as the horizontal standards for the corresponding measurements are not available.

References

Publisher	epddanmark www.epddanmark.dk Template version 2024.2
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	WESSLING Consulting Engineering GmbH & Co. KG Oststraße 6, 48341 Altenberge www.wessling-consulting-engineering.de WESSLING Consulting | Engineering
LCA software / background data	Sphera LCA for Experts (GaBi) Database Version 2024.2 www.sphera.com
3rd party verifier	Stefan Emil Danielsson SDG Consulting

General programme instructions
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