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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

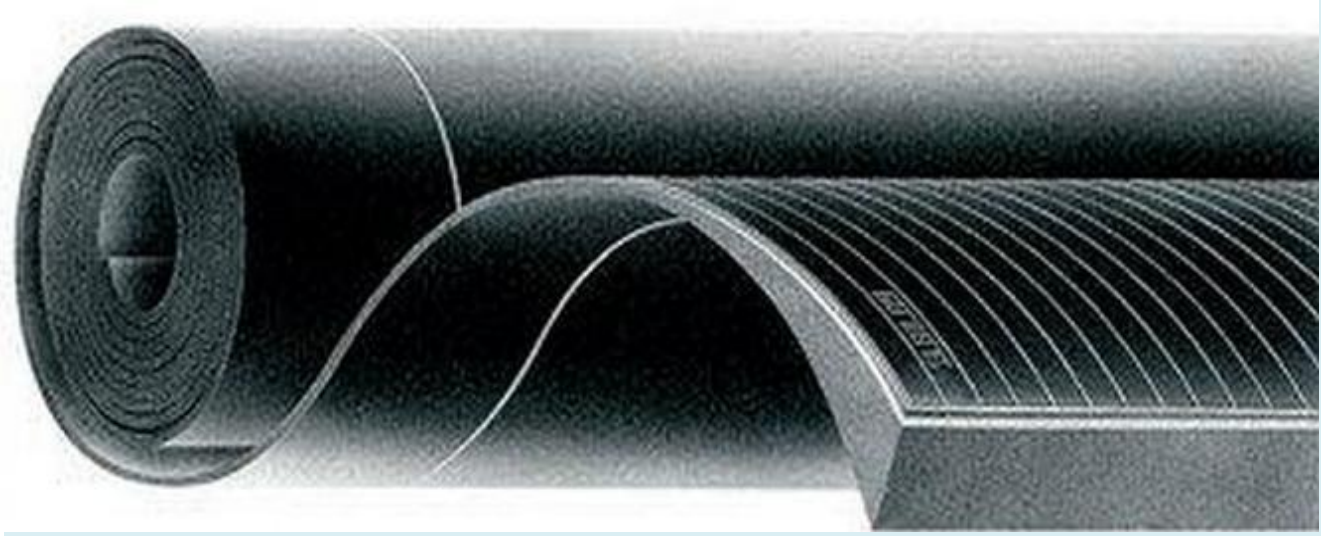
in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Imperbel NV/SA
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-3215-1853-EN
Registration number:	NEPD-3215-1853-EN
ECO Platform reference number:	-
Issue date:	10.11.2021
Valid to:	10.11.2026

Derbigum NT

Imperbel NV/SA

www.epd-norge.no



General information

Product:
Derbigum NT

Owner of the declaration:
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Declaration number:
NEPD-3215-1853-EN

Place of production:
Perwez, Belgium

ECO Platform reference number:

Management system:
ISO 14001
ISO 9001

This declaration is based on Product Category Rules:
CEN Standard EN 15804 serves as core PCR
NPCR 022 version 2.0 PCR – Part B for roof waterproofing

Organisation no:
BE 0400.484.591

Statement of liability:
The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturerinformation, life cycle assessment data and evidences.

Issue date:
10.11.2021

Valid to:
10.11.2026

Declared unit:
1 m^2 of produced waterproofing for cradle-to-gate as required by the reference PCR.

Year of study:
2020

Functional unit:
1 m^2 installed roof waterproofing from cradle-to-grave with activities needed for a study period of 60 years for a building.

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

The EPD has been worked out by:
Niclas Silfverstrand

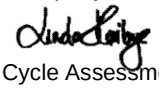
RAMBØLL

Verification:

The CEN Norm EN 15804 serves as the core PCR.
Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☑ external

Third party verifier:



Owner, Life Cycle Assessment Consulting
(Independent verifier approved by EPD Norway)

Approved

Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:
Derbigum NT is a bituminous waterproofing membrane modified by plastomeric polymers. Derbigum NT partly consists of bitumen extracted from recycled cutting waste from installing bituminous waterproofing membranes and used bituminous roofing membranes. The top of the membrane is equipped with two different reinforcements; a glass mat and a non-woven polyester. These materials give the roofing membrane dimensional stability and tear and puncture resistance.

Technical data:
The modified bituminous roofing membrane is covered by harmonized technical specification EN13707:2004+A2:2009. Declaration of performance according to EU regulation 305/2011 is available for the declared product.

Fire resistance: In accordance with EN 13501-5, class BROOF (t2) according to method CEN/TS 1187.

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:
www.derbigum.no (Norway)
www.se.derbigum.com (Sweden)

Product specification:
The main product components are shown in the table below, representative of the product at the factory gate:

Materials	kg	%
Bitumen	2.44-2.81	53-61
Polymers	0.78-0.97	17-21
Reinforcements	0.18-0.28	4-6
Others	0.83-1.11	18-24

Market:
Norway and Sweden

Reference service life, product:
The Derbigum NT is expected to fulfill its function for 40 years in accordance with measurements carried out by British Board of Agrément (an independent certifier) of Derbigum's bitumen at 4 different locations (7 roofs; 3985 m2) during the use phase (S260461 Report Issue 2 FINAL (lifetime), which concluded that a RSL of 40 years can be fulfilled. One replacement has been accounted for in order to maintain the function during the 60-year study period of the building.

Reference service life, building:
60 years

LCA: Calculation rules

Functional unit

The LCI and LCIA results in this EPD relates to a functional unit of 1 m^2 installed Derbigum NT bitumen roof waterproofing system, consisting of a 4 mm layer, which is complimented by an additional 3 mm layer after 40 years to maintain its waterproofing function during the study period of 60 years. The functional unit is defined as: "1 m^2 installed roof waterproofing, from cradle-to-grave, with activities needed for a study period of 60 years for the building."

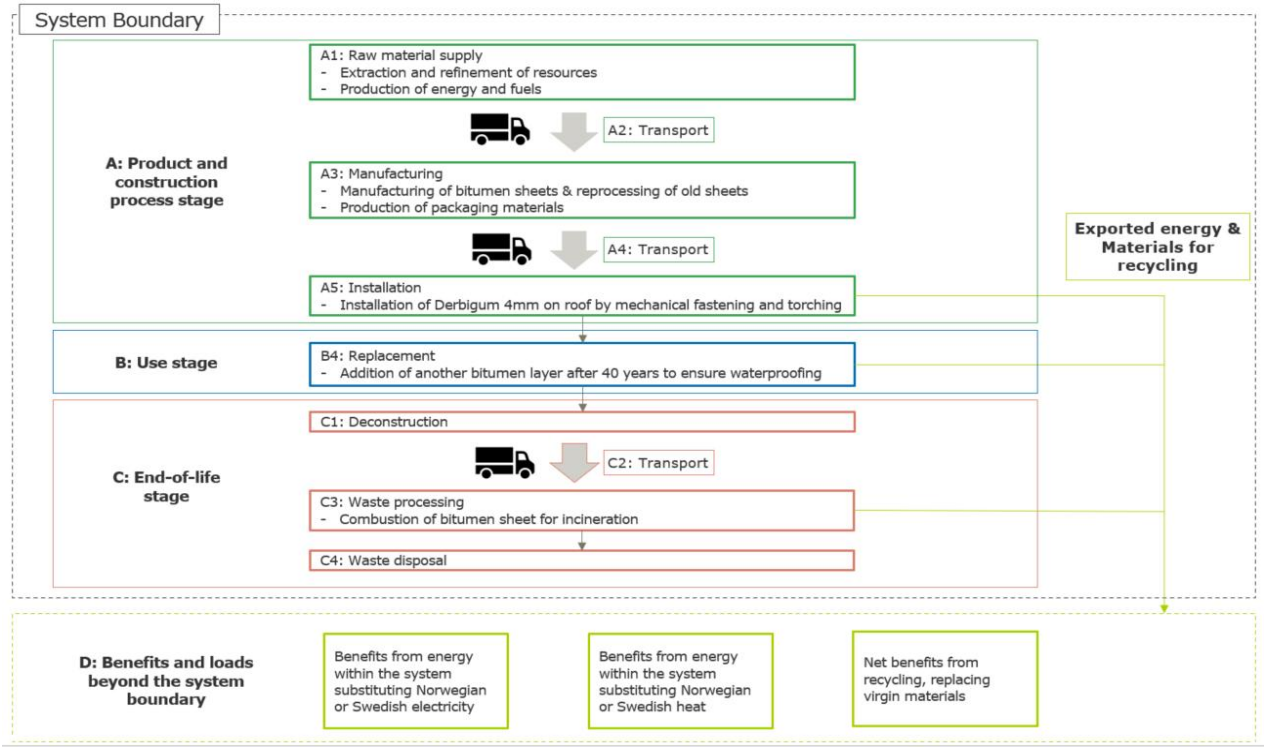
Name	Value	Unit
Functional unit	1	m^2 installed roof waterproofing during 60 years
Weight per unit	8.81	kg/m^2
Conversion factor to 1 kg	0.114	m^2/kg

Declared unit

In addition to the functional unit, the PCR requires that results are also displayed per a declared unit of 1 m^2 of produced waterproofing for cradle-to-gate as required by the reference PCR. In this EPD, the results per declared unit (1 m^2 Derbigum NT 4 mm sheet) corresponds to the first column (A1-A3) of the results per functional unit.

Name	Value	Unit
Declared unit	1	m^2 of produced waterproofing for cradle-to-gate
Weight per unit	4.61	kg/m^2
Conversion factor to 1 kg	0.217	m^2/kg

System boundary:



Module D description:

Module D includes recovery and/or recycling potential, expressed as net impact and benefits. At end of life most of the product is recycled. When bitumen sheets are recycled throughout the modules, the burden from the recycling process and net benefit of this recycling is reported in module D. The net benefit consists of the virgin material in the bitumen sheet replacing alternative material production. A part of the product is also incinerated, and heat and electricity are produced. The energy is recovered and assumed to replace heat that would have been produced from other sources

Data quality and allocation:

The product specific data, covering the production process and packaging of the products, as well as supplier location and information on inbound transport, has been collected for the year 2020. Allocation of manufacturing data is based on the factory data from 2020 and allocated per square meter by dividing by the total production in 2020. Background data are based on GaBi ts 10.0.1.92 incl. databases 2021 Edition, Ecoinvent 3.6 and an LCI profile from Eurobitume and are less than 10 years old.

Cut-off criteria:

The cut-off criteria, meaning 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.

LCA: Scenarios and additional technical information

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

Transport from production place to user (A4)

The transport scenario in module A4 assumes delivery of the product by truck from Perwez, Belgium to a customer in the Oslo area. The transport scenario consists of a transport distance to Oslo and an additional 300km to the installation site. For the Swedish market the transport distance is representative of the distance from Perwez to Stockholm, with and additional 300 km to the installation site

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption
Truck	61	Truck, Euro 5, 28 - 32t gw	1825	0.025 l/tkm

Assembly (A5)

Module A5 represents installation of the product to the building at the installation site. The module includes the production of additional bitumen sheets needed for overlap of the layers for complete waterproofing and wasted product during installation. It also includes production of fastening materials, and production and combustion of propane for torching. Waste from the installation is classified as materials for recycling (99%) and waste for incineration (1%). Impacts from these waste management processes are included in module A5 whereas potential benefits are reported in module D.

Name	Unit	Value
Auxiliary material	kg	0.0172
Propane	kg	0.05
Waste wooden pallet for incineration	kg	0.014
Waste bitumen trimmings for incineration	kg	0.001
Waste bitumen trimmings for recycling	kg	0.091

Use (B1)/Maintenance (B2)/Repair (B3)

No impacts from the modules have been included in accordance with the default values provided in the reference PCR.

Replacement (B4)/Refurbishment (B5)

Module B4 includes replacement after 40 years to maintain the function of the roof waterproofing (for the study period of 60 year). Replacement is performed by adding an additional layer on top of the existing. The module includes production of an additional sheet and its installation via torching on top of the existing sheet, as well as propane for torching. Production of material wasted during installation is also included as is the overlap required. Waste from the replacement is classified as materials for recycling (99%) and waste for incineration (1%). Impacts from these waste management processes are included in module B4 whereas potential benefits are reported in module D.

Name	Unit	Value
Replacement cycle*	Yr	40
Propane	kg	0.05

Operational energy use (B6)/Operational water use (B7)

The roofing system does not require energy or water to operate. Therefore no operational energy use for either of the product systems is included.

End of Life (C1, C3, C4)

De-construction of the waterproofing sheet was assumed to be done manually. Most of the de-constructed bitumen roofing (99%) from C1 is collected by Derbigum for recycling. This is reported as materials for recycling in C3 and the burden from the recycling process and the benefits from replacing bitumen is recorded in module D. Ashes and other remains after incineration are reported in stage C4.

Name	Unit	Value
Material collected	kg	8.81
Recycling	kg	8.71
Energy recovery	kg	0.1

Transport to waste processing (C2)

Module C2 comprises impacts from transportation of the deconstructed products after 60 years to waste processing, incineration in Norway (1%) or recycling (99%) in Belgium.

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption
Truck	61	Truck, Euro 5, 28 - 32t gw	1825	0.025 l/tkm
Truck	61	Truck, Euro 5, 28 - 32t gw	50	0.025 l/tkm

Benefits and loads beyond the system boundaries (D)

Module D includes recovery and/or recycling potential, expressed as net impact and benefits. At end of life most of the product is recycled. When bitumen sheets are recycled throughout the modules, the burden from the recycling process and net benefit of this recycling is reported in module D. The net benefit consists of the virgin material in the bitumen sheet replacing alternative material production. A part of the product is also incinerated, and heat and electricity are produced. The energy is recovered and assumed to replace heat and electricity that would have been produced from other sources. The results reflect the most conservative data choices, with Norwegian electricity being replaced. The difference in results if Swedish electricity was replaced is insignificant.

Name	Unit	Value
Material replacing bitumen production	kg	6.63
Heat replacing Norwegian or Swedish biofuels	MJ	1.17
Electricity replacing Norwegian or Swedish electricity grid mix	MJ	0.62

LCA: Results

This is a specific product EPD, based on a cradle-to-grave and module D LCA, in which 100 product weight-% has been accounted for.

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

Product stage			Assemby stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Environmental impact

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	3.21E+00	6.40E-01	8.04E-01	0	3.48E+00	0	0.00E+00	1.21E+00	3.12E-01	1.03E-04	-3.26E-01
GWP-fossil	kg CO_2 eq.	3.22E+00	6.36E-01	7.77E-01	0	3.46E+00	0	0.00E+00	1.20E+00	3.12E-01	1.03E-04	-3.21E-01
GWP-biogenic	kg CO_2 eq.	-5.64E-03	-7.55E-04	2.52E-02	0	1.40E-02	0	0.00E+00	-1.42E-03	1.51E-05	2.76E-07	-6.15E-03
GWP-luluc	kg CO_2 eq.	2.09E-03	5.18E-03	1.16E-03	0	6.02E-03	0	0.00E+00	9.77E-03	3.28E-06	9.58E-09	7.08E-04
ODP	kg CFC 11 eq.	6.29E-08	1.25E-16	8.87E-09	0	4.90E-08	0	0.00E+00	2.36E-16	1.11E-09	2.07E-11	-7.08E-08
AP	mol H^+ eq.	8.72E-03	2.05E-03	1.90E-03	0	9.24E-03	0	0.00E+00	3.85E-03	9.36E-05	1.03E-06	-1.02E-02
EP-freshwater	kg PO_4 eq.	1.36E-04	1.88E-06	1.97E-05	0	1.08E-04	0	0.00E+00	3.55E-06	1.19E-06	5.84E-09	-4.53E-05
EP-marine	kg N eq.	2.30E-03	9.36E-04	5.99E-04	0	2.77E-03	0	0.00E+00	1.76E-03	2.64E-05	4.43E-07	-1.63E-03
EP-terrestrial	mol N eq.	2.50E-02	1.05E-02	6.58E-03	0	3.06E-02	0	0.00E+00	1.97E-02	2.61E-04	4.85E-06	-1.82E-02
POCP	kg NMVOC eq.	7.89E-03	1.84E-03	1.84E-03	0	8.52E-03	0	0.00E+00	3.47E-03	6.28E-05	1.36E-06	-6.75E-03
ADPm[1]	kg Sb eq.	2.77E-06	5.62E-08	4.15E-07	0	2.27E-06	0	0.00E+00	1.06E-07	1.21E-07	1.51E-10	3.02E-07
ADPf[1]	MJ	1.55E+02	8.45E+00	2.73E+01	0	1.35E+02	0	0.00E+00	1.59E+01	6.73E-02	1.38E-03	-2.87E+02
WDP[1]	m^3	2.34E-01	5.89E-03	3.98E-02	0	2.12E-01	0	0.00E+00	1.11E-02	1.18E-02	3.21E-06	-1.04E-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 = Acidifcation; 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 use											
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

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
PM	kg CO_2 eq.	7.54E-08	1.18E-08	1.73E-08	0.00E+00	7.72E-08	0.00E+00	0.00E+00	2.22E-08	5.60E-10	2.69E-11	-3.76E-09
IRP[2]	kg CO_2 eq.	9.19E-02	2.25E-03	1.83E-02	0.00E+00	8.32E-02	0.00E+00	0.00E+00	4.24E-03	3.40E-04	6.05E-06	2.96E-04
ETP-fw[1]	kg CO_2 eq.	5.13E+01	6.27E+00	1.09E+01	0.00E+00	4.85E+01	0.00E+00	0.00E+00	1.18E+01	1.08E-01	1.07E-03	-1.53E+01
HTP-c[1]	kg CO_2 eq.	3.48E-09	1.27E-10	5.70E-10	0.00E+00	3.05E-09	0.00E+00	0.00E+00	2.39E-10	7.44E-12	3.06E-14	3.76E-10
HTP-nc[1]	kg CFC 11 eq.	1.25E-07	7.42E-09	2.22E-08	0.00E+00	1.23E-07	0.00E+00	0.00E+00	1.40E-08	2.65E-10	1.23E-12	4.67E-10
SQP[1]	mol H^+ eq.	7.86E+00	2.90E+00	1.67E+00	0.00E+00	9.44E+00	0.00E+00	0.00E+00	5.47E+00	2.81E-02	6.27E-03	-6.27E+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

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
RPEE	MJ	8.62E+00	4.86E-01	1.41E+00	0	8.14E+00	0	0.00E+00	9.16E-01	4.01E-03	1.06E-05	1.51E+01
RPEM	MJ	1.95E-01	0.00E+00	2.69E-02	0	1.80E-01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	8.81E+00	4.86E-01	1.44E+00	0	8.32E+00	0	0.00E+00	9.16E-01	4.01E-03	1.06E-05	1.51E+01
NRPE	MJ	2.78E+01	8.48E+00	8.92E+00	0	3.95E+01	0	0.00E+00	1.60E+01	6.73E-02	1.38E-03	-4.92E+01
NRPM	MJ	1.33E+02	0.00E+00	1.91E+01	0	9.95E+01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.56E+02
TRPE	MJ	1.61E+02	8.48E+00	2.80E+01	0	1.39E+02	0	0.00E+00	1.60E+01	6.73E-02	1.38E-03	-3.06E+02
SM	kg	1.02E+00	0.00E+00	1.43E-01	0	8.08E-01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0	0	0	0	0	0	0.00E+00	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0.00E+00	0	0	0	0
W	m^3	9.80E-03	5.57E-04	1.75E-03	0	8.84E-03	0	0.00E+00	1.05E-03	2.75E-04	7.47E-08	-3.49E-03

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
HW	kg	8.43E-09	4.47E-10	1.47E-09	0	7.58E-09	0	0.00E+00	8.42E-10	1.40E-12	0.00E+00	-3.41E-09
NHW	kg	4.75E-02	1.33E-03	7.75E-03	0	4.62E-02	0	0.00E+00	2.51E-03	2.55E-04	0.00E+00	2.84E-03
RW	kg	5.16E-04	1.54E-05	1.08E-04	0	4.82E-04	0	0.00E+00	2.90E-05	4.46E-07	0.00E+00	3.67E-06

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

End of life - Output flow

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
CR	kg	0	0	0	0	0	0	0.00E+00	0	0	0	0
MR	kg	0.00E+00	0.00E+00	9.13E-02	0	6.58E-02	0	0.00E+00	0.00E+00	8.71E+00	0.00E+00	0.00E+00
MER	kg	0	0	0	0	0	0	0.00E+00	0	0	0	0
EEE	MJ	0.00E+00	0.00E+00	4.08E-02	0	3.28E-02	0	0.00E+00	0.00E+00	5.45E-01	0.00E+00	0.00E+00
ETE	MJ	0.00E+00	0.00E+00	7.38E-02	0	5.93E-02	0	0.00E+00	0.00E+00	1.03E+00	0.00E+00	0.00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

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

Results according to EN15804:2012+A1:2013

Environmental impact

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
GWP	kg CO_2 -eqv	3.12E+00	6.24E-01	7.82E-01	0	3.38E+00	0	0.00E+00	1.18E+00	3.12E-01	1.01E-04	-3.37E-01
ODP	kg CFC11-eqv	5.98E-08	1.67E-16	8.43E-09	0	4.66E-08	0	0.00E+00	3.15E-16	1.05E-09	1.64E-11	-7.08E-08
POCP	kg C_2H_4 -eqv	7.48E-03	1.41E-03	1.54E-03	0	7.58E-03	0	0.00E+00	2.66E-03	7.39E-05	7.43E-07	-1.06E-02
AP	kg SO_2 -eqv	1.12E-03	3.39E-04	2.57E-04	0	1.24E-03	0	0.00E+00	6.39E-04	2.82E-05	1.80E-07	1.72E-04
EP	kg PO_4^{3-}-eqv	2.86E-03	-4.89E-04	3.90E-04	0	1.94E-03	0	0.00E+00	-9.21E-04	4.38E-06	8.82E-08	-8.65E-03
ADPM	kg Sb-eqv	2.77E-06	5.63E-08	4.16E-07	0	2.28E-06	0	0.00E+00	1.06E-07	1.21E-07	1.51E-10	3.02E-07
ADPE	MJ	1.54E+02	8.36E+00	2.69E+01	0	1.34E+02	0	0.00E+00	1.58E+01	6.29E-02	1.37E-03	-2.87E+02

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
RPEE	MJ	8.62E+00	4.86E-01	1.41E+00	0	8.14E+00	0	0.00E+00	9.16E-01	4.01E-03	1.06E-05	1.51E+01
RPEM	MJ	1.95E-01	0.00E+00	2.69E-02	0	1.80E-01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	8.81E+00	4.86E-01	1.44E+00	0	8.32E+00	0	0.00E+00	9.16E-01	4.01E-03	1.06E-05	1.51E+01
NRPE	MJ	2.78E+01	8.48E+00	8.92E+00	0	3.95E+01	0	0.00E+00	1.60E+01	6.73E-02	1.38E-03	-4.92E+01
NRPM	MJ	1.33E+02	0.00E+00	1.91E+01	0	9.95E+01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.56E+02
TRPE	MJ	1.61E+02	8.48E+00	2.80E+01	0	1.39E+02	0	0.00E+00	1.60E+01	6.73E-02	1.38E-03	-3.06E+02
SM	kg	1.02E+00	0.00E+00	1.43E-01	0	8.08E-01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0	0	0	0	0	0	0.00E+00	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0.00E+00	0	0	0	0
W	m^3	9.80E-03	5.57E-04	1.75E-03	0	8.84E-03	0	0.00E+00	1.05E-03	2.75E-04	7.47E-08	-3.49E-03

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
HW	kg	8.43E-09	4.47E-10	1.47E-09	0	7.58E-09	0	0.00E+00	8.42E-10	1.40E-12	0.00E+00	-3.41E-09
NHW	kg	4.75E-02	1.33E-03	7.75E-03	0	4.62E-02	0	0.00E+00	2.51E-03	2.55E-04	0.00E+00	2.84E-03
RW	kg	5.16E-04	1.54E-05	1.08E-04	0	4.82E-04	0	0.00E+00	2.90E-05	4.46E-07	0.00E+00	3.67E-06

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

End of life - Output flow

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
CR	kg	0	0	0	0	0	0	0.00E+00	0	0	0	0
MR	kg	0.00E+00	0.00E+00	9.13E-02	0	6.58E-02	0	0.00E+00	0.00E+00	8.71E+00	0.00E+00	0.00E+00
MER	kg	0	0	0	0	0	0	0.00E+00	0	0	0	0
EEE	MJ	0.00E+00	0.00E+00	4.08E-02	0	3.28E-02	0	0.00E+00	0.00E+00	5.45E-01	0.00E+00	0.00E+00
ETE	MJ	0.00E+00	0.00E+00	7.38E-02	0	5.93E-02	0	0.00E+00	0.00E+00	1.03E+00	0.00E+00	0.00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase
The electricity applied to manufacturing (A3) in Perwez, Belgium is representative of the wind power mix purchased by Derbigum.

Data source	Amount	Unit
GaBi Professional 2021	7.22 E-3	kg CO_2-eqv/kWh

Dangerous substances

☑ The product contains no substances given by the REACH Candidate list or the Norwegian priority list

☐ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.

☐ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.

☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

Name	CAS no.	Amount

Indoor environment
No tests have been carried out on the product concerning indoor climate - Not relevant

Carbon footprint
Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010	*Environmental labels and declarations - Type III environmental declarations - Principles and procedures*
ISO 14044:2006	*Environmental management - Life cycle assessment - Requirements and guidelines*
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GaBi 2021 Professional Database	http://www.gabi-software.com/international/databases/gabi-databases/professional/, ts 10.0.1.92 incl. databases 2021 Edition

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