Statement of Verification

BREG EN EPD No.: 000724 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Zentia

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

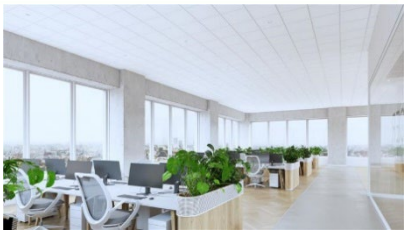
BRE Global Scheme Document SD207

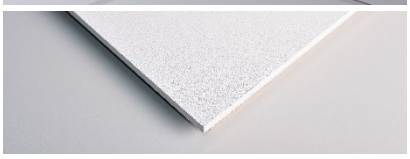
This declaration is for:

1 m² of Mineral Fibre Laminated Suspended Ceiling Tile

Company Address

Zentia
Kingsway South, Team Valley
Gateshead
NE11 0SP





zentia

Signed for BRE Global Ltd	Hayley Thomson Operator	19 August 2025 Date of this Issue
19 August 2025 Date of First Issue		18 August 2030 Expiry Date

BRE Global Verified EPD

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ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EPD Number: **000724**

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE 2023 Product Category Rules (PN 514 Rev 3.1) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019
Commissioner of LCA study	**LCA consultant/Tool**
Zentia Kingsway South, Team Valley Gateshead NE11 0SP	LCA tool: BRE LINA A2 LCA Consultant: Tom Proctor
Declared/Functional Unit	**Applicability/Coverage**
1 m^2 of Mineral Fibre Laminated Suspended Ceiling Tile	Product specific
EPD Type	**Background database**
Cradle to Gate with options	Ecoinvent v3.8

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR (01/2020) [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Bala Subramanian
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A2:2019 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☑	☑	☑	☑		☑

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Zentia Mineral Fibre Laminated Suspended Ceiling Tiles are manufactured at the following factory:

Kingsway South, Team Valley
Gateshead
NE11 0SP

Construction Product:

Product Description

Zentia Mineral Fibre Laminated Suspended Ceiling tiles are available in different sizes and with a wide range of surface finishes, product properties and edge details. Suspended ceilings have a wide range of applications, from office spaces to schools and hospitals. Ceiling tiles are typically laid into a suspended ceiling grid. They can be installed to improve interior acoustic performance, conceal building services, and for their fire resistance properties.

This EPD applies to the following products:
Prestige, Prestige hA+, Biobloc Acoustic, Oplia, Oplia hA, Oplia hA+ and Serene hA

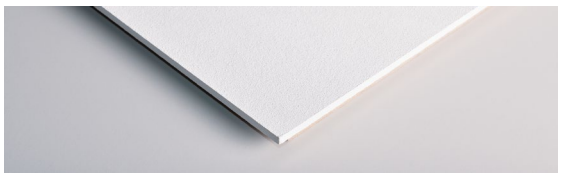
All products are manufactured on the same line, via the same process, with variations as detailed above.

Technical Information

Mineral tiles (wet felt mineral fibre ceiling tiles) are regulated by EN 13964, EN 13501-1, EN 16516, EN ISO 11654, ISO 10848-2 & EN 717-1 and have corresponding labelling and declaration of performance. The following data provide an overview of results, further information and certification can be provided upon request.

Product Name	Width (mm)	Surface Density (kg/m2)	Edge Detail					Sound Absorption (EN ISO 11654) (Class)	Fire Reaction (EN 13501-1)	Formaldehyde Emissions (EN 13964)
			Board	Tegular 24	Tegular 15	Integra	Conceal			
Prestige	19	5.0	✓	✓	✓	✓	✓	C	A2-s1, d0	E1
Prestige hA+	20	3.2	✓	✓	✓	×	×	A	A2-s1, d0	E1
Biobloc Acoustic	17	4.5	✓	✓	✓	×	×	C	A2-s1, d0	E1
Oplia	17	4.6	✓	✓	✓	×	×	C	A2-s1, d0	E1
Oplia hA	15	2.4	✓	✓	✓	×	×	A	A2-s1, d0	E1
Oplia hA+	20	3.1	✓	✓	✓	×	×	A	A2-s1, d0	E1
Serene hA	15	2.4	✓	✓	✓	×	×	A	A2-s1, d0	E1

Note: Please contact Zentia's technical team for further technical information or certificates upon request. More information can be found in https://www.zentia.com/en-gb/solutions/products/ceiling-tiles/



Main Product Contents

Zentia Mineral Fibre Laminated Suspended Ceiling Tile are manufactured using a wet felt process and the main board content is:

Material/Chemical Input	%
Mineral wool	0 - 60
Waste Fibreglass	10 - 60
Perlite	5 - 20
Newspaper	0 - 10
Clay	0 - 20
Starch	1 - 15
Others	0 > 0.5

Manufacturing Process

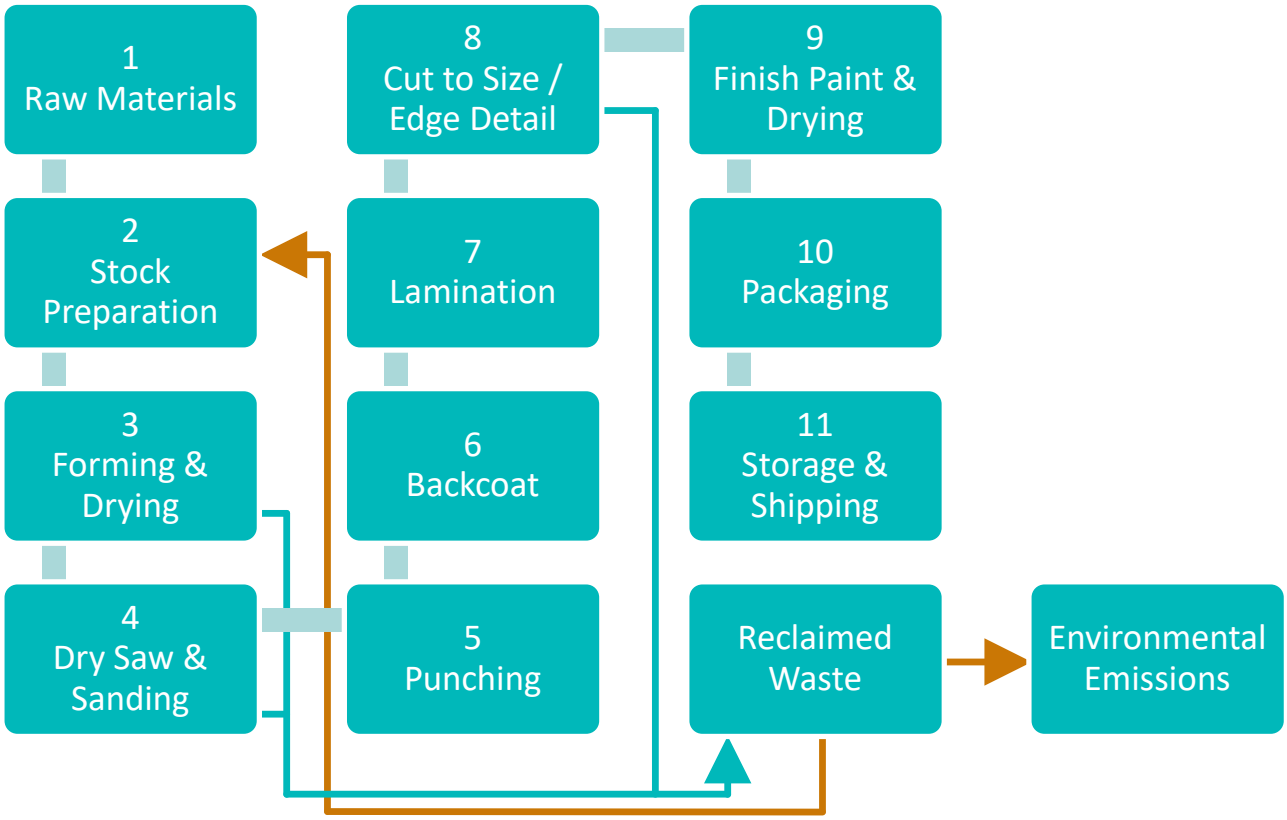
The mineral fibre laminated ceiling tiles are manufactured using the traditional wet felt process. The ceiling tile manufacturing process begins with the expansion of raw perlite ore. The perlite is then mixed in a stock tank with other raw materials including mineral fibre, ball clay, newsprint, starch and others - this forms the process stock.

The stock is fed continuously to the board forming machine where it is cut with water jets and fed into the main drying oven in sheets. The boards are trimmed, pressed, cut, sanded, laminated and painted before final packaging.

The trims and off-cuts are fed back into the process, along with scrap, reducing waste.

Zentia's mineral fibre laminated ceiling tiles are produced in a manufacturing plant certified in accordance with ISO 9001, ISO 14001, and ISO 45001.

Process Flow Diagram



Construction Installation

Transport to site (A4) is calculated on the assumption that Zentia sells tiles to distributors, 90% of which are in the UK. The remaining distributors are within Europe. It is assumed that the tiles are used in large commercial buildings which tend to be located within large cities. The furthest of which from the factory is London, hence the EPD assumes this distance for A4 – 450 km.

Construction installation (A5) has a wastage rate of 5%. No further materials or energy are associated with the construction of the product. There are no known increased hazards over and above those typically found on a building site. Personal protective equipment should be worn.

Use Information

There is no energy use associated with the product once installed. Direct contact with water should be avoided.

End of Life

The service life of wet felt mineral fibre laminated ceiling tiles is up to 30 years if manufacturer's recommendations on installation and use are followed. At the end of use and where ceiling tiles are removed from grid without damage, they can be re-installed in other contexts. There is currently no large scale process in place to recycle the product waste. Therefore, it is assumed that 100% of waste goes to landfill at the end-of-life stage.

Life Cycle Assessment Calculation Rules

Declared unit description

1 m^2 of Mineral Fibre Laminated Suspended Ceiling Tile.

System boundary

This cradle-to-gate with options EPD has been assessed in accordance with the modular approach as defined in EN15804:2012+A2:2019 and BRE 2023 Product Category Rules (PN 514 Rev 3.1) which includes the processes covered in the manufacturing site i.e., product stage A1 to A3, construction installation A4- A5, end of life stages C1-C4 and Module D.

Data sources, quality and allocation

Specific primary data derived from Zentia's production process in Kingsway South, Team Valley, Gateshead NE11 0SP factory, have been modelled using the LINA LCA software A2 and the ecoinvent 3.8 database. In accordance with the requirements of EN 15804:2012+A2:2019, the most current available data has been used. The manufacturer-specific data from Zentia covers a period of sixteen months (01/01/2024 – 01/05/2025). Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production) from the ecoinvent 3.8 database. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN 15804:2012+A2:2019.

This LCA covers the 15-20 mm mineral fibre laminated suspended ceiling tile product range with various surface finishes and edge details. These products represent 16% of the total production at the Kingsway South manufacturing plant. Therefore, all energy, water and waste has been allocated to the products by mass (kg) according to the provisions of the BRE PCR PN 514 3.1 and EN 15804:2012+A2:2019. Site wide values for energy, water and waste have been taken from bills. Figures for the raw materials, ancillary materials and packaging were from actual usages. Individual product LCA were performed based on production by square metre (m^2). All inputs and outputs are weighted by individual product's percentage of total production.

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e. identical technology).	There is less than 5 years between the ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific UK datasets have been selected from the ecoinvent LCI for this LCA. The quality level of geographical and technical representativeness is therefore good. The quality level of time representativeness is good as the background LCI datasets are based on ecoinvent v3.8 which was compiled in 2021. Therefore, there is less than 5 years between the ecoinvent LCI reference year and the time period for which the LCA was undertaken.

The emission factors, CO_2 emissions for every 1 kWh of energy used, was 0.239 kgCO2eq/kWh for GB national grid electricity (consumption mix) and 0.232 kgCO2eq/kWh for GB natural gas, at industrial furnace.

Some harmful chemicals are used in the process, that LINA A2 do not have direct analogues of. In these cases, a proxy has been used for defoamers, dispersants, and thickeners etc. The total percentage of these chemicals in any individual product is less than 0.1 %.

A proxy has been used for the fiberglass that is derived from primary EPD data from Zentia's suppliers. The fiberglass is not a direct analogue as it is the waste fiberglass that is procured for use in Zentia's Mineral Fibre Laminated Suspended Ceiling Tiles.

The overall mass balance of the site (materials purchased and used for production vs total production output & waste) is within 5% , but due to the process by which we have allocated the amounts of raw materials, energy and water used etc, the mass balance for specific products may be outside the 5% limit, but not greater than 6% for an individual product.

Cut-off criteria

All processes associated with the manufacturing process have been included, specifically substantial product developmental work for these new laminated products, which could have affected the results of the Life-Cycle Analysis. This EPD was produced during a period of product development due to market expectations and are not expected to be reflective of typical laminated product production cycles. Once production has stabilised, we will update the EPD with the most up to date data. The impact of the grid to support the ceiling tiles when installed is not included in this EPD. All inputs or outputs have been included and all raw materials, packaging and transport, energy, water use, emissions, and wastes, are included, except for direct emissions to soil, which are not measured. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA

LCA Results

Summary of Main Indicators A1-3					
Product	**Global warming**	**Non-renewable consumption**	**Primary energy usage**	**Non-hazardous Waste Production**	**Water Consumption**
Unit	kg CO2 eq	MJ	MJ	Kg	m3
Prestige	1.29E+01	2.49E+02	3.20E+01	1.70E+01	1.11E-01
Prestige hA+	1.23E+01	1.91E+02	2.14E+01	1.71E+01	9.05E-02
Biobloc Acoustic	1.05E+01	2.08E+02	2.76E+01	1.08E+01	7.53E-02
Oplia	1.05E+01	2.09E+02	2.81E+01	1.10E+01	7.60E-02
Oplia hA	8.62E+00	1.34E+02	1.54E+01	1.04E+01	5.41E-02
Oplia hA+	1.11E+01	1.73E+02	1.99E+01	1.35E+01	6.97E-02
Serene hA	8.21E+00	1.35E+02	1.53E+01	1.01E+01	5.52E-02

Prestige LCA Results - 5.0 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts								
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	5.64E+00	6.62E+00	-9.86E-01	6.12E-03	5.55E-07	6.65E-02	2.43E-03
	Transport	A2	6.53E-01	6.52E-01	5.11E-04	2.72E-04	1.49E-07	3.96E-03	4.05E-05
	Manufacturing	A3	6.59E+00	6.55E+00	2.82E-02	2.07E-03	5.78E-07	7.05E-03	3.76E-04
	Total (of product stage)	A1-3	1.29E+01	1.38E+01	-9.57E-01	8.46E-03	1.28E-06	7.76E-02	2.85E-03
Construction process stage	Transport	A4	1.32E-01	1.32E-01	1.28E-04	4.73E-05	3.14E-08	5.49E-04	8.19E-06
	Construction	A5	9.61E-01	7.02E-01	2.57E-01	4.31E-04	6.53E-08	3.98E-03	1.46E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.27E-02	2.27E-02	2.20E-05	8.16E-06	5.42E-09	9.47E-05	1.41E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.10E+00	1.57E-01	1.82E+00	7.88E-05	1.65E-08	6.27E-04	4.01E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Prestige LCA Results - 5.0 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	1.13E-02	1.23E-01	2.83E-02	1.06E-04	1.04E+02	3.81E+00	4.57E-07
	Transport	A2	1.11E-03	1.22E-02	3.54E-03	2.17E-06	9.75E+00	4.26E-02	5.37E-08
	Manufacturing	A3	4.28E-03	2.61E-02	7.19E-03	9.59E-06	1.22E+02	5.55E-01	6.99E-08
	Total (of product stage)	A1-3	1.67E-02	1.62E-01	3.91E-02	1.18E-04	2.36E+02	4.41E+00	5.80E-07
Construction process stage	Transport	A4	1.68E-04	1.83E-03	5.89E-04	3.02E-07	2.05E+00	9.91E-03	1.55E-08
	Construction	A5	8.81E-04	8.54E-03	2.08E-03	5.94E-06	1.19E+01	2.27E-01	3.02E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.89E-05	3.16E-04	1.02E-04	5.20E-08	3.54E-01	1.71E-03	2.67E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.94E-03	1.98E-03	1.03E-03	2.43E-07	1.41E+00	5.94E-02	9.70E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Prestige LCA Results - 5.0 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	9.73E-01	1.44E+02	1.14E-08	3.04E-07	4.60E+01
	Transport	A2	4.97E-02	7.51E+00	2.59E-10	7.73E-09	6.37E+00
	Manufacturing	A3	1.18E+00	5.08E+01	1.68E-09	2.42E-08	3.77E+01
	Total (of product stage)	A1-3	2.20E+00	2.03E+02	1.33E-08	3.36E-07	9.00E+01
Construction process stage	Transport	A4	1.04E-02	1.60E+00	4.43E-11	1.75E-09	2.35E+00
	Construction	A5	1.12E-01	1.03E+01	7.38E-10	1.71E-08	4.56E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.79E-03	2.76E-01	7.64E-12	3.02E-10	4.05E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	7.65E-03	1.15E+01	9.19E-11	3.61E-09	2.99E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Prestige LCA Results - 5.0 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.30E+01	6.51E+00	1.95E+01	8.43E+01	1.79E+01	1.02E+02
	Transport	A2	1.33E-01	0.00E+00	1.33E-01	9.57E+00	0.00E+00	9.57E+00
	Manufacturing	A3	6.87E+00	5.40E+00	1.23E+01	1.31E+02	6.35E+00	1.38E+02
	Total (of product stage)	A1-3	2.00E+01	1.19E+01	3.20E+01	2.25E+02	2.43E+01	2.49E+02
Construction process stage	Transport	A4	2.61E-02	0.00E+00	2.61E-02	2.01E+00	0.00E+00	2.01E+00
	Construction	A5	-2.37E+00	3.97E+00	1.60E+00	1.06E+01	1.94E+00	1.25E+01
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.50E-03	0.00E+00	4.50E-03	3.47E-01	0.00E+00	3.47E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-1.53E+01	1.53E+01	4.26E-02	-8.65E+00	1.00E+01	1.39E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Prestige LCA Results - 5.0 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	7.50E-03	0.00E+00	0.00E+00	9.18E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.06E-03
	Manufacturing	A3	6.08E-02	2.90E-05	0.00E+00	1.85E-02
	Total (of product stage)	A1-3	6.83E-02	2.90E-05	0.00E+00	1.11E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.44E-04
	Construction	A5	3.46E-03	1.45E-06	0.00E+00	5.73E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	4.21E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.41E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Prestige LCA Results - 5.0 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	5.55E-01	1.45E+01	3.28E-04
	Transport	A2	1.09E-02	1.86E-01	3.13E-04
	Manufacturing	A3	1.53E-01	2.35E+00	5.29E-04
	Total (of product stage)	A1-3	7.19E-01	1.70E+01	1.17E-03
Construction process stage	Transport	A4	2.16E-03	3.76E-02	1.37E+01
	Construction	A5	3.74E-02	1.05E+00	5.88E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.73E-04	6.47E-03	2.37E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.93E-03	3.65E+00	7.91E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Prestige LCA Results - 5.0 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

	Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.55E-01	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	1.67E-02	4.17E-07	5.73E-03	2.19E-02	-2.04E-02	-7.28E-02
	Total (of product stage)	A1-3	0.00E+00	1.67E-02	4.17E-07	5.73E-03	2.19E-02	-2.75E-01	-7.28E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	1.16E-01	2.25E-08	2.87E-04	1.09E-03	-1.33E-02	1.88E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Prestige hA+ LCA Results - 3.2 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	6.86E+00	7.31E+00	-4.63E-01	5.23E-03	4.73E-07	6.96E-02	2.44E-03
	Transport	A2	6.24E-01	6.23E-01	4.87E-04	2.60E-04	1.43E-07	3.83E-03	3.87E-05
	Manufacturing	A3	4.86E+00	4.31E+00	5.07E-01	1.36E-03	3.81E-07	4.86E-03	2.63E-04
	Total (of product stage)	A1-3	1.23E+01	1.22E+01	4.39E-02	6.86E-03	9.97E-07	7.83E-02	2.74E-03
Construction process stage	Transport	A4	1.31E-01	1.31E-01	1.27E-04	4.70E-05	3.12E-08	5.45E-04	8.14E-06
	Construction	A5	8.14E-01	6.16E-01	1.95E-01	3.46E-04	5.04E-08	3.97E-03	1.39E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.45E-02	1.45E-02	1.41E-05	5.22E-06	3.47E-09	6.06E-05	9.04E-07
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.15E+00	1.44E-01	1.88E+00	6.29E-05	1.08E-08	4.79E-04	3.79E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Prestige hA+ LCA Results - 3.2 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	9.02E-03	1.19E-01	3.24E-02	9.09E-05	9.97E+01	3.20E+00	4.37E-07
	Transport	A2	1.07E-03	1.18E-02	3.42E-03	2.07E-06	9.31E+00	4.07E-02	5.13E-08
	Manufacturing	A3	3.85E-03	1.78E-02	5.06E-03	6.35E-06	7.93E+01	3.91E-01	5.04E-08
	Total (of product stage)	A1-3	1.39E-02	1.48E-01	4.08E-02	9.93E-05	1.88E+02	3.63E+00	5.39E-07
Construction process stage	Transport	A4	1.66E-04	1.82E-03	5.85E-04	3.00E-07	2.04E+00	9.84E-03	1.54E-08
	Construction	A5	7.22E-04	7.68E-03	2.12E-03	4.98E-06	9.47E+00	1.85E-01	2.75E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.85E-05	2.02E-04	6.50E-05	3.33E-08	2.26E-01	1.09E-03	1.71E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	4.03E-03	1.40E-03	8.76E-04	1.88E-07	9.88E-01	3.99E-02	6.55E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Prestige hA+ LCA Results - 3.2 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	5.72E-01	1.69E+02	2.19E-08	1.72E-07	4.30E+01
	Transport	A2	4.75E-02	7.17E+00	2.48E-10	7.38E-09	6.09E+00
	Manufacturing	A3	7.60E-01	3.63E+01	1.14E-09	1.68E-08	2.54E+01
	Total (of product stage)	A1-3	1.38E+00	2.12E+02	2.32E-08	1.96E-07	7.45E+01
Construction process stage	Transport	A4	1.03E-02	1.59E+00	4.40E-11	1.74E-09	2.33E+00
	Construction	A5	6.97E-02	1.07E+01	1.20E-09	9.95E-09	3.74E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.14E-03	1.77E-01	4.89E-12	1.93E-10	2.59E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	5.81E-03	1.16E+01	8.12E-11	3.54E-09	1.93E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Prestige hA+ LCA Results - 3.2 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	8.08E+00	5.30E+00	1.34E+01	7.90E+01	1.35E+01	9.26E+01
	Transport	A2	1.27E-01	0.00E+00	1.27E-01	9.14E+00	0.00E+00	9.14E+00
	Manufacturing	A3	2.83E-01	7.60E+00	7.88E+00	7.67E+01	1.24E+01	8.91E+01
	Total (of product stage)	A1-3	8.50E+00	1.29E+01	2.14E+01	1.65E+02	2.59E+01	1.91E+02
Construction process stage	Transport	A4	2.59E-02	0.00E+00	2.59E-02	2.00E+00	0.00E+00	2.00E+00
	Construction	A5	-1.69E+00	2.76E+00	1.07E+00	8.15E+00	1.43E+00	9.58E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.88E-03	0.00E+00	2.88E-03	2.22E-01	0.00E+00	2.22E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-1.58E+01	1.59E+01	3.76E-02	-9.44E+00	1.04E+01	9.75E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Prestige hA+ LCA Results - 3.2 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	2.80E-03	0.00E+00	0.00E+00	7.68E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.01E-03
	Manufacturing	A3	3.89E-02	1.86E-05	0.00E+00	1.27E-02
	Total (of product stage)	A1-3	4.17E-02	1.86E-05	0.00E+00	9.05E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.42E-04
	Construction	A5	2.09E-03	9.29E-07	0.00E+00	4.61E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.69E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	9.50E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Prestige hA+ LCA Results - 3.2 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	5.76E-01	1.33E+01	2.12E-04
	Transport	A2	1.04E-02	1.77E-01	2.02E-01
	Manufacturing	A3	1.13E-01	3.59E+00	3.43E-04
	Total (of product stage)	A1-3	7.00E-01	1.71E+01	2.02E-01
Construction process stage	Transport	A4	2.15E-03	3.73E-02	1.37E+01
	Construction	A5	3.58E-02	9.79E-01	1.01E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.38E-04	4.14E-03	1.52E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.25E-03	2.93E+00	5.32E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Prestige hA+ LCA Results - 3.2 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

	Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.18E-01	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	1.32E-02	2.67E-07	3.67E-03	1.40E-02	-1.31E-02	-4.60E-02
	Total (of product stage)	A1-3	0.00E+00	1.32E-02	2.67E-07	3.67E-03	1.40E-02	-1.31E-01	-4.60E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	6.34E-02	1.44E-08	1.83E-04	7.00E-04	-6.23E-03	1.12E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Biobloc Acoustic LCA Results - 4.5 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	4.25E+00	5.14E+00	-8.94E-01	4.99E-03	7.78E-06	4.74E-02	1.84E-03
	Transport	A2	5.06E-01	5.05E-01	3.91E-04	2.12E-04	1.16E-07	3.22E-03	3.12E-05
	Manufacturing	A3	5.74E+00	5.86E+00	-1.30E-01	1.85E-03	5.18E-07	6.26E-03	3.34E-04
	Total (of product stage)	A1-3	1.05E+01	1.15E+01	-1.02E+00	7.06E-03	8.41E-06	5.69E-02	2.21E-03
Construction process stage	Transport	A4	1.84E-01	1.84E-01	1.79E-04	6.61E-05	4.39E-08	7.67E-04	1.14E-05
	Construction	A5	8.08E-01	5.85E-01	2.22E-01	3.60E-04	4.22E-07	2.93E-03	1.14E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.04E-02	2.04E-02	1.98E-05	7.34E-06	4.88E-09	8.52E-05	1.27E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.03E+00	1.49E-01	1.76E+00	7.28E-05	1.49E-08	5.77E-04	3.79E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Biobloc Acoustic LCA Results - 4.5 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	9.31E-03	1.03E-01	2.23E-02	7.99E-05	7.82E+01	2.39E+00	3.60E-07
	Transport	A2	8.96E-04	9.86E-03	2.85E-03	1.67E-06	7.54E+00	3.28E-02	4.13E-08
	Manufacturing	A3	3.50E-03	2.32E-02	6.35E-03	8.60E-06	1.10E+02	4.92E-01	6.14E-08
	Total (of product stage)	A1-3	1.37E-02	1.36E-01	3.15E-02	9.02E-05	1.96E+02	2.92E+00	4.62E-07
Construction process stage	Transport	A4	2.34E-04	2.56E-03	8.23E-04	4.21E-07	2.86E+00	1.38E-02	2.16E-08
	Construction	A5	7.25E-04	7.19E-03	1.69E-03	4.55E-06	9.90E+00	1.52E-01	2.41E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.60E-05	2.84E-04	9.15E-05	4.68E-08	3.18E-01	1.54E-03	2.40E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.82E-03	1.80E-03	9.62E-04	2.24E-07	1.28E+00	5.38E-02	8.79E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Biobloc Acoustic LCA Results - 4.5 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	7.42E-01	1.33E+02	8.48E-09	2.52E-07	3.60E+01
	Transport	A2	3.84E-02	5.80E+00	2.02E-10	5.95E-09	4.89E+00
	Manufacturing	A3	1.06E+00	4.47E+01	1.50E-09	2.14E-08	3.35E+01
	Total (of product stage)	A1-3	1.84E+00	1.83E+02	1.02E-08	2.79E-07	7.44E+01
Construction process stage	Transport	A4	1.45E-02	2.24E+00	6.19E-11	2.45E-09	3.28E+00
	Construction	A5	9.33E-02	9.27E+00	5.72E-10	1.42E-08	3.77E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.61E-03	2.49E-01	6.88E-12	2.72E-10	3.64E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	7.02E-03	1.11E+01	8.66E-11	3.47E-09	2.70E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Biobloc Acoustic LCA Results - 4.5 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.06E+01	5.86E+00	1.64E+01	6.98E+01	7.09E+00	7.69E+01
	Transport	A2	1.02E-01	0.00E+00	1.02E-01	7.41E+00	0.00E+00	7.41E+00
	Manufacturing	A3	7.49E+00	3.56E+00	1.10E+01	1.21E+02	3.15E+00	1.24E+02
	Total (of product stage)	A1-3	1.82E+01	9.42E+00	2.76E+01	1.98E+02	1.02E+01	2.08E+02
Construction process stage	Transport	A4	3.64E-02	0.00E+00	3.64E-02	2.81E+00	0.00E+00	2.81E+00
	Construction	A5	-2.05E+00	3.43E+00	1.38E+00	9.35E+00	1.11E+00	1.05E+01
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.05E-03	0.00E+00	4.05E-03	3.12E-01	0.00E+00	3.12E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-1.49E+01	1.49E+01	4.00E-02	-8.50E+00	9.76E+00	1.26E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Biobloc Acoustic LCA Results - 4.5 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	6.60E-03	0.00E+00	0.00E+00	5.81E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	8.13E-04
	Manufacturing	A3	5.47E-02	2.61E-05	0.00E+00	1.65E-02
	Total (of product stage)	A1-3	6.13E-02	2.61E-05	0.00E+00	7.53E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.41E-04
	Construction	A5	3.10E-03	1.31E-06	0.00E+00	3.91E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	3.79E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.27E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Biobloc Acoustic LCA Results - 4.5 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	4.43E-01	9.24E+00	2.41E-04
	Transport	A2	8.44E-03	1.43E-01	4.40E-03
	Manufacturing	A3	1.37E-01	1.46E+00	4.75E-04
	Total (of product stage)	A1-3	5.89E-01	1.08E+01	5.12E-03
Construction process stage	Transport	A4	3.02E-03	5.24E-02	1.92E+01
	Construction	A5	3.07E-02	7.20E-01	2.56E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.35E-04	5.83E-03	2.13E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.65E-03	3.22E+00	7.16E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Biobloc Acoustic LCA Results - 4.5 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

	Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.29E-01	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	1.50E-02	3.75E-07	5.16E-03	1.97E-02	-1.84E-02	-6.55E-02
	Total (of product stage)	A1-3	0.00E+00	1.50E-02	3.75E-07	5.16E-03	1.97E-02	-2.48E-01	-6.55E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	9.35E-02	2.01E-08	2.58E-04	9.85E-04	-1.19E-02	1.47E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Oplia LCA Results - 4.6 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	4.26E+00	5.17E+00	-9.15E-01	4.81E-03	4.18E-07	4.81E-02	1.87E-03
	Transport	A2	3.18E-01	3.17E-01	2.31E-04	1.38E-04	7.21E-08	2.45E-03	1.91E-05
	Manufacturing	A3	5.88E+00	6.00E+00	-1.29E-01	1.89E-03	5.30E-07	6.40E-03	3.42E-04
	Total (of product stage)	A1-3	1.05E+01	1.15E+01	-1.04E+00	6.85E-03	1.02E-06	5.69E-02	2.23E-03
Construction process stage	Transport	A4	1.88E-01	1.88E-01	1.83E-04	6.75E-05	4.49E-08	7.84E-04	1.17E-05
	Construction	A5	8.22E-01	5.84E-01	2.37E-01	3.50E-04	5.20E-08	2.94E-03	1.15E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.09E-02	2.09E-02	2.03E-05	7.50E-06	4.98E-09	8.71E-05	1.30E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.10E+00	1.54E-01	1.82E+00	7.47E-05	1.52E-08	5.92E-04	3.90E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Oplia LCA Results - 4.6 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	9.46E-03	1.04E-01	2.25E-02	8.19E-05	7.89E+01	2.42E+00	3.60E-07
	Transport	A2	6.64E-04	7.32E-03	2.07E-03	1.02E-06	4.70E+00	2.00E-02	2.51E-08
	Manufacturing	A3	3.58E-03	2.37E-02	6.49E-03	8.79E-06	1.12E+02	5.03E-01	6.28E-08
	Total (of product stage)	A1-3	1.37E-02	1.35E-01	3.11E-02	9.17E-05	1.96E+02	2.94E+00	4.48E-07
Construction process stage	Transport	A4	2.39E-04	2.61E-03	8.41E-04	4.31E-07	2.93E+00	1.41E-02	2.21E-08
	Construction	A5	7.27E-04	7.19E-03	1.67E-03	4.63E-06	9.92E+00	1.53E-01	2.34E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.66E-05	2.91E-04	9.35E-05	4.79E-08	3.25E-01	1.57E-03	2.45E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.95E-03	1.84E-03	9.89E-04	2.30E-07	1.31E+00	5.50E-02	9.00E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Oplia LCA Results - 4.6 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	7.64E-01	1.09E+02	8.45E-09	2.56E-07	3.63E+01
	Transport	A2	2.38E-02	3.58E+00	1.30E-10	3.63E-09	2.94E+00
	Manufacturing	A3	1.08E+00	4.57E+01	1.53E-09	2.19E-08	3.43E+01
	Total (of product stage)	A1-3	1.87E+00	1.58E+02	1.01E-08	2.82E-07	7.36E+01
Construction process stage	Transport	A4	1.48E-02	2.29E+00	6.33E-11	2.50E-09	3.35E+00
	Construction	A5	9.49E-02	8.03E+00	5.72E-10	1.43E-08	3.73E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.65E-03	2.54E-01	7.03E-12	2.78E-10	3.72E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	7.20E-03	1.15E+01	8.91E-11	3.57E-09	2.76E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Oplia LCA Results - 4.6 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.07E+01	5.99E+00	1.67E+01	7.07E+01	6.88E+00	7.76E+01
	Transport	A2	6.24E-02	0.00E+00	6.24E-02	4.62E+00	0.00E+00	4.62E+00
	Manufacturing	A3	7.63E+00	3.66E+00	1.13E+01	1.23E+02	3.28E+00	1.26E+02
	Total (of product stage)	A1-3	1.84E+01	9.65E+00	2.81E+01	1.98E+02	1.02E+01	2.09E+02
Construction process stage	Transport	A4	3.72E-02	0.00E+00	3.72E-02	2.87E+00	0.00E+00	2.87E+00
	Construction	A5	-2.17E+00	3.58E+00	1.41E+00	9.34E+00	1.15E+00	1.05E+01
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.14E-03	0.00E+00	4.14E-03	3.19E-01	0.00E+00	3.19E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-1.53E+01	1.54E+01	4.10E-02	-8.80E+00	1.01E+01	1.29E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Oplia LCA Results - 4.6 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	6.90E-03	0.00E+00	0.00E+00	5.86E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	4.96E-04
	Manufacturing	A3	5.59E-02	2.67E-05	0.00E+00	1.68E-02
	Total (of product stage)	A1-3	6.28E-02	2.67E-05	0.00E+00	7.60E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.48E-04
	Construction	A5	3.18E-03	1.34E-06	0.00E+00	3.95E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	3.87E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.30E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Oplia LCA Results - 4.6 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.50E-01	9.41E+00	2.47E-04
	Transport	A2	5.30E-03	8.75E-02	2.58E-04
	Manufacturing	A3	1.40E-01	1.50E+00	4.86E-04
	Total (of product stage)	A1-3	4.95E-01	1.10E+01	9.91E-04
Construction process stage	Transport	A4	3.08E-03	5.36E-02	1.96E+01
	Construction	A5	2.61E-02	7.38E-01	4.98E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.43E-04	5.96E-03	2.18E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.74E-03	3.25E+00	7.32E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Oplia LCA Results - 4.6 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

	Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.34E-01	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	1.53E-02	3.84E-07	5.27E-03	2.01E-02	-1.88E-02	-6.70E-02
	Total (of product stage)	A1-3	0.00E+00	1.53E-02	3.84E-07	5.27E-03	2.01E-02	-2.53E-01	-6.70E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	9.45E-02	2.05E-08	2.64E-04	1.01E-03	-1.22E-02	1.46E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Oplia hA LCA Results - 2.4 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	4.65E+00	5.00E+00	-3.52E-01	3.50E-03	3.07E-07	4.54E-02	1.64E-03
	Transport	A2	4.26E-01	4.25E-01	3.29E-04	1.78E-04	9.72E-08	2.70E-03	2.63E-05
	Manufacturing	A3	3.54E+00	3.21E+00	3.04E-01	1.01E-03	2.84E-07	3.57E-03	1.93E-04
	Total (of product stage)	A1-3	8.62E+00	8.63E+00	-4.76E-02	4.69E-03	6.88E-07	5.16E-02	1.85E-03
Construction process stage	Transport	A4	9.81E-02	9.80E-02	9.52E-05	3.52E-05	2.34E-08	4.09E-04	6.10E-06
	Construction	A5	5.86E-01	4.37E-01	1.47E-01	2.39E-04	3.49E-08	2.63E-03	9.45E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.09E-02	1.09E-02	1.06E-05	3.92E-06	2.60E-09	4.55E-05	6.78E-07
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.71E+00	1.13E-01	1.50E+00	4.85E-05	8.19E-09	3.69E-04	2.97E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Oplia hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	6.26E-03	8.42E-02	2.24E-02	5.99E-05	6.61E+01	1.83E+00	2.97E-07
	Transport	A2	7.51E-04	8.26E-03	2.39E-03	1.41E-06	6.35E+00	2.76E-02	3.48E-08
	Manufacturing	A3	2.71E-03	1.32E-02	3.70E-03	4.69E-06	5.91E+01	2.83E-01	3.67E-08
	Total (of product stage)	A1-3	9.72E-03	1.06E-01	2.85E-02	6.60E-05	1.32E+02	2.14E+00	3.68E-07
Construction process stage	Transport	A4	1.25E-04	1.36E-03	4.39E-04	2.25E-07	1.53E+00	7.38E-03	1.15E-08
	Construction	A5	5.08E-04	5.50E-03	1.49E-03	3.32E-06	6.64E+00	1.10E-01	1.89E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.39E-05	1.52E-04	4.88E-05	2.50E-08	1.70E-01	8.20E-04	1.28E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.20E-03	1.07E-03	6.83E-04	1.45E-07	7.53E-01	3.02E-02	4.97E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Oplia hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.60E-01	1.14E+02	1.53E-08	1.17E-07	2.92E+01
	Transport	A2	3.23E-02	4.88E+00	1.70E-10	5.01E-09	4.12E+00
	Manufacturing	A3	5.69E-01	2.66E+01	8.36E-10	1.24E-08	1.88E+01
	Total (of product stage)	A1-3	9.62E-01	1.46E+02	1.63E-08	1.34E-07	5.21E+01
Construction process stage	Transport	A4	7.73E-03	1.19E+00	3.30E-11	1.31E-09	1.75E+00
	Construction	A5	4.87E-02	7.35E+00	8.52E-10	6.84E-09	2.64E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.59E-04	1.33E-01	3.67E-12	1.45E-10	1.94E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	4.46E-03	9.21E+00	6.35E-11	2.79E-09	1.46E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Oplia hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	5.40E+00	3.98E+00	9.38E+00	5.57E+01	5.13E+00	6.08E+01
	Transport	A2	8.62E-02	0.00E+00	8.62E-02	6.23E+00	0.00E+00	6.23E+00
	Manufacturing	A3	8.49E-01	5.06E+00	5.91E+00	5.86E+01	7.96E+00	6.65E+01
	Total (of product stage)	A1-3	6.34E+00	9.03E+00	1.54E+01	1.20E+02	1.31E+01	1.34E+02
Construction process stage	Transport	A4	1.94E-02	0.00E+00	1.94E-02	1.50E+00	0.00E+00	1.50E+00
	Construction	A5	-1.27E+00	2.04E+00	7.70E-01	5.71E+00	9.99E-01	6.71E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.16E-03	0.00E+00	2.16E-03	1.67E-01	0.00E+00	1.67E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-1.26E+01	1.26E+01	2.93E-02	-7.53E+00	8.28E+00	7.42E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Oplia hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	2.10E-03	0.00E+00	0.00E+00	4.41E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	6.84E-04
	Manufacturing	A3	2.92E-02	1.39E-05	0.00E+00	9.28E-03
	Total (of product stage)	A1-3	3.13E-02	1.39E-05	0.00E+00	5.41E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.82E-04
	Construction	A5	1.59E-03	6.97E-07	0.00E+00	2.79E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.02E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	7.20E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Oplia hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.48E-01	7.94E+00	1.30E-04
	Transport	A2	7.10E-03	1.20E-01	1.61E-04
	Manufacturing	A3	8.42E-02	2.36E+00	2.57E-04
	Total (of product stage)	A1-3	4.40E-01	1.04E+01	5.48E-04
Construction process stage	Transport	A4	1.61E-03	2.80E-02	1.02E+01
	Construction	A5	2.27E-02	6.18E-01	2.75E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.79E-04	3.11E-03	1.14E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.52E-03	2.19E+00	4.03E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Oplia hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

			Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.83E-02	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	9.89E-03	2.00E-07	2.75E-03	1.05E-02	-9.81E-03	-3.45E-02
	Total (of product stage)	A1-3	0.00E+00	9.89E-03	2.00E-07	2.75E-03	1.05E-02	-9.81E-02	-3.45E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.78E-02	1.07E-08	1.38E-04	5.25E-04	-4.68E-03	7.25E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Oplia hA+ LCA Results - 3.1 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	6.01E+00	6.46E+00	-4.54E-01	4.52E-03	3.96E-07	5.86E-02	2.11E-03
	Transport	A2	5.50E-01	5.49E-01	4.25E-04	2.30E-04	1.26E-07	3.49E-03	3.40E-05
	Manufacturing	A3	4.57E+00	4.14E+00	3.92E-01	1.31E-03	3.67E-07	4.61E-03	2.50E-04
	Total (of product stage)	A1-3	1.11E+01	1.12E+01	-6.14E-02	6.06E-03	8.88E-07	6.67E-02	2.40E-03
Construction process stage	Transport	A4	1.27E-01	1.27E-01	1.23E-04	4.55E-05	3.02E-08	5.28E-04	7.88E-06
	Construction	A5	7.57E-01	5.65E-01	1.90E-01	3.08E-04	4.51E-08	3.40E-03	1.22E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.41E-02	1.41E-02	1.37E-05	5.06E-06	3.36E-09	5.87E-05	8.76E-07
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.21E+00	1.46E-01	1.93E+00	6.26E-05	1.05E-08	4.76E-04	3.83E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Oplia hA+ LCA Results - 3.1 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	8.09E-03	1.09E-01	2.89E-02	7.74E-05	8.54E+01	2.36E+00	3.83E-07
	Transport	A2	9.71E-04	1.07E-02	3.08E-03	1.82E-06	8.20E+00	3.57E-02	4.49E-08
	Manufacturing	A3	3.50E-03	1.70E-02	4.79E-03	6.06E-06	7.64E+01	3.60E-01	4.74E-08
	Total (of product stage)	A1-3	1.26E-02	1.36E-01	3.68E-02	8.53E-05	1.70E+02	2.76E+00	4.75E-07
Construction process stage	Transport	A4	1.61E-04	1.76E-03	5.67E-04	2.90E-07	1.97E+00	9.53E-03	1.49E-08
	Construction	A5	6.56E-04	7.11E-03	1.92E-03	4.29E-06	8.58E+00	1.42E-01	2.45E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.79E-05	1.96E-04	6.30E-05	3.23E-08	2.19E-01	1.06E-03	1.65E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	4.13E-03	1.38E-03	8.81E-04	1.87E-07	9.69E-01	3.89E-02	6.40E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Oplia hA+ LCA Results - 3.1 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	4.65E-01	1.47E+02	1.98E-08	1.51E-07	3.77E+01
	Transport	A2	4.18E-02	6.30E+00	2.20E-10	6.47E-09	5.32E+00
	Manufacturing	A3	7.35E-01	3.45E+01	1.08E-09	1.60E-08	2.43E+01
	Total (of product stage)	A1-3	1.24E+00	1.88E+02	2.11E-08	1.73E-07	6.73E+01
Construction process stage	Transport	A4	9.98E-03	1.54E+00	4.26E-11	1.69E-09	2.26E+00
	Construction	A5	6.30E-02	9.50E+00	1.10E-09	8.83E-09	3.40E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.11E-03	1.71E-01	4.74E-12	1.87E-10	2.51E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	5.75E-03	1.19E+01	8.20E-11	3.61E-09	1.87E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Oplia hA+ LCA Results - 3.1 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	6.98E+00	5.14E+00	1.21E+01	7.19E+01	6.63E+00	7.86E+01
	Transport	A2	1.11E-01	0.00E+00	1.11E-01	8.05E+00	0.00E+00	8.05E+00
	Manufacturing	A3	1.10E+00	6.53E+00	7.63E+00	7.56E+01	1.03E+01	8.59E+01
	Total (of product stage)	A1-3	8.19E+00	1.17E+01	1.99E+01	1.56E+02	1.69E+01	1.73E+02
Construction process stage	Transport	A4	2.51E-02	0.00E+00	2.51E-02	1.94E+00	0.00E+00	1.94E+00
	Construction	A5	-1.70E+00	2.70E+00	9.94E-01	7.39E+00	1.27E+00	8.67E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.79E-03	0.00E+00	2.79E-03	2.15E-01	0.00E+00	2.15E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-1.63E+01	1.63E+01	3.78E-02	-9.74E+00	1.07E+01	9.56E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Oplia hA+ LCA Results - 3.1 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	2.71E-03	0.00E+00	0.00E+00	5.70E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	8.84E-04
	Manufacturing	A3	3.76E-02	1.80E-05	0.00E+00	1.19E-02
	Total (of product stage)	A1-3	4.03E-02	1.80E-05	0.00E+00	6.97E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.35E-04
	Construction	A5	2.05E-03	9.00E-07	0.00E+00	3.59E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.61E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	9.27E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Oplia hA+ LCA Results - 3.1 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	4.50E-01	1.03E+01	1.68E-04
	Transport	A2	9.17E-03	1.56E-01	2.10E-04
	Manufacturing	A3	1.09E-01	3.05E+00	3.31E-04
	Total (of product stage)	A1-3	5.68E-01	1.35E+01	7.10E-04
Construction process stage	Transport	A4	2.08E-03	3.61E-02	1.32E+01
	Construction	A5	2.93E-02	7.99E-01	3.57E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.31E-04	4.01E-03	1.47E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.25E-03	2.82E+00	5.19E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Oplia hA+ LCA Results - 3.1 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

	Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.14E-01	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	1.28E-02	2.59E-07	3.55E-03	1.36E-02	-1.27E-02	-4.46E-02
	Total (of product stage)	A1-3	0.00E+00	1.28E-02	2.59E-07	3.55E-03	1.36E-02	-1.27E-01	-4.46E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	6.97E-02	1.40E-08	1.78E-04	6.79E-04	-6.02E-03	1.12E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Serene hA LCA Results - 2.4 kg/m2

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	4.44E+00	4.76E+00	-3.25E-01	3.81E-03	3.32E-07	4.22E-02	1.63E-03
	Transport	A2	3.32E-01	3.32E-01	2.58E-04	1.39E-04	7.60E-08	2.07E-03	2.06E-05
	Manufacturing	A3	3.44E+00	3.19E+00	2.19E-01	1.01E-03	2.83E-07	3.52E-03	1.91E-04
	Total (of product stage)	A1-3	8.21E+00	8.29E+00	-1.06E-01	4.96E-03	6.90E-07	4.78E-02	1.84E-03
Construction process stage	Transport	A4	9.81E-02	9.80E-02	9.52E-05	3.52E-05	2.34E-08	4.09E-04	6.10E-06
	Construction	A5	5.65E-01	4.20E-01	1.44E-01	2.52E-04	3.50E-08	2.44E-03	9.39E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.09E-02	1.09E-02	1.06E-05	3.92E-06	2.60E-09	4.55E-05	6.78E-07
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.33E+00	9.26E-02	1.16E+00	4.25E-05	8.03E-09	3.31E-04	2.38E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

Serene hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	6.67E-03	8.18E-02	2.13E-02	6.46E-05	6.72E+01	1.88E+00	2.95E-07
	Transport	A2	5.77E-04	6.34E-03	1.84E-03	1.10E-06	4.96E+00	2.16E-02	2.72E-08
	Manufacturing	A3	2.52E-03	1.30E-02	3.64E-03	4.68E-06	5.90E+01	2.79E-01	3.58E-08
	Total (of product stage)	A1-3	9.76E-03	1.01E-01	2.68E-02	7.04E-05	1.31E+02	2.18E+00	3.58E-07
Construction process stage	Transport	A4	1.25E-04	1.36E-03	4.39E-04	2.25E-07	1.53E+00	7.38E-03	1.15E-08
	Construction	A5	5.10E-04	5.28E-03	1.40E-03	3.54E-06	6.62E+00	1.12E-01	1.85E-08
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.39E-05	1.52E-04	4.88E-05	2.50E-08	1.70E-01	8.20E-04	1.28E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.50E-03	1.00E-03	5.79E-04	1.29E-07	7.08E-01	2.92E-02	4.79E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

Serene hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	5.15E-01	9.68E+01	1.16E-08	1.71E-07	2.54E+01
	Transport	A2	2.53E-02	3.82E+00	1.32E-10	3.92E-09	3.23E+00
	Manufacturing	A3	5.68E-01	2.61E+01	8.31E-10	1.22E-08	1.86E+01
	Total (of product stage)	A1-3	1.11E+00	1.27E+02	1.26E-08	1.87E-07	4.73E+01
Construction process stage	Transport	A4	7.73E-03	1.19E+00	3.30E-11	1.31E-09	1.75E+00
	Construction	A5	5.61E-02	6.40E+00	6.63E-10	9.50E-09	2.39E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.59E-04	1.33E-01	3.67E-12	1.45E-10	1.94E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	4.01E-03	7.23E+00	5.29E-11	2.22E-09	1.44E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

Serene hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	5.57E+00	3.72E+00	9.29E+00	5.94E+01	4.50E+00	6.39E+01
	Transport	A2	6.75E-02	0.00E+00	6.75E-02	4.87E+00	0.00E+00	4.87E+00
	Manufacturing	A3	1.56E+00	4.34E+00	5.90E+00	5.99E+01	6.55E+00	6.64E+01
	Total (of product stage)	A1-3	7.20E+00	8.06E+00	1.53E+01	1.24E+02	1.10E+01	1.35E+02
Construction process stage	Transport	A4	1.94E-02	0.00E+00	1.94E-02	1.50E+00	0.00E+00	1.50E+00
	Construction	A5	-1.23E+00	1.99E+00	7.64E-01	5.89E+00	8.96E-01	6.79E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.16E-03	0.00E+00	2.16E-03	1.67E-01	0.00E+00	1.67E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-9.76E+00	9.79E+00	2.43E-02	-5.72E+00	6.42E+00	6.98E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Serene hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	4.22E-03	0.00E+00	0.00E+00	4.55E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	5.35E-04
	Manufacturing	A3	2.92E-02	1.39E-05	0.00E+00	9.18E-03
	Total (of product stage)	A1-3	3.34E-02	1.39E-05	0.00E+00	5.52E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.82E-04
	Construction	A5	1.69E-03	6.97E-07	0.00E+00	2.84E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.02E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	6.93E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

Serene hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.08E-01	7.97E+00	1.71E-04
	Transport	A2	5.54E-03	9.43E-02	1.51E-04
	Manufacturing	A3	8.39E-02	2.00E+00	2.56E-04
	Total (of product stage)	A1-3	3.98E-01	1.01E+01	5.79E-04
Construction process stage	Transport	A4	1.61E-03	2.80E-02	1.02E+01
	Construction	A5	2.06E-02	6.01E-01	2.91E-05
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.79E-04	3.11E-03	1.14E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.16E-03	1.81E+00	3.89E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Serene hA LCA Results - 2.4 kg/m2 (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

	Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EEE	EET	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.49E-02	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	9.88E-03	2.00E-07	2.75E-03	1.05E-02	-9.82E-03	-3.45E-02
	Total (of product stage)	A1-3	0.00E+00	9.88E-03	2.00E-07	2.75E-03	1.05E-02	-9.47E-02	-3.45E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.78E-02	1.07E-08	1.38E-04	5.25E-04	-4.51E-03	7.26E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EEE = Exported Electrical Energy
EET = Exported Thermal Energy

Scenarios and additional technical information

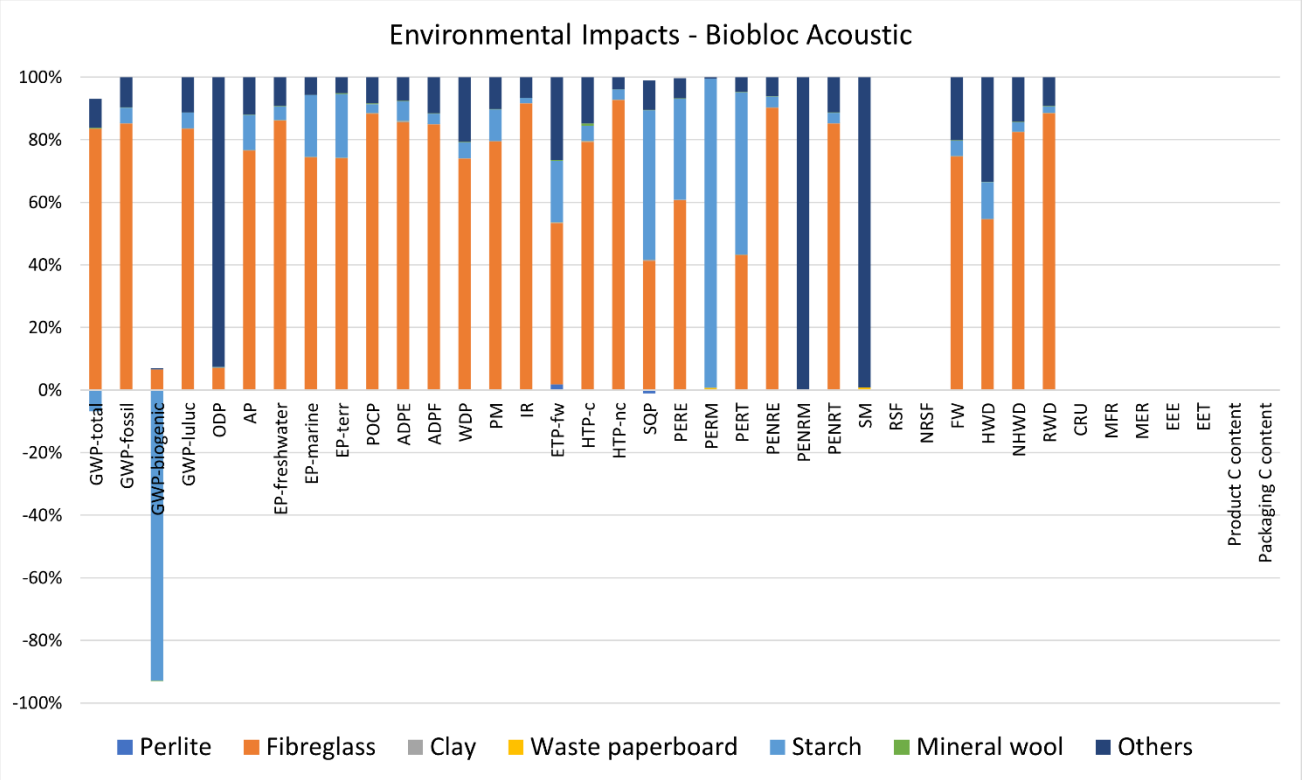
Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	The products are sold to distributors. 90% of those are based in the UK. This product is used mainly in large commercial offices, which tend to be based in larger cities, the furthest from the manufacturing plant is London – which is therefore the scenario used for the EPD		
	Fuel type / Vehicle type:16-32 tonne lorry	Litre of fuel type per distance or vehicle type	Diesel 0.227 L/km
	Distance:	km	450
	Capacity utilisation (incl. empty returns)	%	50
	Bulk density of transported products	kg/m^2	4.50 – Biobloc Acoustic
A5 – Installation in the building	No further materials or energy are associated with the construction of the product. There are no known increased hazards over and above those typically found on a building site. Personal protective equipment should be worn.		
A5 – Wastage rate	Construction installation (A5) has a wastage rate of 5%. For individual product's packaging information, please contact Zentia for further information	%	5
A5 – Packaging (Biobloc Acoustic shown here) For individual product's packaging information, please contact Zentia for further information	Pallet	kg	0.17
	Cardboard dunnage	kg	0.041
	Polyethylene film	kg	0.013
	Polypropylene strapping	kg	0.0024
	Label	kg	0.001
	Ribbons	kg	0.0001
Reference service life	Zentia's mineral ceiling tiles have a reference service life of	years	30
C1 to C4 End of life,			
C1 – Deconstruction	The tiles are manually taken down from buildings. There is therefore no impact at this stage. 100% recovery rate has been assumed for the waste product from the demolition site.	MJ	0
C2 – Transport from site to pre-processing facility or landfill	Mineral ceiling tiles are typically transported 50 km by lorry to a landfill	km	50
	Type of transport	Road	16-32 tonne lorry
	Fuel type	Litre of fuel type per distance	Diesel 0.227 L/km
C3 - Pre-processing of uninstalled product	There is no pre-processing of the mineral ceiling tiles.	MJ	0
C4 – Disposal	There is currently no process in place to dispose of the product waste. Therefore, it is assumed that 100% of waste goes to landfill at the end-of-life stage.	%	100

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
D – Benefits and loads beyond the system	100% of the product waste goes to landfill. Therefore, there are no benefits in Module D.		

Interpretation

The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing phase, covered by information modules A1-A3 of EN15804:2012+A2:2019. Out of the total mass of input materials, averagely, glass fibre makes up 10-60%, mineral wool makes up 0-60%, perlite make up 5-20%, clay makes up 0-20%, starch makes up 1-15%, others make up the remaining of 0-0.5%. As a result, glass fibre ranks first in terms of overall environmental impacts and is responsible for the greatest impact on GWP. Although perlite and clay account for a high proportion of the total mass, their environmental impact is negligible.

The following figure illustrates the environmental impacts of the raw material supply stage, using Biobloc Acoustic product as an example.



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