

## Statement of Verification

BREG EN EPD No.: 000554

Issue 01

This is to verify that the  
**Environmental Product Declaration**  
provided by:  
**Mayflex UK Limited**



is in accordance with the requirements of:  
**EN 15804:2012+A2:2019**  
and  
**BRE Global Scheme Document SD207**

This declaration is for:  
**1 Unit of Faceplate, shutters, and Adaptors**

### Company Address

Mayflex UK Limited  
Unit 15,  
Junction Six Industrial Park,  
Electric Avenue  
Birmingham  
B6 7JJ



Signed for BRE Global Ltd

Emma Baker  
Operator

30 January 2024  
Date of this Issue

30 January 2024  
Date of First Issue

29 January 2029  
Expiry Date



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## Environmental Product Declaration

EPD Number: 000554

### General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.1
Commissioner of LCA study	LCA consultant/Tool
Mayflex UK Limited Unit 15, Junction Six Industrial Park, Electric Avenue Birmingham B6 7JJ	LCA Tool: BRE LINA A2 LCA Consultant: Bala Subramanian
Declared/Functional Unit	Applicability/Coverage
1 Unit of Faceplate, shutters, and Adaptors	Other (please specify). Product specific
EPD Type	Background database
Cradle to Gate with options	ecoinvent
Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR <sup>a</sup>	
Independent verification of the declaration and data according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
(Where appropriate <sup>b</sup> ) Third party verifier: Pat Hermon	
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
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

### Manufacturing site(s)

Mayflex UK Limited  
 Unit 15,  
 Junction Six Industrial Park,  
 Electric Avenue  
 Birmingham  
 B6 7JJ

### Construction Product:

#### Product Description

The Excel range of outlet products for keystone jacks and modules includes various shutters – Euro (25mm x 50mm) and 6C (25mm x 38mm) sizes, angled & flat and various faceplates from the standard and office ranges. The 6C shutters also suit our range of GOP boxes and Consolidation points. Office items are available in off-white and grey versions to suit the environment. The shutters will accept all keystone jacks and LC & SC fibre adaptors when used with the appropriate converter. All the shutters have an integrated labelling window.

The Office Range of faceplates and shutters brings style and enhanced aesthetics to any Excel installation, thanks to its curved plate finish and built-in labelling fields. The Single/Double Gang faceplates are each supplied with two half (12.5 mm wide) blanks. In the case of the Single Gang Faceplate this allows a single jack or shutter to be mounted centrally in the aperture. The two half (12.5 mm wide) blanks supplied with the Double Gang Faceplate allows spacing options for mounting three jacks or shutters in the faceplate. The colour options permit the assembly of the telecommunication outlets to contrast with the wall finish if required to comply with the Equality Act 2010 and Part M of the Building Regulations.

Product name:	Item Code	Weight (kg/unit)
Excel Angled Shutter for Keystone Jack 25mm x 50mm	100-020	0.01
Excel Angled Shutter LJ6C for Keystone Jack White	100-022	0.008
Excel Angled Shutter for Keystone Jack White	100-175	0.007
Excel Angled Shutter for Keystone Jack 25mm x 50mm	100-280	0.01
Excel Office Angled Shutter for Keystone Jack 25mm x 50mm	100-280-GE	0.01
Excel Flat Shutter for Keystone Jack 25mm x 50mm	100-014	0.009
Excel Single Gang Faceplate Complete with 2 Half Blanks Office White	100-270	0.028

Product name:	Item Code	Weight (kg/unit)
Excel Single Gang Faceplate Complete with 2 Half Blanks Charcoal Grey	100-270-GE	0.028
Excel Double Gang Faceplate Complete with 2 Half Blanks Office White	100-271	0.041
Excel Double Gang Faceplate Complete with 2 Half Blanks Charcoal Grey	100-271-GE	0.042
Excel White Single Gang Bevelled Plate without Blanks	100-712	0.029
Excel White Double Gang Bevelled Plate without Blanks	100-716	0.041

In this EPD, Angled shutter for Keystone Jack white with the weight of 0.0073 kg/unit, Double Gang Faceplate with the weight of 0.042kg/unit, Single faceplate with the weight of 0.028kg/unit and Shutter with the weight of 0.009kg/unit has been modelled and results are enclosed in this EPD.

## Technical Information

### Technical Information for Shutters

Property	100-020	100-022	100-175	100-280	100-280-GE	100-014
Material	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic
Colour	White	White	White	White	Grey	White
RAL/PANTONE Ref	9003	9003	9003	9003	PANTONE425C	9016
Type of fastening	Snap-In	Snap-In	Snap-In	Snap-In	Snap-In	Snap-In
Width of device	25 mm	22 mm	25 mm	25 mm	25 mm	25 mm
Height of device	50 mm	37 mm	50 mm	50 mm	50 mm	50 mm

### Technical Information for Face Plates

Property	100-270	100-270-GE	100-271	100-271-GE	100-712	100-716
Outlet Capacity	2	2	4	4	2	4
Flush-mounted installation	Yes	Yes	Yes	Yes	Yes	Yes
Suitable for floor box	Yes	Yes	Yes	Yes	Yes	Yes
Material	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic
Colour	White	Grey	White	Grey	White	White
RAL-number (akin)	9003	7011	9003	7011	9016	9016
Type of fastening	Screw	Screw	Screw	Screw	Screw	Screw
Width of device	85 mm	85 mm	146 mm	146 mm	85 mm	146 mm
Height of device	85 mm	85 mm	85 mm	85 mm	85 mm	85 mm
Aperture width	50 mm	50 mm	100 mm	100 mm	50 mm	100 mm
Aperture height	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm



### Main Product Contents

Material/Chemical Input	%
Polycarbonate	70-75
Others	20-25

### Manufacturing Process

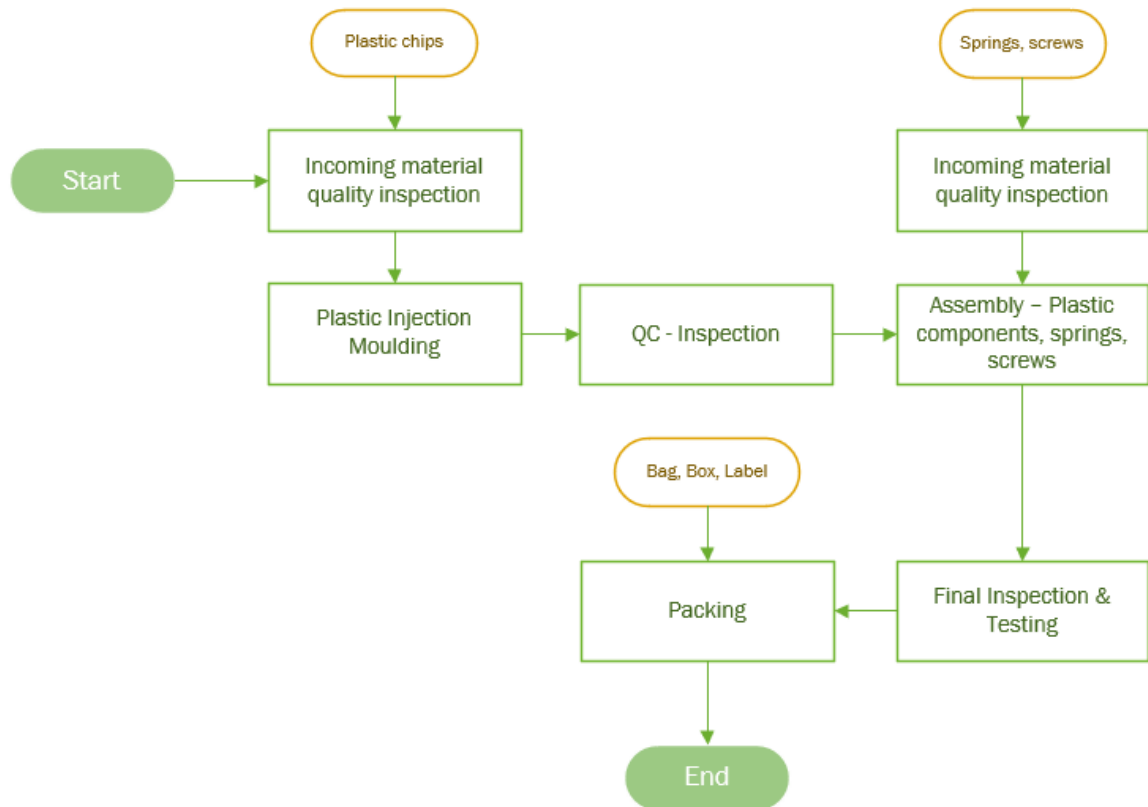
The manufacturing of these plastic components involves a couple of processes and QC checks, starting with the raw materials and ending with the completed items.

Firstly, the raw materials are checked for conformance. This includes the plastic materials, springs and screws that are used to make up the assemblies. Once all the materials are verified, the mouldings can be produced. This is a process of injection moulding, where the plastics are melted and injected into a high-precision mould. This applies to all the plastic parts used in the assemblies, some of which use several different mouldings. The mouldings are inspected for finish and dimensions. Once done, the assembly takes place. This involves bringing all the components together, which includes the various mouldings as required, the spring (for shutters) and the screws (for faceplates). This process is generally carried out on automatic assembly machines, where the components are fed into a press by vibrating bowl feeders and pick-and-place machines. All parts are aligned in jigs and pressed together.

The finished assemblies are visually inspected and mechanically tested for conformance, then packed into bags/boxes, labelled and ready for shipping.

Process flow diagram

Faceplates, Shutters & Adaptors



End of Life

The end-of-life stage starts when the product is replaced, dismantled, and does not provide any further function. The Faceplates, Shutters and Adaptors made up of plastic and steel which are recyclable materials; therefore, at the end of life, 100% of the recovered products is assumed to be recycled.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description.

1 Unit of Faceplate, shutters, and Adaptors

System boundary

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 and A4 and A5 (transportation and installation) and end of life stages C1-C4, and D in accordance with EN 15804:2012+A2:2019 and BRE 2021 Product Category Rules (PN 514 Rev 3.1).

Data sources, quality, and allocation

The quantity used in the data collection for this EPD is the total quantity of Faceplate, shutters, and Adaptors manufactured as a proportion of the total manufactured, during the data collection period (01/01/21-31/12/21). Mayflex receives the data cables from their PRC manufacturing partners, therefore the transportation used to

transfer the products from PRC to the UK is included in the LCA analysis. Other products are manufactured in addition to Keystone patch panel and cable management bar; therefore, the allocation of electricity and water consumption and discharge are required, and this has been done according to the provisions of the BRE PCR PN514 and EN15804.

In this EPD, Angled shutter for Keystone Jack white with the weight of 0.0073 kg/unit, Single faceplate with the weight of 0.028kg/unit, Double Gang Faceplate with the weight of 0.042kg/unit, and Shutter with the weight of 0.009kg/unit has been modelled and results are enclosed in this EPD. 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 EN15804 A2.

ISO14044 guidance. <b>Quality Level</b>	<b>Geographical representativeness</b>	<b>Technical representativeness</b>	<b>Time representativeness</b>
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).	n/a
Very Good	n/a	n/a	There is approximately 1-2 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific Global and European datasets have been selected from the ecoinvent LCI for this LCA. Manufacturer uses the national grid electricity for production, so therefore the national grid electricity dataset has been used for the LCA modelling (Ecoinvent 3.8). The GWP carbon footprint for using 1 kWh of Electricity, China is 1.054 in kgCO<sub>2</sub>e/kWh. The quality level of time representativeness is also Very 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

### Cut-off criteria

All raw materials and energy inputs to the manufacturing process have been included. There were no ancillary materials used during the production and no direct emissions to air, water, or soil, which were not measured, and there were no non-production wastes recorded during the production period.



## LCA Results - Single faceplate with the weight of 0.028kg

(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 <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq
Product stage	Raw material supply	A1	2.09E-01	2.08E-01	5.49E-04	2.01E-05	1.19E-09	7.59E-04	1.16E-05
	Transport	A2	7.89E-03	7.89E-03	1.36E-06	4.96E-06	1.64E-09	1.89E-04	3.33E-07
	Manufacturing	A3	2.41E-02	2.45E-02	-3.65E-04	9.23E-06	3.57E-10	1.31E-04	5.60E-06
	Total (Consumption grid)	A1-3	2.41E-01	2.40E-01	1.85E-04	3.42E-05	3.19E-09	1.08E-03	1.75E-05
Construction process stage	Transport	A4	8.01E-04	8.00E-04	6.82E-07	3.14E-07	1.85E-10	3.25E-06	5.16E-08
	Construction	A5	1.13E-02	7.24E-03	3.80E-03	5.00E-06	1.04E-09	4.02E-05	9.44E-07
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	5.82E-05	5.82E-05	4.96E-08	2.28E-08	1.35E-11	2.36E-07	3.75E-09
	Waste processing	C3	-8.27E-03	-8.28E-03	1.85E-05	-5.27E-06	-5.41E-10	-2.10E-05	-1.11E-06
	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 boundaries	Reuse, recovery, recycling potential	D	-2.07E-01	-2.07E-01	-3.15E-04	-6.00E-06	-5.18E-10	-7.14E-04	-8.90E-06

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



## LCA Results (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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	1.23E-04	1.33E-03	4.86E-04	5.63E-07	2.54E+00	6.35E-02	1.87E-08
	Transport	A2	4.70E-05	5.22E-04	1.37E-04	1.58E-08	1.06E-01	3.27E-04	3.76E-10
	Manufacturing	A3	2.95E-05	3.06E-04	7.58E-05	3.32E-08	2.38E-01	1.67E-02	1.74E-09
	Total (Consumption grid)	A1-3	1.99E-04	2.16E-03	6.98E-04	6.12E-07	2.88E+00	8.05E-02	2.08E-08
Construction process stage	Transport	A4	9.79E-07	1.07E-05	3.27E-06	2.78E-09	1.21E-02	5.45E-05	6.91E-11
	Construction	A5	1.64E-05	1.52E-04	5.20E-05	4.77E-08	8.12E-02	6.91E-04	1.37E-09
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	7.11E-08	7.77E-07	2.38E-07	2.02E-10	8.79E-04	3.96E-06	5.02E-12
	Waste processing	C3	-7.93E-06	-5.83E-05	-1.99E-05	-4.23E-08	-7.99E-02	-1.96E-03	-4.15E-10
	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 boundaries	Reuse, recovery, recycling potential	D	-1.17E-04	-1.27E-03	-4.70E-04	-4.56E-08	-2.36E+00	-5.41E-02	-1.96E-08

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.

## LCA Results (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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.42E-03	4.16E+00	4.75E-10	3.68E-09	1.11E-01
	Transport	A2	5.03E-04	7.12E-02	4.23E-12	5.73E-11	3.41E-02
	Manufacturing	A3	1.21E-03	6.87E-01	6.53E-12	2.75E-10	1.59E-01
	Total (Consumption grid)	A1-3	3.13E-03	4.92E+00	4.86E-10	4.01E-09	3.04E-01
Construction process stage	Transport	A4	6.22E-05	9.44E-03	3.06E-13	9.90E-12	8.31E-03
	Construction	A5	4.58E-04	4.24E-01	1.04E-11	1.08E-10	2.90E-02
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
<b>100% - Recycling</b>							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.52E-06	6.86E-04	2.22E-14	7.20E-13	6.04E-04
	Waste processing	C3	-4.34E-04	-8.13E-02	-1.02E-11	-8.93E-11	-6.49E-02
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.63E-04	-4.29E+00	-9.21E-11	-3.80E-09	-2.76E-02

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.

## LCA Results (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	6.07E-02	0.00E+00	6.07E-02	1.79E+00	7.52E-01	2.54E+00
	Transport	A2	9.80E-04	0.00E+00	9.80E-04	1.04E-01	0.00E+00	1.04E-01
	Manufacturing	A3	5.02E-02	9.41E-02	1.44E-01	9.64E-01	2.23E-05	9.64E-01
	Total (Consumption grid)	A1-3	1.12E-01	9.41E-02	2.06E-01	2.86E+00	7.52E-01	3.61E+00
Construction process stage	Transport	A4	1.70E-04	0.00E+00	1.70E-04	1.19E-02	0.00E+00	1.19E-02
	Construction	A5	-1.68E+00	1.68E+00	0.00E+00	5.39E-03	0.00E+00	5.39E-03
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	1.24E-05	0.00E+00	1.24E-05	8.64E-04	0.00E+00	8.64E-04
	Waste processing	C3	2.21E-05	0.00E+00	2.21E-05	-9.73E-01	9.77E-01	3.87E-03
	Disposal	C4	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 boundaries	Reuse, recovery, recycling potential	D	-1.43E-02	0.00E+00	-1.43E-02	-1.69E+00	-6.80E-01	-2.37E+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

## LCA Results (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 <sup>3</sup>
Product stage	Raw material supply	A1	2.14E-03	0.00E+00	0.00E+00	1.52E-03
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	8.11E-06
	Manufacturing	A3	1.10E-05	0.00E+00	0.00E+00	4.09E-04
	Total (Consumption grid)	A1-3	2.15E-03	0.00E+00	0.00E+00	1.94E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.35E-06
	Construction	A5	1.19E-01	0.00E+00	0.00E+00	1.74E-05
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
<b>100% - Recycling</b>						
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	9.80E-08
	Waste processing	C3	1.52E-06	0.00E+00	0.00E+00	-4.73E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.23E-06	0.00E+00	0.00E+00	-1.26E-03

SM = Use of secondary material;  
RSF = Use of renewable secondary fuels;

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

### LCA Results (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	2.30E-02	3.86E-02	7.34E-07
	Transport	A2	1.34E-04	1.47E-03	7.33E-07
	Manufacturing	A3	1.32E-02	9.72E-02	1.00E-06
	Total (Consumption grid)	A1-3	3.63E-02	1.37E-01	2.47E-06
Construction process stage	Transport	A4	1.33E-05	2.37E-04	8.19E-08
	Construction	A5	1.12E-05	1.69E-04	3.53E-08
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
<b>100% - Recycling</b>					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	9.70E-07	1.72E-05	5.95E-09
	Waste processing	C3	5.20E-06	3.64E-05	2.73E-08
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.23E-03	-2.20E-02	-3.72E-07

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

## LCA Results (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	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.10E-06	1.68E-10	2.75E-03	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	7.88E-06	0.00E+00	0.00E+00	0.00E+00	2.89E-03
	Total (Consumption grid)	A1-3	0.00E+00	8.98E-06	1.68E-10	2.75E-03	0.00E+00	2.89E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.35E-02
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	5.00E-03	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
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	-1.26E-06	-1.92E-10	-3.15E-03	0.00E+00	0.00E+00

CRU = Components for reuse;  
MFR = Materials for recycling

MER = Materials for energy recovery;  
EE = Exported Energy

## LCA Results - Double Gang Faceplate with the weight of 0.042kg

(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 <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq
Product stage	Raw material supply	A1	3.44E-01	3.43E-01	7.13E-04	1.33E-05	8.84E-10	1.21E-03	1.26E-05
	Transport	A2	1.20E-02	1.20E-02	2.16E-06	7.49E-06	2.50E-09	2.84E-04	5.09E-07
	Manufacturing	A3	3.96E-02	4.05E-02	-9.01E-04	2.34E-05	9.03E-10	2.23E-04	1.08E-05
	Total (Consumption grid)	A1-3	3.95E-01	3.95E-01	-1.86E-04	4.42E-05	4.29E-09	1.71E-03	2.39E-05
Construction process stage	Transport	A4	1.20E-03	1.20E-03	1.02E-06	4.71E-07	2.78E-10	4.87E-06	7.73E-08
	Construction	A5	2.27E-02	1.46E-02	7.66E-03	1.01E-05	2.09E-09	8.10E-05	1.90E-06
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	8.74E-05	8.73E-05	7.44E-08	3.43E-08	2.02E-11	3.54E-07	5.62E-09
	Waste processing	C3	-1.47E-02	-1.48E-02	3.20E-05	-9.19E-06	-1.02E-09	-4.02E-05	-1.94E-06
	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 boundaries	Reuse, recovery, recycling potential	D	-3.49E-01	-3.48E-01	-5.74E-04	-3.24E-06	-3.82E-10	-1.20E-03	-1.05E-05

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



## LCA Results (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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	1.94E-04	2.11E-03	7.64E-04	4.03E-07	4.04E+00	9.61E-02	3.21E-08
	Transport	A2	7.07E-05	7.84E-04	2.05E-04	2.42E-08	1.62E-01	5.01E-04	5.77E-10
	Manufacturing	A3	5.15E-05	5.30E-04	1.27E-04	6.97E-08	4.22E-01	2.88E-02	2.82E-09
	Total (Consumption grid)	A1-3	3.16E-04	3.43E-03	1.10E-03	4.97E-07	4.62E+00	1.25E-01	3.54E-08
Construction process stage	Transport	A4	1.47E-06	1.60E-05	4.91E-06	4.17E-09	1.82E-02	8.17E-05	1.04E-10
	Construction	A5	3.31E-05	3.07E-04	1.05E-04	9.61E-08	1.64E-01	1.39E-03	2.77E-09
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	1.07E-07	1.17E-06	3.57E-07	3.03E-10	1.32E-03	5.94E-06	7.53E-12
	Waste processing	C3	-1.54E-05	-1.19E-04	-3.95E-05	-7.38E-08	-1.44E-01	-3.42E-03	-8.21E-10
	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 boundaries	Reuse, recovery, recycling potential	D	-1.93E-04	-2.11E-03	-7.63E-04	-6.37E-08	-3.99E+00	-9.14E-02	-3.33E-08

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.

## LCA Results (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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	9.66E-04	6.93E+00	3.51E-10	6.18E-09	7.58E-02
	Transport	A2	7.65E-04	1.09E-01	6.40E-12	8.77E-11	5.27E-02
	Manufacturing	A3	3.05E-03	1.22E+00	1.21E-11	4.91E-10	4.15E-01
	Total (Consumption grid)	A1-3	4.78E-03	8.27E+00	3.69E-10	6.76E-09	5.43E-01
Construction process stage	Transport	A4	9.33E-05	1.42E-02	4.59E-13	1.49E-11	1.25E-02
	Construction	A5	9.22E-04	8.55E-01	2.10E-11	2.18E-10	5.85E-02
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
<b>100% - Recycling</b>							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.78E-06	1.03E-03	3.33E-14	1.08E-12	9.06E-04
	Waste processing	C3	-7.77E-04	-1.44E-01	-1.79E-11	-1.57E-10	-1.14E-01
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.77E-04	-7.13E+00	-9.34E-11	-6.37E-09	-1.74E-02

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.

## LCA Results (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	5.18E-02	0.00E+00	5.18E-02	2.85E+00	1.21E+00	4.06E+00
	Transport	A2	1.50E-03	0.00E+00	1.50E-03	1.59E-01	0.00E+00	1.59E-01
	Manufacturing	A3	1.40E-02	2.88E-01	3.02E-01	1.57E+00	4.33E-05	1.57E+00
	Total (Consumption grid)	A1-3	6.74E-02	2.88E-01	3.55E-01	4.58E+00	1.21E+00	5.79E+00
Construction process stage	Transport	A4	2.56E-04	0.00E+00	2.56E-04	1.78E-02	0.00E+00	1.78E-02
	Construction	A5	-3.39E+00	3.39E+00	0.00E+00	1.09E-02	0.00E+00	1.09E-02
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	1.86E-05	0.00E+00	1.86E-05	1.30E-03	0.00E+00	1.30E-03
	Waste processing	C3	1.11E-05	0.00E+00	1.11E-05	-1.70E+00	1.70E+00	1.94E-03
	Disposal	C4	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 boundaries	Reuse, recovery, recycling potential	D	-2.14E-02	0.00E+00	-2.14E-02	-2.83E+00	-1.18E+00	-4.01E+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

## LCA Results (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 <sup>3</sup>
Product stage	Raw material supply	A1	1.40E-03	0.00E+00	0.00E+00	2.27E-03
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.24E-05
	Manufacturing	A3	4.10E-04	0.00E+00	0.00E+00	7.07E-04
	Total (Consumption grid)	A1-3	1.81E-03	0.00E+00	0.00E+00	2.99E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.02E-06
	Construction	A5	2.40E-01	0.00E+00	0.00E+00	3.50E-05
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
<b>100% - Recycling</b>						
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	1.47E-07
	Waste processing	C3	7.58E-07	0.00E+00	0.00E+00	-8.26E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.15E-06	0.00E+00	0.00E+00	-2.13E-03

SM = Use of secondary material;  
RSF = Use of renewable secondary fuels;

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

## LCA Results (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	1.98E-02	3.30E-02	7.20E-07
	Transport	A2	2.03E-04	2.25E-03	1.11E-06
	Manufacturing	A3	2.03E-02	1.67E-01	2.23E-06
	Total (Consumption grid)	A1-3	4.03E-02	2.02E-01	4.06E-06
Construction process stage	Transport	A4	2.00E-05	3.55E-04	1.23E-07
	Construction	A5	2.27E-05	3.41E-04	7.10E-08
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
<b>100% - Recycling</b>					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.45E-06	2.58E-05	8.93E-09
	Waste processing	C3	2.60E-06	1.82E-05	1.36E-08
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.72E-03	-2.02E-02	-4.69E-07

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

## LCA Results (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	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	2.03E-06	3.11E-10	5.09E-03	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	4.69E-04	0.00E+00	0.00E+00	0.00E+00	8.83E-03
	Total (Consumption grid)	A1-3	0.00E+00	4.71E-04	3.11E-10	5.09E-03	0.00E+00	8.83E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	2.50E-03	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
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	-2.18E-06	-3.34E-10	-5.47E-03	0.00E+00	0.00E+00

CRU = Components for reuse;  
MFR = Materials for recycling

MER = Materials for energy recovery;  
EE = Exported Energy

## LCA Results - Angled shutter with the weight of 0.0073kg

(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 <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq
Product stage	Raw material supply	A1	3.90E-02	3.84E-02	5.78E-04	5.64E-05	1.07E-09	2.33E-04	1.81E-05
	Transport	A2	2.27E-03	2.27E-03	5.16E-07	1.38E-06	4.77E-10	5.07E-05	1.00E-07
	Manufacturing	A3	1.52E-02	2.01E-02	-5.17E-03	9.16E-05	1.66E-09	1.03E-04	7.90E-06
	Total (Consumption grid)	A1-3	5.64E-02	6.08E-02	-4.60E-03	1.49E-04	3.21E-09	3.87E-04	2.61E-05
Construction process stage	Transport	A4	2.09E-04	2.09E-04	1.78E-07	8.19E-08	4.83E-11	8.47E-07	1.34E-08
	Construction	A5	1.98E-01	1.27E-01	6.67E-02	8.79E-05	1.82E-08	7.06E-04	1.66E-05
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	1.52E-05	1.52E-05	1.29E-08	5.96E-09	3.51E-12	6.16E-08	9.77E-10
	Waste processing	C3	-4.56E-04	-4.57E-04	1.70E-06	-4.32E-07	9.15E-12	9.03E-07	-8.85E-08
	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 boundaries	Reuse, recovery, recycling potential	D	-2.64E-02	-2.64E-02	-8.26E-06	-5.82E-06	-4.27E-10	-9.43E-05	-4.48E-06

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



## LCA Results (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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.74E-05	5.02E-04	1.42E-04	7.41E-06	4.67E-01	2.29E-02	2.98E-09
	Transport	A2	1.27E-05	1.40E-04	3.69E-05	4.82E-09	3.09E-02	9.92E-05	1.15E-10
	Manufacturing	A3	4.47E-05	2.97E-04	6.69E-05	7.32E-08	2.50E-01	8.54E-03	1.61E-09
	Total (Consumption grid)	A1-3	1.05E-04	9.39E-04	2.46E-04	7.49E-06	7.49E-01	3.16E-02	4.70E-09
Construction process stage	Transport	A4	2.55E-07	2.79E-06	8.54E-07	7.26E-10	3.15E-03	1.42E-05	1.80E-11
	Construction	A5	2.88E-04	2.68E-03	9.12E-04	8.37E-07	1.42E+00	1.21E-02	2.41E-08
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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-08	2.03E-07	6.20E-08	5.27E-11	2.29E-04	1.03E-06	1.31E-12
	Waste processing	C3	5.20E-07	8.18E-06	1.92E-06	-3.54E-09	-3.35E-03	-1.62E-04	3.71E-11
	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 boundaries	Reuse, recovery, recycling potential	D	-1.79E-05	-1.92E-04	-8.07E-05	-1.54E-08	-2.86E-01	-6.72E-03	-2.35E-09

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.

## LCA Results (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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.15E-03	3.47E+00	8.84E-11	2.63E-09	1.06E-01
	Transport	A2	1.47E-04	2.10E-02	1.19E-12	1.74E-11	1.09E-02
	Manufacturing	A3	1.66E-03	4.33E-01	8.77E-12	2.30E-10	6.45E-01
	Total (Consumption grid)	A1-3	4.96E-03	3.93E+00	9.83E-11	2.88E-09	7.62E-01
Construction process stage	Transport	A4	1.62E-05	2.46E-03	7.97E-14	2.58E-12	2.17E-03
	Construction	A5	8.03E-03	7.45E+00	1.83E-10	1.90E-09	5.09E-01
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
<b>100% - Recycling</b>							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.18E-06	1.79E-04	5.80E-15	1.88E-13	1.58E-04
	Waste processing	C3	-2.15E-05	-4.96E-03	-8.06E-13	-6.24E-12	-5.19E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.30E-04	-6.07E-01	-5.72E-11	-5.05E-10	-2.49E-02

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.

## LCA Results (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	3.18E-02	0.00E+00	3.18E-02	4.02E-01	6.70E-02	4.69E-01
	Transport	A2	2.99E-04	0.00E+00	2.99E-04	3.04E-02	0.00E+00	3.04E-02
	Manufacturing	A3	-3.39E-02	1.95E-01	1.61E-01	4.53E-01	2.65E-03	4.55E-01
	Total (Consumption grid)	A1-3	-1.86E-03	1.95E-01	1.93E-01	8.85E-01	6.96E-02	9.55E-01
Construction process stage	Transport	A4	4.44E-05	0.00E+00	4.44E-05	3.10E-03	0.00E+00	3.10E-03
	Construction	A5	-2.96E+01	2.96E+01	0.00E+00	9.46E-02	0.00E+00	9.46E-02
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	3.23E-06	0.00E+00	3.23E-06	2.25E-04	0.00E+00	2.25E-04
	Waste processing	C3	2.21E-05	0.00E+00	2.21E-05	-8.11E-02	8.49E-02	3.87E-03
	Disposal	C4	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 boundaries	Reuse, recovery, recycling potential	D	-3.83E-03	0.00E+00	-3.83E-03	-2.27E-01	-5.91E-02	-2.86E-01

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

## LCA Results (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 <sup>3</sup>
Product stage	Raw material supply	A1	2.84E-05	0.00E+00	0.00E+00	5.47E-04
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.45E-06
	Manufacturing	A3	1.51E-06	0.00E+00	0.00E+00	2.10E-04
	Total (Consumption grid)	A1-3	2.99E-05	0.00E+00	0.00E+00	7.59E-04
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.52E-07
	Construction	A5	2.09E+00	0.00E+00	0.00E+00	3.05E-04
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
<b>100% - Recycling</b>						
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	2.56E-08
	Waste processing	C3	1.52E-06	0.00E+00	0.00E+00	-3.91E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.07E-07	0.00E+00	0.00E+00	-1.58E-04

SM = Use of secondary material;  
RSF = Use of renewable secondary fuels;

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

## LCA Results (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	3.60E-03	5.22E-02	1.06E-06
	Transport	A2	3.85E-05	4.43E-04	2.13E-07
	Manufacturing	A3	4.64E-03	4.51E-02	7.20E-07
	Total (Consumption grid)	A1-3	8.28E-03	9.78E-02	1.99E-06
Construction process stage	Transport	A4	3.48E-06	6.18E-05	2.13E-08
	Construction	A5	1.97E-04	2.97E-03	6.19E-07
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
<b>100% - Recycling</b>					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.53E-07	4.49E-06	1.55E-09
	Waste processing	C3	5.20E-06	3.64E-05	2.73E-08
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.10E-03	-1.52E-02	-1.63E-07

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

## LCA Results (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	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.24E-07	1.89E-11	3.10E-04	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.88E-03
	Total (Consumption grid)	A1-3	0.00E+00	1.24E-07	1.89E-11	3.10E-04	0.00E+00	-6.88E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	5.00E-03	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
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	-1.09E-07	-1.67E-11	-2.73E-04	0.00E+00	0.00E+00

CRU = Components for reuse;  
MFR = Materials for recycling

MER = Materials for energy recovery;  
EE = Exported Energy

## LCA Results - Shutter with the weight of 0.009kg

(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 <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq
Product stage	Raw material supply	A1	7.56E-02	7.54E-02	1.49E-04	4.39E-06	2.38E-10	2.69E-04	3.24E-06
	Transport	A2	2.59E-03	2.59E-03	4.55E-07	1.62E-06	5.39E-10	6.17E-05	1.10E-07
	Manufacturing	A3	8.22E-03	8.36E-03	-1.41E-04	4.17E-06	1.61E-10	4.57E-05	2.19E-06
	Total (Consumption grid)	A1-3	8.64E-02	8.64E-02	8.64E-06	1.02E-05	9.38E-10	3.76E-04	5.54E-06
Construction process stage	Transport	A4	2.58E-04	2.57E-04	2.19E-07	1.01E-07	5.95E-11	1.04E-06	1.66E-08
	Construction	A5	1.76E-02	1.13E-02	5.94E-03	7.82E-06	1.62E-09	6.28E-05	1.47E-06
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	1.87E-05	1.87E-05	1.59E-08	7.34E-09	4.33E-12	7.59E-08	1.20E-09
	Waste processing	C3	-3.04E-03	-3.05E-03	6.64E-06	-1.91E-06	-2.07E-10	-8.18E-06	-4.03E-07
	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 boundaries	Reuse, recovery, recycling potential	D	-7.29E-02	-7.28E-02	-1.18E-04	-1.00E-06	-1.03E-10	-2.50E-04	-2.40E-06

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



## LCA Results (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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.34E-05	4.73E-04	1.68E-04	1.28E-07	8.64E-01	2.02E-02	7.16E-09
	Transport	A2	1.53E-05	1.70E-04	4.46E-05	5.20E-09	3.49E-02	1.08E-04	1.24E-10
	Manufacturing	A3	1.23E-05	1.08E-04	2.61E-05	1.36E-08	8.47E-02	2.36E-03	5.91E-10
	Total (Consumption grid)	A1-3	7.10E-05	7.51E-04	2.39E-04	1.46E-07	9.83E-01	2.26E-02	7.87E-09
Construction process stage	Transport	A4	3.15E-07	3.44E-06	1.05E-06	8.95E-10	3.89E-03	1.75E-05	2.22E-11
	Construction	A5	2.56E-05	2.38E-04	8.11E-05	7.45E-08	1.27E-01	1.08E-03	2.15E-09
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>									
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	2.29E-08	2.50E-07	7.65E-08	6.50E-11	2.83E-04	1.27E-06	1.61E-12
	Waste processing	C3	-3.13E-06	-2.40E-05	-7.97E-06	-1.53E-08	-2.96E-02	-7.09E-04	-1.66E-10
	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 boundaries	Reuse, recovery, recycling potential	D	-4.06E-05	-4.42E-04	-1.61E-04	-1.39E-08	-8.32E-01	-1.91E-02	-6.94E-09

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.

## LCA Results (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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.13E-04	1.58E+00	1.09E-10	1.40E-09	2.46E-02
	Transport	A2	1.65E-04	2.34E-02	1.38E-12	1.89E-11	1.13E-02
	Manufacturing	A3	5.43E-04	2.81E-01	2.73E-12	1.07E-10	7.28E-02
	Total (Consumption grid)	A1-3	1.02E-03	1.89E+00	1.13E-10	1.53E-09	1.09E-01
Construction process stage	Transport	A4	2.00E-05	3.04E-03	9.83E-14	3.18E-12	2.67E-03
	Construction	A5	7.15E-04	6.62E-01	1.63E-11	1.69E-10	4.53E-02
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
<b>100% - Recycling</b>							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.45E-06	2.21E-04	7.14E-15	2.31E-13	1.94E-04
	Waste processing	C3	-1.60E-04	-2.98E-02	-3.70E-12	-3.26E-11	-2.35E-02
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.95E-05	-1.49E+00	-2.24E-11	-1.33E-09	-4.99E-03

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.

## LCA Results (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	1.48E-02	0.00E+00	1.48E-02	6.22E-01	2.45E-01	8.66E-01
	Transport	A2	3.23E-04	0.00E+00	3.23E-04	3.43E-02	0.00E+00	3.43E-02
	Manufacturing	A3	9.87E-03	4.71E-02	5.69E-02	3.25E-01	9.99E-05	3.25E-01
	Total (Consumption grid)	A1-3	2.50E-02	4.71E-02	7.20E-02	9.81E-01	2.45E-01	1.23E+00
Construction process stage	Transport	A4	5.48E-05	0.00E+00	5.48E-05	3.82E-03	0.00E+00	3.82E-03
	Construction	A5	-2.62E+00	2.62E+00	0.00E+00	8.41E-03	0.00E+00	8.41E-03
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	3.98E-06	0.00E+00	3.98E-06	2.78E-04	0.00E+00	2.78E-04
	Waste processing	C3	3.54E-06	0.00E+00	3.54E-06	-3.52E-01	3.53E-01	6.19E-04
	Disposal	C4	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 boundaries	Reuse, recovery, recycling potential	D	-4.61E-03	0.00E+00	-4.61E-03	-5.92E-01	-2.45E-01	-8.38E-01

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

## LCA Results (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 <sup>3</sup>
Product stage	Raw material supply	A1	4.66E-04	0.00E+00	0.00E+00	4.79E-04
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.67E-06
	Manufacturing	A3	3.67E-06	0.00E+00	0.00E+00	6.23E-05
	Total (Consumption grid)	A1-3	4.70E-04	0.00E+00	0.00E+00	5.44E-04
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.34E-07
	Construction	A5	1.86E-01	0.00E+00	0.00E+00	2.71E-05
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
<b>100% - Recycling</b>						
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	3.15E-08
	Waste processing	C3	2.42E-07	0.00E+00	0.00E+00	-1.71E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.45E-07	0.00E+00	0.00E+00	-4.45E-04

SM = Use of secondary material;  
RSF = Use of renewable secondary fuels;

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

### LCA Results (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	5.71E-03	9.56E-03	1.91E-07
	Transport	A2	4.39E-05	4.84E-04	2.40E-07
	Manufacturing	A3	4.32E-03	3.38E-02	4.10E-07
	Total (Consumption grid)	A1-3	1.01E-02	4.39E-02	8.42E-07
Construction process stage	Transport	A4	4.29E-06	7.62E-05	2.63E-08
	Construction	A5	1.76E-05	2.64E-04	5.51E-08
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
<b>100% - Recycling</b>					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.12E-07	5.54E-06	1.91E-09
	Waste processing	C3	8.32E-07	5.82E-06	4.36E-09
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.90E-03	-5.02E-03	-1.05E-07

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

## LCA Results (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	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	4.52E-07	6.91E-11	1.13E-03	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	6.72E-08	0.00E+00	0.00E+00	0.00E+00	1.44E-03
	Total (Consumption grid)	A1-3	0.00E+00	5.19E-07	6.91E-11	1.13E-03	0.00E+00	1.44E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.35E-02
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
<b>100% - Recycling</b>								
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	8.00E-04	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
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	-4.53E-07	-6.93E-11	-1.13E-03	0.00E+00	0.00E+00

CRU = Components for reuse;  
MFR = Materials for recycling

MER = Materials for energy recovery;  
EE = Exported Energy

## Scenarios and additional technical information

Scenarios and additional technical information					
Scenario	Parameter			Units	Results
A4 – Transport to the building site	Mayflex receives the Faceplates, Shutters and Adaptors from PRC and without any further processing in the distribution sector they will be distributed to the customer site.				
	Fuel type / Vehicle type			Road transport	16–32-ton lorry
	Distance: Mayflex to customer site			Km	172
	Capacity utilisation (incl. empty returns)			%	49
	Bulk density of transported products			kg/m <sup>3</sup>	342
A5 – Installation in the building	The installation of Faceplates, Shutters and Adaptors are carried out by manual labour, and it is installed directly on the construction without the use of power equipment during the installation. During the installation, only packaging waste resulted.				
	Packaging waste (kg)	Single Gang Faceplate (kg)	Double Gang Bevelled Plate(kg)	Angled shutter	Shutter
	Cardboard waste	0.1190	0.24	2.1	0.185
C1 Deconstruction	Faceplates/Shutters removed manually from the building sites. Therefore, no energy is associated while removing the plates from the building				
C2- Transportation	Recovered products are taken back by the registered broker to landfill.			km	12.5
C3-Preprocessing	The end-of-life stage starts when the product is replaced, dismantled, and does not provide any further function. The Faceplates, Shutters and Adaptors made up of plastic and steel which are recyclable materials; therefore, at the end of life, 100% of the recovered products is assumed to be recycled.				
	The separation processes have not been included in Module C3 because they are assumed to be very small and effectively negligible, and as 100% of the product is recycled, no waste is sent to landfill in Module C4.				
	Recycling materials	Single Gang Faceplate (kg/unit)	Double Gang Bevelled Plate(kg/unit)	Angled shutter	Shutter
	Plastic	0.023	0.040	0.002	0.008
Steel	0.005	0.0025	0.005	0.0008	
Module D	It is assumed that 100% of the Faceplates, Shutters and Adaptors used in the construction building is recovered for recycling. The calculation assumes that there is no yield-loss during the recycling processes.				

### Interpretation of results

The bulk of the environmental impacts are attributed to the manufacturing of Faceplates, Shutters and Adaptors covered by information modules A1-A3 of EN15804:2012+A2:2019



## References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A2:2019. London, BSI, 2019.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

## Annex:

### Applicable standards

The below standards are applicable to Faceplates, shutters, and Adaptors and it covers all the product codes.

Applicable Standard	Subject
BSEN 60670-1:2005 + A1:2013	Boxes and enclosures for electrical accessories for household and similar fixed electrical installations general requirements
BSEN 61340-5-1:2007	Protection of electronic devices from electrostatic phenomena. General requirements apply to activities that: manufacture, process, assemble, install, package, label, service, test, inspect, transport, or otherwise handle electrical or electronic parts, assemblies, and equipment susceptible to damage by electrostatic discharges greater than or equal to 100 V human body model (HBM).
BSEN 60529:1992+A2:2013	Degrees of Protection provided by Enclosures (IP CODE)
RoHS	Compliant to the Restriction of Hazardous Substances
WFD	Compliant to Waste Framework Directive
SCIP	Compliant to the Restriction of Hazardous Substances