

## Environmental Product Declaration

Average EPD

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

# IsoZero 200 & IsoZero 150

## Ecocon Solutions AB



### Programme

EPD Square | [www.epdsquare.com](http://www.epdsquare.com)

### Programme operator

EPD Square, s.r.o.

### EPD Registration number

SQ 00-022

### Publication date

25.02.2025

### Valid until

24.02.2030

## General information

**Product**

IsoZero 200 and IsoZero 150

**Program operator**

EPD Square, s.r.o.

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**Registration number**

SQ 00-022

**Publication date**

25.02.2025

**Valid until date**

24.02.2030

**Owner of the declaration**

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**Place of production**

Sweden

**Product Category Rules (PCR)**

The CEN standard EN 15804+A2 serves as the core PCR.

In addition, EPD Square PCR v1.0, 2024 is used.

**Declared unit**

1 m<sup>3</sup>

**Mass per DU**

290 kg

**UN CPC code**

375 - Articles of concrete, cement and plaster

**Geographical scope**

Sweden, Europe

**Year of study**

2024

**Comparability**

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in the context of the building.

**EPD author**

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**Verification type**


Independent verification of the declaration and data, according to ISO14025:2006

Internal: ☐

External: ☒

**Verified by**

Daniel Satola, Daniel Satola Consulting



*The owner of the declaration shall be liable for the underlying information and evidence.*

*EPD Square shall not be liable with respect to manufacturer, life cycle assessment data and evidence.*

## System boundaries

Cradle to gate with modules C1–C4 and module D. The LCA was carried out considering the product stage A1-A3, A4, modules C1–C4, module D. This is an average EPD based on 3 months production data since this is a new product introduced to the market. The EPD must be re-verified at the end of it's validity (1 year) presented on the cover page.

## Modules declared and geographical scope

|                     | Product stage       |           |               | Constructi<br>on process<br>stage |                           | Use stage |             |        |             |               |                        |                       | End of life<br>stage       |           |                  |          | Resource<br>recovery<br>stage          |
|---------------------|---------------------|-----------|---------------|-----------------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|----------------------------------------|
|                     | Raw material supply | Transport | Manufacturing | Transport                         | Construction installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-<br>potential |
| Module              | A1                  | A2        | A3            | A4                                | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                      |
| Modules<br>declared | ✓                   | ✓         | ✓             | ✓                                 | MND                       | MND       | MND         | MND    | MND         | MND           | MND                    | MND                   | ✓                          | ✓         | ✓                | ✓        | ✓                                      |
| Geography           | EU                  | EU        | SE            | SE                                | MND                       | MND       | MND         | MND    | MND         | MND           | MND                    | MND                   | SE                         | SE        | SE               | SE       | SE                                     |

MND = Modules not declared.

## Description of Organization

We deliver innovative foam concrete for infrastructure, ground, and foundation projects. With our experienced in-house team, we provide on-site services and offer a more sustainable alternative to traditional materials like crushed aggregate and polystyrene.

Our ambition is to contribute to a sustainable future while creating value for contractors with our unique product.

With decades of experience in both the industry and our specialized product, we work closely with the leading contractors in the Nordics and the largest players in infrastructure projects.

## Product information

### Product name

IsoZero 200 and IsoZero 150. This is an EPD based on the average results of IsoZero 200 and IsoZero 150.

### Product description

Concrete foam, also known as cellular concrete, is a lightweight, versatile building material created by mixing cement, water and a foaming agent. The foaming agent generates air bubbles, resulting in a cellular structure that reduces the material's density while maintaining strength. This material is valued for its thermal insulation, fire resistance, and acoustic properties.

#### IsoZero 200

Compressive strength 28 days [MPa] : 0.52

Thermal conductivity [W/m\*K]: 0.062

#### IsoZero 150

Compressive strength 28 days [MPa] : 0.24

Thermal conductivity [W/m\*K]: 0.052

### Product application

It is used in various applications, such as filling voids, lightweight construction, and thermal insulation layers.

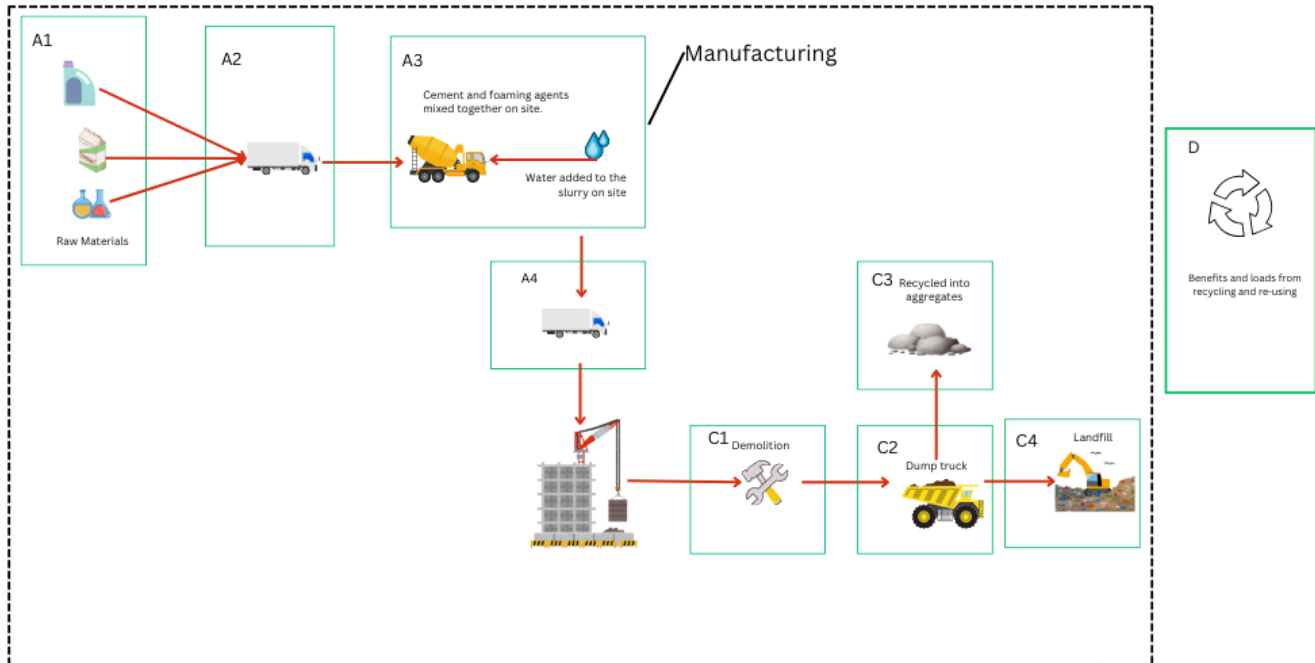
### Geographical scope

Sweden, Europe

## Product contents information

| Product components | Weight, kg | Post-consumer material, weight-% | Renewable material, weight-% |
|--------------------|------------|----------------------------------|------------------------------|
| CEM I 52,5 R       | 150-190    | -                                | -                            |
| Foaming agent SB   | 2.0-2.2    | -                                | -                            |
| Foaming agent L    | 1.5        | -                                | -                            |
| Water              | 109-123    | -                                | -                            |
| TOTAL              | 290        | -                                | -                            |

## Manufacturing process and System Boundaries



Cellular concrete is produced directly on-site using a mobile plant equipped with a 33-tonne cement silo and multiple mixing stations. The process involves combining cement, water, and a biotechnical additive to create a lightweight, highly fluid foam. The production capacity reaches approximately 50 cubic meters per hour on a continuous basis. For large-scale projects, additional cement is required after producing around 300 cubic meters, as the mix uses approximately 100 kilograms of cement per cubic meter. Water is continuously supplied during production, while the biotechnical additive is added at a rate of about 1.5 liters per cubic meter.

## Life cycle assessment

Two types of cement foam are included in this EPD. As such an average EPD is produced based on the average results of each cement foam (IsoZero 150 & IsoZero 200). The rationale is that each cement foam is produced in equal quantity (50%/50%) and therefore reflect the production. In the Life Cycle Assessment (LCA) study, one set of results is declared, representing the average results. This approach is taken to ensure that the declared results reflect a balanced view of the environmental impacts.

### Cut-off criteria

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

### Allocation, estimations, and assumptions

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 m<sup>3</sup> of the products which are used within this study are calculated by considering the total product weight per annual production. In the production plant, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the produced products output fixed to 1 m<sup>3</sup> and the corresponding amount of product is used in the calculations.

### Database(s) and LCA software

This EPD has been created using One Click LCA Pre-Verified EPD Generator. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

## LCA Scenarios and additional technical information

### Manufacturing (A1-A3)

The raw materials are brought from different part of Europe by road (lorry). The raw materials are mixed with part of the total water to form a slurry. Upon arrival to the building site, additional water is added to the slurry and the final mix is then poured into forms.

### Manufacturing energy scenario

| Fuel Data Source and quality    | 0.2 L/m <sup>3</sup> , Propane burnt in building machine, Ecoinvent 3.8 |
|---------------------------------|-------------------------------------------------------------------------|
| Emission CO <sub>2</sub> e / MJ | 0.0898                                                                  |

### Transport (A4)

The products are transported by lorry to various building sites within Sweden. A weighted average distance of 30 km is considered based on records from the data collection period.

### End of Life (C1, C2, C3, C4)

The fuel usage involved in the deconstruction and dismantling process is estimated based on the reference background process available in Ecoinvent v3.8 designed for this specific task that is 17.9 MJ are required to demolish 1m<sup>3</sup> of the product. At this stage, the transport of the dismantled product system is also taken into account, with an assumed distance of 50 km to the disposal site. 95% of the concrete product is recycled into aggregates while the remaining 5% is assumed to be landfilled.

|                                            | Value | Unit |
|--------------------------------------------|-------|------|
| Collected separately to recycling facility | 246   | kg   |
| Collected as mixed construction waste      | 44    | kg   |
| Reuse                                      | -     | kg   |
| Recycling                                  | 246   | kg   |
| Energy recovery                            | -     | kg   |
| To landfill                                | 44    | kg   |

### Benefits and loads beyond system boundary (D)

The benefits of recycling concrete form C3 are taken into account. The recycled concrete is milled into aggregates.

## LCA results

### Core environmental impact indicators – EN 15804+A2, PEF 3.0

| Indicator      | Unit                   | A1-A3     | A4       | C1       | C2       | C3       | C4       | D         |
|----------------|------------------------|-----------|----------|----------|----------|----------|----------|-----------|
| GWP-total      | kg CO2 eq.             | 9.62E+01  | 1.24E+00 | 1.61E+00 | 1.26E+00 | 1.11E+00 | 2.22E-01 | -2.22E+00 |
| GWP-fossil     | kg CO2 eq.             | 9.75E+01  | 1.24E+00 | 1.61E+00 | 1.26E+00 | 1.11E+00 | 1.80E-01 | -2.22E+00 |
| GWP-biogenic   | kg CO2 eq.             | -1.60E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.52E+00 | 8.01E-02 | -2.73E-03 |
| GWP-LULUC      | kg CO2 eq.             | 1.17E-01  | 4.97E-04 | 3.81E-04 | 4.73E-04 | 1.10E-04 | 3.77E-04 | -3.04E-03 |
| ODP            | kg CFC11 eq.           | 3.12E-06  | 2.88E-07 | 1.18E-07 | 3.14E-07 | 2.37E-07 | 5.21E-08 | -1.81E-07 |
| AP             | mol H <sup>+</sup> eq. | 2.94E-01  | 3.53E-03 | 3.80E-03 | 4.02E-03 | 1.15E-02 | 1.61E-03 | -1.44E-02 |
| EP-freshwater  | kg P eq.               | 1.92E-03  | 8.87E-06 | 1.24E-05 | 9.00E-06 | 3.67E-06 | 1.62E-06 | -1.26E-04 |
| EP-marine      | kg N eq.               | 1.06E-01  | 7.04E-04 | 1.08E-03 | 8.86E-04 | 5.09E-03 | 6.18E-04 | -3.11E-03 |
| EP-terrestrial | mol N eq.              | 1.18E+00  | 7.82E-03 | 1.18E-02 | 9.81E-03 | 5.58E-02 | 6.77E-03 | -4.04E-02 |
| POCP           | kg NMVOC eq.           | 2.95E-01  | 3.01E-03 | 4.09E-03 | 3.87E-03 | 1.54E-02 | 1.92E-03 | -1.04E-02 |
| ADP-M&M        | kg Sb eq.              | 2.18E-04  | 4.50E-06 | 5.58E-06 | 3.09E-06 | 5.62E-07 | 3.71E-07 | -2.15E-05 |
| ADP-fossil     | MJ                     | 3.62E+02  | 1.85E+01 | 1.73E+01 | 2.02E+01 | 1.49E+01 | 3.53E+00 | -3.20E+01 |
| WDP            | m <sup>3</sup>         | 1.21E+04  | 8.66E-02 | 7.35E-02 | 9.27E-02 | 4.00E-02 | 1.26E-02 | -4.23E+00 |

**GWP-total:** Global Warming Potential; **GWP-fossil:** Global Warming Potential fossil fuels; **GWP-biogenic:** Global Warming Potential biogenic; **GWP-LULUC:** Global Warming Potential land use and land use change; **ODP:** Depletion potential of the stratospheric ozone layer; **AP:** Acidification potential, Accumulated Exceedance; **EP-freshwater:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional requirements" for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption



## Additional (optional) environmental impact indicators – EN 15804+A2, PEF 3.0

| Indicator | Unit              | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
|-----------|-------------------|----------|----------|----------|----------|----------|----------|-----------|
| PM        | Disease incidence | 1.85E-06 | 1.00E-07 | 5.18E-08 | 1.47E-07 | 2.36E-06 | 1.44E-07 | -9.41E-07 |
| IRP       | kBq U235 eq.      | 1.51E+00 | 9.69E-02 | 2.62E-02 | 1.04E-01 | 6.84E-02 | 1.63E-02 | -4.76E-01 |
| ETP-fw    | CTUe              | 3.45E+02 | 1.54E+01 | 1.25E+01 | 1.68E+01 | 8.95E+00 | 2.49E+00 | -4.02E+01 |
| HTP-c     | CTUh              | 5.98E-08 | 4.75E-10 | 6.69E-10 | 4.35E-10 | 3.43E-10 | 7.78E-11 | -2.23E-09 |
| HTP-nc    | CTUh              | 1.87E-07 | 1.51E-08 | 1.61E-08 | 1.71E-08 | 6.47E-09 | 1.87E-09 | -4.12E-08 |
| SQP       | Dimensionless     | 4.25E+02 | 1.32E+01 | 1.73E+00 | 2.35E+01 | 1.94E+00 | 5.16E+00 | -3.07E+01 |

*PM* Particulate matter emissions; *IRP* Ionising radiation, human health; *ETP-fw* Ecotoxicity (freshwater); *ETP-c* Human toxicity, cancer effects; *HTP-nc* Human toxicity, non-cancer effects; *SQP* Land use related impacts / soil quality

## Use of Natural Resources

| Parameter | Unit           | A1-A3    | A4       | C1       | C2       | C3        | C4        | D         |
|-----------|----------------|----------|----------|----------|----------|-----------|-----------|-----------|
| RPEE      | MJ             | 6.39E+01 | 2.69E-01 | 3.30E-01 | 2.61E-01 | 8.51E-02  | 3.70E-02  | -2.88E+00 |
| RPEM      | MJ             | 3.37E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -3.20E+01 | -1.69E+00 | 0.00E+00  |
| TPE       | MJ             | 9.77E+01 | 2.69E-01 | 3.30E-01 | 2.61E-01 | -3.19E+01 | -1.65E+00 | -2.88E+00 |
| NRPE      | MJ             | 3.46E+02 | 1.85E+01 | 1.73E+01 | 2.02E+01 | 1.49E+01  | 3.53E+00  | -3.20E+01 |
| NRPM      | MJ             | 1.74E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -1.65E+01 | -8.68E-01 | 0.00E+00  |
| TRPE      | MJ             | 3.64E+02 | 1.85E+01 | 1.73E+01 | 2.02E+01 | -1.60E+00 | 2.66E+00  | -3.20E+01 |
| SM        | kg             | 3.94E+01 | 6.30E-03 | 1.02E-02 | 5.68E-03 | 5.83E-03  | 1.07E-03  | 2.75E+02  |
| RSF       | MJ             | 5.50E+01 | 6.93E-05 | 6.06E-05 | 5.00E-05 | 1.91E-05  | 1.53E-05  | -2.52E-04 |
| NRSF      | MJ             | 3.28E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00  | 0.00E+00  |
| W         | m <sup>3</sup> | 1.80E+00 | 2.36E-03 | 1.76E-03 | 2.67E-03 | 9.04E-04  | 2.44E-03  | -1.02E-01 |

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

## End of life – Waste

| Parameter | Unit | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
|-----------|------|----------|----------|----------|----------|----------|----------|-----------|
| HW        | KG   | 7.02E-02 | 2.11E-02 | 4.26E-02 | 2.16E-02 | 0.00E+00 | 4.66E-03 | -1.87E-01 |
| NHW       | KG   | 3.42E+00 | 3.74E-01 | 5.11E-01 | 3.76E-01 | 0.00E+00 | 5.94E-02 | -5.51E+00 |
| RW        | KG   | 1.37E-03 | 1.27E-04 | 1.36E-05 | 1.39E-04 | 0.00E+00 | 2.38E-05 | -1.60E-04 |

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

## End of life – Output flows

| Parameter | Unit | A1-A3    | A4       | C1       | C2       | C3       | C4       | D        |
|-----------|------|----------|----------|----------|----------|----------|----------|----------|
| CR        | kg   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| MR        | kg   | 7.23E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.76E+02 | 0.00E+00 | 0.00E+00 |
| MER       | kg   | 2.93E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EEE       | MJ   | 9.21E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| ETE       | MJ   | 9.99E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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

## Information describing biogenic carbon content at factory gate

| Biogenic carbon content                               | Value | Unit |
|-------------------------------------------------------|-------|------|
| Biogenic carbon content in product                    | -     | kg C |
| Biogenic carbon content in the accompanying packaging | -     | kg C |

## Specific data (GWP-GHG) and data variation for A1-A3

| Specific data and data variation |              |
|----------------------------------|--------------|
| Specific data                    | 75%          |
| Variation - product              | 10%          |
| Variation - site                 | Not relevant |

## Hazardous substances

☒ The product does not contain any REACH SVHC substances in amounts greater than 0.1 %.

## Contact information

### **Programme operator**

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## Bibliography

### **ISO 14020:2000**

Environmental labels and declarations – General principles

### **ISO 14025:2010**

Environmental labels and declarations - Type III environmental declarations - Principles and procedures

### **ISO 14040:2006**

Environmental management. Life cycle assessment. Principles and frameworks

### **ISO 14044:2006**

Environmental management - Life cycle assessment - Requirements and guidelines

### **EN 15804:2012+A2:2019**

Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products

EPD Square PCR v.1.0, 2024

EPD Square, General Programme Instructions v.1, 2024

Ecoinvent database v3.8 (2021) and One Click LCA database

EPD. CEM II/B-M (S-LL) 52.5 N (Viridiscement). The Norwegian EPD Foundation. (08/01/2024-08/01/2029)

EPD. Foaming agent: ISOCEM S/B. The International EPD system. (17/09/2024-16/09/2029)

EPD. Foaming agents: ISOCEM S/L and ISOCEM S/X. The International EPD system. (17/09/2024-16/09/2029)

## Annex

## Environmental impacts – EN 15804+A1, CML/ISO 21930

| Indicator  | Unit                                 | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
|------------|--------------------------------------|----------|----------|----------|----------|----------|----------|-----------|
| GWP        | kg CO <sub>2</sub> eq.               | 2.31E+00 | 1.23E+00 | 1.57E+00 | 1.25E+00 | 1.09E+00 | 1.78E-01 | -2.16E+00 |
| ODP        | kg CFC11 eq.                         | 3.91E-07 | 2.29E-07 | 9.87E-08 | 2.49E-07 | 1.87E-07 | 4.13E-08 | -1.50E-07 |
| AP         | kg SO <sub>2</sub> eq.               | 5.99E-03 | 2.90E-03 | 2.98E-03 | 3.26E-03 | 8.19E-03 | 1.19E-03 | -1.11E-02 |
| EP         | kg PO <sub>4</sub> eq.               | 1.39E-03 | 6.25E-04 | 7.71E-04 | 6.90E-04 | 1.90E-03 | 2.70E-04 | -5.21E-03 |
| POCP       | kg C <sub>2</sub> H <sub>4</sub> eq. | 3.40E-04 | 1.47E-04 | 3.78E-04 | 1.52E-04 | 1.80E-04 | 3.96E-05 | -7.55E-04 |
| ADP-M&M    | kg Sb eq.                            | 7.28E-06 | 4.39E-06 | 5.57E-06 | 3.00E-06 | 5.52E-07 | 3.64E-07 | -2.10E-05 |
| ADP-fossil | MJ                                   | 3.46E+01 | 1.85E+01 | 1.73E+01 | 2.02E+01 | 1.49E+01 | 3.53E+00 | -3.20E+01 |

## Environmental impacts – GWP-GHG

| Indicator | Unit                 | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
|-----------|----------------------|----------|----------|----------|----------|----------|----------|-----------|
| GWP - GHG | kg CO <sub>2</sub> e | 9.75E+01 | 1.24E+00 | 1.61E+00 | 1.26E+00 | 1.11E+00 | 1.80E-01 | -2.22E+00 |

*GWP- GHG* Global Warming Potential, greenhouse gases