# READY-MIXED CONCRETE

## ENVIRONMENTAL PRODUCT DECLARATION

according to the standards EN ISO 14025:2010 and EN 15804:2012+A2:2019/AC:2021


Organization: **Lafarge Beocinska Fabrika Cementa, d.o.o.**
Programme holder: **CENIA, Czech Environmental Information Agency, executive function of the Agency NPEZ**
Declaration number: **3015-EPD-030065070**
Issue date: **2023-06-30**
Valid to: **2028-06-30 according to EN 15804:2012+A2:2019/AC:2021**

LAFARGE SRBIJA

# General information

## Programme information

| | |
|---|---|
| **Programme:** | **'National programme of environmental labelling' – CZ (NPEZ)**<br>CENIA, Czech Environmental Information Agency<br>executive function of the Agency NPEZ |
| **Address:** | CENIA, Czech Environmental Information Agency<br>Moskevská 1523/63<br>101 00 Praha 10<br>CZ |
| **Website:** | www.cenia.cz |

| **Accountabilities for PCR, LCA and independent, third-party verification** | | | |
|---|---|---|---|
| **Product Category Rules (PCR)** | | | |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR), EN 16757:2017 | | | |
| **Life Cycle Assessment (LCA)** | | | |
| Product: **Ready-mixed concrete** | | Declared unit:<br>**1 m3 of average concrete mix for the given group of concretes** | |
| LCA accountability: Technický a zkušební ústav stavební Praha, s.p. - branch office Ostrava | | | |
| **Third-party verification** | | | |
| Independent third-party verification of the declaration and data, according to **ČSN ISO 14025:2010** | | | |
| The ČSN EN 15804+A2 standard prepared by CEN serves as the basic PCR | | | |
| ☐ | internal | ☒ | external |
| **Third party verifier** [b]: | | | |
| Technický a zkušební ústav stavební Praha, s.p.<br>Prosecká 811/76a, Praha 9, 190 00<br>Czech Republic | | Ing. Lenka Vrbová<br>*Lead assessor of the certification body* | |
| Certification body for EPD, accredited by ČIA, Czech Accreditation Institute under No. 3015 | | | |
| [a] Product Category Rules<br>[b] *Optional for business-to-business communications, mandatory for business-to-consumer communications (see ISO 14025:2010, clause 9.4).* | | | |

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

# Company information

Owner of the EPD:

## Lafarge Beocinska Fabrika Cementa, d.o.o.

Contact:

Damir Čjepa, Trg BFC 1, 21300 Beocin, Serbia

Description of the organisation:

Lafarge Serbia is part of the Holcim Group, which was formed in July 2015 by merging two leading world companies in the field of construction materials: Lafarge and Holcim. Our activity in Serbia takes place in one cement factory and several concrete factories.

The cement factory in Beocin is one of the oldest and largest cement factories in Europe. The history of the cement factory, almost two centuries long, dates back to 1839 and the beginnings of industrialization in our area. Today, the Beočin cement plant is a modern factory, aligned with Holcim Group standards in all relevant areas - in the field of efficiency, impact on the environment and safety at work. Thanks to the great efforts and financial resources that have been invested in the factory since the time of privatization, Lafarge BFC d.o.o. is reputed to be the leading producer of construction materials in Serbia - cement and concrete, which are woven into a large number of capital buildings built in previous decades, such as the Ada Bridge, the Beška Bridge, the Aval Tower, the Zemun-Borć Bridge, Corridors X and XI and many others.

Lafarge BFC, in addition to top-quality cement, is also recognizable on the domestic market by offering high-quality concrete, both standard and so-called innovative concrete, specialized for specific purposes.

The present EPD provides quantified environmental information on a construction product on harmonized and scientifically reasoned basis. It is also intended to provide basic information on the product regarding assessment of life cycle of buildings and other structures and contribute to identification of products with a lower impact on the environment.

To enable comparison of products in the building life cycle assessment process based on their EPD which is made by determination of their contribution to the environmental properties of the building, the EPD for the concerned construction products must be drawn up in accordance with the requirements of **EN 15804:2012+A2:2019/AC:2021** *Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products*.

Product-related or management system-related certifications:

The quality of the products is ensured by an effective quality management system according to EN ISO 9001 and at selected operations by an environmental management system according to EN ISO 14001 in accordance with the technical regulations regarding the type of product.

Name and location of production site(s):

## Lafarge Beocinska Fabrika Cementa, d.o.o.

The LCA considers the production of concrete in the following **concrete plants**:

- Beška, Kneza Miloša bb, Beška
- Sava, Savski nasip bb, Beograd
- Makiš, Obrenovački drum bb, Beograd
- Ada Huja, Vuka Vrčevića bb, Beograd
- Marmil, Kružni put bb, Leštane

# Product information

Product name:

## Ready-mixed concrete

Product identification:

Concretes are produced according to the currently valid standards of the national and international standard **EN 206:2013+A2:2021** *Concrete - Specification, performance, production and conformity*.
For the production of concrete in these concrete plants, the following groups of concrete are considered:

- **C 8/10 (MB 10)**
- **C 12/15 (MB 15)**
- **C 16/20 (MB 20)**
- **C 20/25 (MB 25)**
- **C 25/30 (MB 30 AM, MB 30 BM)**
- **C 30/37 (MB 40 AM, MB 40 BM))**
- **C 35/45 (MB 45)**
- **C 40/50 (MB 50)**

These specific types of concrete have a wide range of applications and are primarily used in civil engineering and residential and commercial construction.

Product description:

Lafarge concrete plants use different types of cement with particular attention to the granulometric composition of the aggregate; the use of modern measuring devices ensures accurate dosing of the supplied concrete components at every moment, as well as the delivery of exactly the ordered amount of concrete to customers. Concrete mixers with a volume of 7 to 10 m³ and concrete pumps with a boom length of 28 to 47 meters are available for the transport of Lafarge concrete.
Lafarge concrete plants offer the service of cooling fresh concrete in summer conditions as well as heating concrete in winter months, thus completing the possibility of concrete deliveries throughout the year and ensuring the availability of quality concrete to customers at all times, respecting the required requirements. project dynamics.
In addition to a wide range of quality products, as mentioned, Lafarge also provides its customers with technical solutions that create added value for product users, making Lafarge a reliable support for the construction industry in Serbia.
Lafarge's range of standard concretes includes concretes from brand 10 to brand 60 (MB10 to MB60), which are produced in two, three or four fractions according to the purpose and customer requirements. Concretes can be designed for different classes of exposure.
The production process is fully automated to ensure superior quality products, conforming to the national and European concrete standards. The raw materials (cement, aggregates, water, admixtures etc.) are accurately weighed according to the proprietary mix designs to produce ready-mixed concrete with specific characteristics (strength, durability, finish ability, pumpability etc.). Once manufactured, the fresh concrete is transported with concrete trucks to the construction sites.

***Table 1 Representation of material components in 1 m3 of product***

| Material specification | % composition |
|---|---|
| Cement | 10-18 |
| Coarse aggregate | 40-46 |
| Fine aggregate (0/4) | 35-40 |
| Chemical additives | < 0,1 |
| Water | 5-10 |

Finished product - does not contain any harmful substances that are listed in the "*Candidate List of substances of very high concern for Authorisation*".

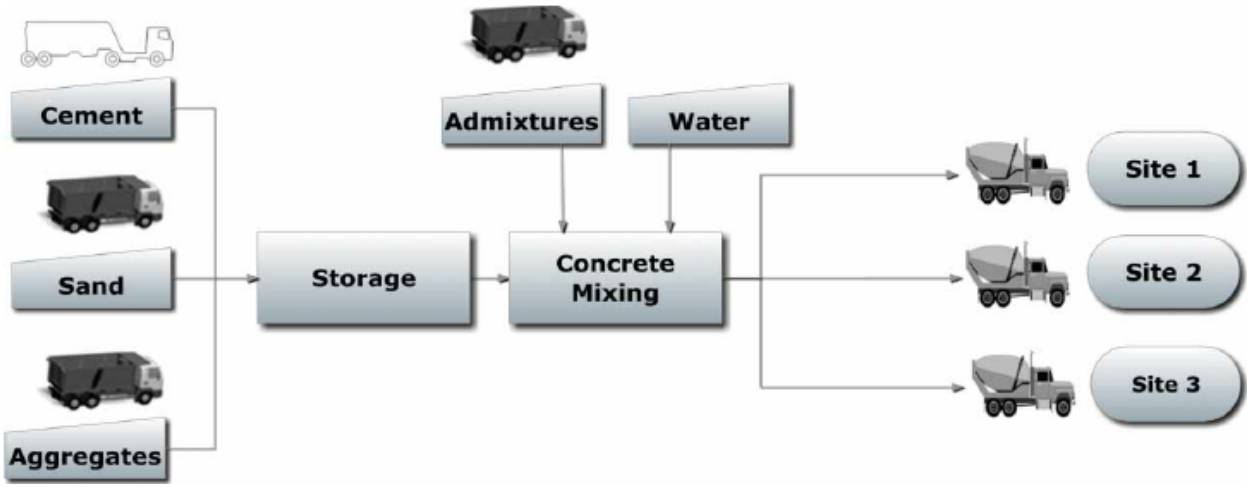


***Figure 1 Production scheme***

Product packaging:

The concrete is delivered to the place of storage by means of transport (truck mixers).

Waste management

The waste generated during the production of the so-called residual concrete is disposed of in a recycling facility or taken as waste to a landfill. The recycled water goes into the sludge water tank, from where it is used again for the production of fresh concrete in accordance with EN 1008.

The possibility of recycling used products (after the end of their useful life)

After the end of the building's useful life, the given material can be sorted together with the other concrete parts of the building (in the amount corresponding to DJ) as part of the controlled demolition of the building. Furthermore, the material can be handled in the following way:

- Crush and use as aggregate for various purposes
- Dump unused material, waste type O (waste code 101103)

UN CPC code: 375 - Articles of concrete, cement and plaster

Geographical scope:

Module A1, A2, C, D: EU, Global
Module A3: EU, RS

# LCA information

Functional unit / declared unit:

The declared unit is **1 m3 of average concrete mix** for the given **group** of concretes.

| Designation | Unit | Value | Conversion factor to 1 kg |
|---|---|---|---|
| The declared unit | **$m^3$** | **1** | - |
| Average bulk weight C 8/10 | $kg/m^3$ | 2 338 | 0,000428 |
| Average bulk weight C 12/15 | $kg/m^3$ | 2 364 | 0,000423 |
| Average bulk weight C 16/20 | $kg/m^3$ | 2 415 | 0,000414 |
| Average bulk weight C 20/25 | $kg/m^3$ | 2 394 | 0,000418 |
| Average bulk weight C 25/30 (AM) | $kg/m^3$ | 2 461 | 0,000406 |
| Average bulk weight C 25/30 (BM) | $kg/m^3$ | 2 455 | 0,000407 |
| Average bulk weight C 30/37 (AM) | $kg/m^3$ | 2 470 | 0,000405 |
| Average bulk weight C 30/37 (BM) | $kg/m^3$ | 2 527 | 0,000396 |
| Average bulk weight C 35/45 | $kg/m^3$ | 2 398 | 0,000417 |
| Average bulk weight C 40/50 | $kg/m^3$ | 2 414 | 0,000414 |

Reference service life:

The reference service life (RSL) for concrete mixtures is declared in the technical specification and in the application standards. According to this standard, concrete mixtures have a service life (RSL) of 50 or 100 years.

Time representativeness:

Data input based on data related to the year **2021**. All generic data refer to the Ecoinvent v3.8 database

Database(s) and LCA software used: SimaPro 9.4, Ecoinvent 3.8

Description of system boundaries:

### b) Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules B1).

**The production stage** includes the following modules:

- **A1** – extraction and processing of raw materials and production of packaging from input raw materials
- **A2** – transport of input raw materials from supplier to manufacturer, waste collection
- **A3** – production of products, production of auxiliary materials and semi-finished products, energy consumption, including treatment of waste, up to reaching end-of-waste or after the last material residues have been removed during the production phase.

Data for the period **2021** provided by Lafarge Beocinska Fabrika Cementa, d.o.o. is used.

**The use phase** includes the module:

- **B1** – Use of the installed product from the point of view of emissions and the environment, taking into account the effect of carbonation. The calculation of the effect of carbonation (the process in which CO2 from the ambient air penetrates into concrete and reacts with concrete hydration products) was carried out according to the procedure specified in Annex BB.3 of the EN standard 16757:2017.

**The end-of-life stage** includes modules:

- **C1,** deconstruction, demolition; of the product from the building, including its dismantling or demolition, including the initial classification of materials at the site of construction
- **C2,** transport to the waste treatment site; transport of the discarded product as part of the waste treatment, e.g., to the recycling site, and transport of the waste, e.g., to the final disposal site.

- **C3,** treatment of waste for re-use, recovery and/or recycling, e.g., collection of waste fractions from deconstruction, treatment of waste from material flows intended for re-use, recycling, and energy recovery.
- **C4,** disposal of waste, including its pre-treatment and management of the disposal site

**The benefits and costs beyond** the product system are set out in Module D.

Module D includes:

- **D,** potential for reuse, recovery and/or recycling, expressed in net impacts or benefits. In the module D scenario, the saving of primary raw material inputs in another product system compared to the process of crushing recycled aggregate is taken into account.

Information modules **A4 to A5** and module **B2-B7** have **not been included** in the LCA due to the difficult availability of input data and are therefore not declared.

Data on consumption or production of inputs / outputs (within the production phase) were collected as specific data directly from the production plant. Technological data is based on the actual consumption of input materials and product production.

Production emissions are not reported.

The time range of the required specific data provided by Lafarge Beocinska Fabrika Cementa, d.o.o., for the purpose of this report was set as a representative period **2021**. For this period, all available data were provided by the organization for their further processing.

Description of the application of cut-off criteria and assumptions

The cut-off rules set for this project are the ones recommended by the document EN 15804:2012+A2:2019/AC:2021.

The boundaries of the product system are considered in such a way that they include only production processes, not administrative activities.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Resource recovery 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-potential |
| **Module** | **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Modules declared | **X** | **X** | **X** | **ND** | **ND** | **X** | **ND** | **ND** | **ND** | **ND** | **ND** | **ND** | **X** | **X** | **X** | **X** | **X** |
| Geography | EU | EU | EU,RS | | | | | | | | | | EU | EU | EU | EU | EU |
| Specific data used | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – products | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

# Content information

| **Product components** | **Weight, kg** | **Post-consumer material, weight-%** | **Biogenic material, weight-% and kg C/kg** |
|---|---|---|---|
| Cement | 240-430 | 0 | 0 |
| Aggregate | 1800-2060 | 0 | 0 |
| Chemical additives | < 3 | 0 | 0 |
| **Packaging materials** | **Weight, kg** | **Weight-% (versus the product)** | **Weight biogenic carbon, kg C/kg** |
| - | - | - | 0 |

| **Dangerous substances from the candidate list of SVHC for Authorisation** | **EC No.** | **CAS No.** | **Weight-% per functional or declared unit** |
|---|---|---|---|
| - | - | - | - |

The list of components does not include products included in the "*Candidate List of Substances of Very High Concern for Authorizations*" by European Chemicals Agency (ECHA).

## Information on biogenic carbon content (all types of concrete)

| **Results per functional or declared unit** | | |
|---|---|---|
| **BIOGENIC CARBON CONTENT** | **Unit** | **QUANTITY** |
| Biogenic carbon content in product | kg C | 0,00E+00 |
| Biogenic carbon content in packaging | kg C | 0,00E+00 |

*Note: 1 kg biogenic carbon is equivalent to 44/12 kg $CO_2$.*

# Results of the environmental performance indicators Group C 8/10 (MB 10)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 1,67E+02 | -4,63E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 1,64E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 2,49E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 4,45E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 7,93E-06 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 4,80E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 2,61E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 1,24E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 1,39E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 3,63E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 3,73E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 9,08E+02 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,06E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 3,82E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 8,78E+00 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 1,26E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 1,37E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 3,72E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 4,23E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 5,60E+01 | 0,00E+00 | 5,79E-01 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 5,60E+01 | 0,00E+00 | 5,79E-01 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 9,63E+02 | 0,00E+00 | 9,74E+01 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 9,63E+02 | 0,00E+00 | 9,74E+01 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,90E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 12/15 (MB 15)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 2,18E+02 | -6,61E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 2,15E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 3,34E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 5,32E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 9,65E-06 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 5,99E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 3,13E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 1,56E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 1,75E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 4,55E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 4,54E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,11E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,25E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 4,45E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,08E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 1,59E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 1,74E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 4,49E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 4,75E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 6,86E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 6,86E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,18E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,18E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,80E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 16/20 (MB 20)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 2,38E+02 | -7,15E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 2,34E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 3,60E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 5,74E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,10E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 6,52E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 3,33E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 1,70E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 1,91E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 4,98E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 4,93E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,23E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,53E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 4,96E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,17E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 1,74E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 1,89E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 4,87E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 5,29E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 7,35E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 7,35E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,30E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,30E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,75E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 20/25 (MB 25)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 2,63E+02 | -5,54E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 2,59E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 4,04E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 6,19E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,15E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 7,06E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 3,58E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 1,83E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,07E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 5,37E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 5,60E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,33E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,52E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 5,07E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,27E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 1,90E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,06E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 5,31E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 5,28E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 8,06E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 8,06E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,41E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,41E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,60E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 25/30 (MB 30 AM)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 2,73E+02 | -5,90E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 2,69E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 4,29E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 6,31E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,09E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 7,23E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 3,71E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 1,87E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,12E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 5,45E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 5,71E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,32E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,64E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 4,88E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,30E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 1,94E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,12E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 5,39E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 4,99E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 8,37E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 8,37E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,40E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,40E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,60E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 25/30 (MB 30 BM)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 2,72E+02 | -4,41E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 2,68E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 4,05E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 6,88E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,35E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 7,55E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 3,81E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 1,96E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,21E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 5,77E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 6,47E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,49E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,52E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 5,91E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,39E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 2,15E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,21E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 5,77E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 6,29E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 8,72E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 8,72E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,58E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,58E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,60E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 30/37 (MB 40 AM)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 3,21E+02 | -4,57E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 3,16E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 5,09E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 7,11E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,23E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 8,31E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 4,17E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 2,16E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,44E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 6,28E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 6,52E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,51E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,69E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 5,38E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,49E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 2,25E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,45E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 6,11E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 5,36E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 9,55E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 9,55E+01 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,60E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,60E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,55E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 30/37 (MB 40 BM)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 3,20E+02 | -3,18E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 3,16E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 4,84E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 7,78E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,52E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 8,70E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 4,31E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 2,26E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,55E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 6,64E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 7,44E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,70E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 1,00E+02 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 6,52E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,59E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 2,50E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,56E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 6,55E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 6,80E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 1,00E+02 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 1,00E+02 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,80E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,80E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,60E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 35/45 (MB 45)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 3,73E+02 | -3,27E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 3,67E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 5,92E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 7,94E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,43E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 9,51E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 4,66E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 2,48E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,81E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 7,21E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 7,38E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,73E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,72E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 6,06E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,68E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 2,59E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,81E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 6,89E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 5,91E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 1,08E+02 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 1,08E+02 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,83E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,83E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,55E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Group C 40/50 (MB 50)

## Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **GWP-total** | kg $CO_2$ eq. | 3,86E+02 | -3,37E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,69E+01 |
| **GWP-fossil** | kg $CO_2$ eq. | 3,80E+02 | 0,00E+00 | 6,68E+00 | 2,23E+00 | 3,33E+00 | 0,00E+00 | -1,66E+01 |
| **GWP-biogenic** | kg $CO_2$ eq. | 6,11E+00 | 0,00E+00 | 2,91E-03 | 7,87E-04 | 1,18E-03 | 0,00E+00 | -2,57E-01 |
| **GWP-luluc** | kg $CO_2$ eq. | 8,24E-02 | 0,00E+00 | 7,12E-04 | 2,23E-04 | 3,33E-04 | 0,00E+00 | -2,78E-02 |
| **ODP** | kg CFC 11 eq. | 1,52E-05 | 0,00E+00 | 1,42E-06 | 4,77E-07 | 7,12E-07 | 0,00E+00 | -8,93E-07 |
| **AP** | mol $H^+$ eq. | 9,87E-01 | 0,00E+00 | 6,93E-02 | 2,32E-02 | 3,46E-02 | 0,00E+00 | -9,35E-02 |
| **EP-freshwater** | kg P eq. | 4,80E-02 | 0,00E+00 | 2,26E-04 | 6,91E-05 | 1,03E-04 | 0,00E+00 | -1,07E-02 |
| **EP-marine** | kg N eq. | 2,58E-01 | 0,00E+00 | 3,07E-02 | 1,03E-02 | 1,53E-02 | 0,00E+00 | -1,42E-02 |
| **EP-terrestrial** | mol N eq. | 2,92E+00 | 0,00E+00 | 3,36E-01 | 1,12E-01 | 1,68E-01 | 0,00E+00 | -1,88E-01 |
| **POCP** | kg NMVOC eq. | 7,50E-01 | 0,00E+00 | 9,23E-02 | 3,09E-02 | 4,62E-02 | 0,00E+00 | -4,54E-02 |
| **ADP-minerals&metals*** | kg Sb eq. | 7,69E-04 | 0,00E+00 | 3,56E-06 | 1,15E-06 | 1,71E-06 | 0,00E+00 | -1,87E-04 |
| **ADP-fossil*** | MJ | 1,81E+03 | 0,00E+00 | 9,17E+01 | 3,06E+01 | 4,57E+01 | 0,00E+00 | -2,48E+02 |
| **WDP** | $m^3$ | 9,77E+01 | 0,00E+00 | 3,76E+00 | 4,79E-02 | 7,16E-02 | 0,00E+00 | -3,52E+01 |
| Acronyms | **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; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | |

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PM** | Occurrence of the disease | 6,40E-06 | 0,00E+00 | 1,85E-06 | 6,21E-07 | 9,28E-07 | 0,00E+00 | -6,91E-07 |
| **IRP** | kBq U235 eq. | 1,75E+01 | 0,00E+00 | 4,21E-01 | 1,38E-01 | 2,06E-01 | 0,00E+00 | -4,33E+00 |
| **ETP-fw** | CTUe | 2,69E+03 | 0,00E+00 | 5,39E+01 | 1,79E+01 | 2,67E+01 | 0,00E+00 | -3,13E+02 |
| **HTP-c** | CTUh | 2,93E-06 | 0,00E+00 | 4,04E-08 | 1,30E-08 | 1,94E-08 | 0,00E+00 | -3,37E-07 |
| **HTP-nc** | CTUh | 7,16E-08 | 0,00E+00 | 2,18E-09 | 6,93E-10 | 1,03E-09 | 0,00E+00 | -1,87E-08 |
| **SQP** | dimensionless | 6,27E+02 | 0,00E+00 | 1,17E+01 | 3,90E+00 | 5,82E+00 | 0,00E+00 | -2,64E+02 |
| Acronyms | **PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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, **SQP**=Potential Soil Quality Index | | | | | | | |

## Resource use indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **PERE** | MJ | 1,11E+02 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PERM** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PERT** | MJ | 1,11E+02 | 0,00E+00 | 0,00E+00 | 1,72E-01 | 2,57E-01 | 0,00E+00 | -2,73E+01 |
| **PENRE** | MJ | 1,92E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **PENRM** | MJ. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **PENRT** | MJ | 1,92E+03 | 0,00E+00 | 0,00E+00 | 3,25E+01 | 4,86E+01 | 0,00E+00 | -2,63E+02 |
| **SM** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **RSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **NRSF** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **FW** | $m^3$ | 1,55E-01 | 0,00E+00 | 8,40E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Acronyms | **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water | | | | | | | |

## Waste indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Non-hazardous waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Radioactive waste disposed** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **B1** | **C1** | **C2** | **C3** | **C4** | **D** |
| **Components for re-use** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Material for recycling** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,40E+03 | 0,00E+00 | 0,00E+00 |
| **Materials for energy recovery** | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| **Exported energy** | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# LIFE CYCLE INTERPRETATION

The content and environmental "quality" of the cement used has a significant influence on the basic impact indicators. Other inputs have a relatively small effect on the overall indicators of the given group. The energy consumption is also relatively small and therefore not significant for the environmental impact. Other material inputs (aggregates) and the transport of raw materials to the given concrete plant also have a greater influence.

For the possibility of comparing these effects, the **analysis of the share of information modules A-D** on the basic impact indicators for group C 20/25 (MB 25), which is the most common type of concrete, is presented below.

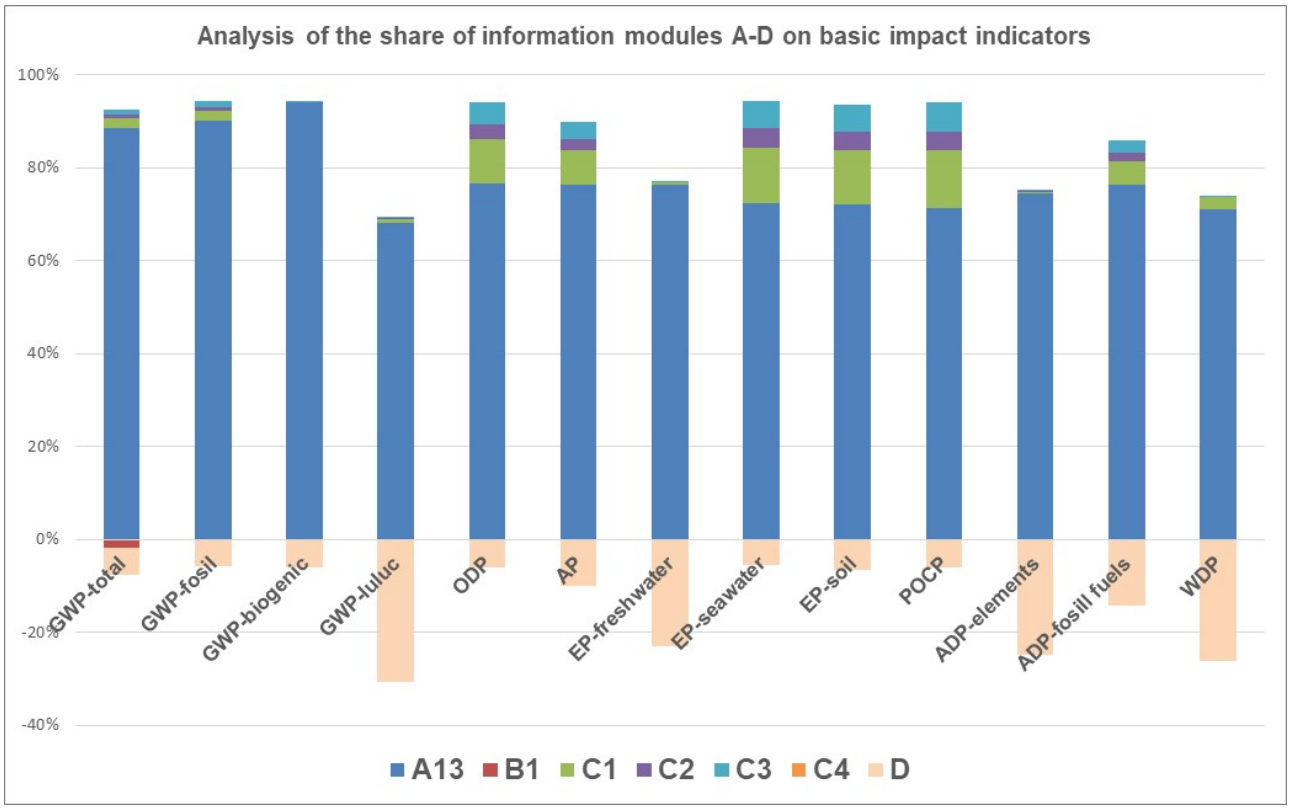


***Figure 2 Analysis of the share of information modules A-D on basic impact indicators***

## Other environmental performance indicators

The quality of the products is ensured by an effective quality management system according to EN ISO 9001 and at selected operations by an environmental management system according to EN ISO 14001 in accordance with the technical regulations regarding the type of product.

# References


‘National programme of environmental labelling’ – CZ (NPEZ)

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

EN ISO 14040:2006 Environmental management - Life Cycle Assessment - Principles and Framework

EN ISO 14044:2006 Environmental management - Life Cycle Assessment – Requirements and guidelines

EN 15643-2:2011 Sustainability of construction works - Assessment of buildings - Part 2: Framework for the assessment of environmental performance

TNI CEN/TR 15941:2012 Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data

Act. No. 541/2020 Coll., as amended (Waste Act)

Decree No. 8/2021 Coll. Waste catalogue – Waste catalogue

Regulation (EC) No 1907/2006 of the European Parliament concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency - REACH (Registration, Evaluation and Authorisation of Chemicals

SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

Ecoinvent Centre, www.Ecoinvent.org



| | | |
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