# Environmental Product Declaration

**In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:**

# *White Portland cement*

**CEM II/A-LL 52.5 N**
**CEM II/A-LL 42.5 R**

DANUCEM
A CRH COMPANY

| Programme: | Programme operator: | EPD registration number: | Publication date: | Valid until: |
|---|---|---|---|---|
| The International EPD® System<br>www.environdec.com | EPD International AB | S-P-06296 | 2022-07-01 | 2027-06-30 |

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

# GENERAL INFORMATION

## MANUFACTURER INFORMATION

| | |
|---|---|
| **Manufacturer** | Danucem Slovakia, a.s. |
| **Address** | 906 38 Rohožník, Slovak Republic |
| **Contact details** | veronika.kovanicova@danucem.com |
| **Website** | www.danucem.com |

## PRODUCT IDENTIFICATION

| | |
|---|---|
| **Product name** | White Portland Cement CEM II/A-LL 52.5 N,<br>CEM II/A-LL 42.5 R |
| **Additional label(s)** | - |
| **Product number / reference** | CEM II/A-LL 52.5 N,<br>CEM II/A-LL 42.5 R |
| **Place of production** | Danucem Slovensko a.s., 906 38 Rohožník, Slovakia |
| **Geographical Scope** | Europe |

## EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

| | |
|---|---|
| **EPD program operator** | EPD International AB |
| **EPD standards** | This EPD is in accordance with EN 15804+A2 and ISO 14025 standards. |
| **Product category rules** | The CEN standard EN 15804 serves as the core PCR. In addition, the EPD International PCR 2019:2014 version 1.11 (2021-02-05) is used. C-PCR 001 Cement and building lime (EN 16908) is also used. |
| **EPD author** | Silvia Vilčeková, Marcela Ondová, SALVIS, s.r.o. |
| **EPD verification** | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal certification ☑ External verification |
| **Verification date** | 2022-06-29 |
| **EPD verifier** | Bárbara M Civit |
| **Eco Platform #** | - |
| **EPD number** | S-P-06296 |
| **Publishing date** | 2022-07-01 |
| **EPD valid until** | 2027-06-30 |

### The International EPD System

EPDs within the same product category but from different programmes may not be comparable.

# PRODUCT INFORMATION

## PRODUCT DESCRIPTION

White Portland limestone cement is manufactured according to EN 197, as a binder for the production of white products. The white Portland cement opens thanks to its versatility: new dimensions in design and construction, excellent quality, high strength and aesthetic appearance. Product is supplied in tank trucks (approx. 26 t).

***Advantages:***

- High quality and high durability
- Excellent functionality and unrivalled appearance
- Production of white or coloured with suitable colour pigments concrete
- Good early and final strength
- Improves the water retention and reduces the risk of segregation, thereby supple and very easily pumpable

## PRODUCT APPLICATION

- Especially suitable for exposed concrete and architectural concrete
- Ready-mix concrete / Pumpable concrete
- Precast concrete elements / Precast concrete products
- Plaster and masonry mortar

## PRODUCT STANDARDS

DANUCEM (Slovakia) is certified by the quality management system EN ISO 9001, the environmental management system EN ISO 14001 and the occupational health and safety management system EN ISO 45001.
CEM II/A-LL 52.5 N and CEM II/A-LL 42.5 R are manufactured according to the European standard EN 197-1 and the related use of CE conformity mark.

**Product characteristics**

| | Parameter | | | | | |
|---|---|---|---|---|---|---|
| | $SO_3$ (%) | Volume resistance (mm) | Initial Set (min.) | Compressive strength 2 days (MPa) | Compressive strength 28 days (Mpa) | Whiteness (Ry) (%) |
| | ≤ 4.0 | ≤ 10 | ≥ 45 | ≥ 20.0 | min. 52.5 | - |
| **CEM II/A-LL 52.5 N** | **2.8** | **0 – 1.5** | **100** | **32** | **57** | **84** |
| **CEM II/A-LL 42.5 R** | **2.8** | **0 – 1.5** | **120** | **30** | **55** | **84** |

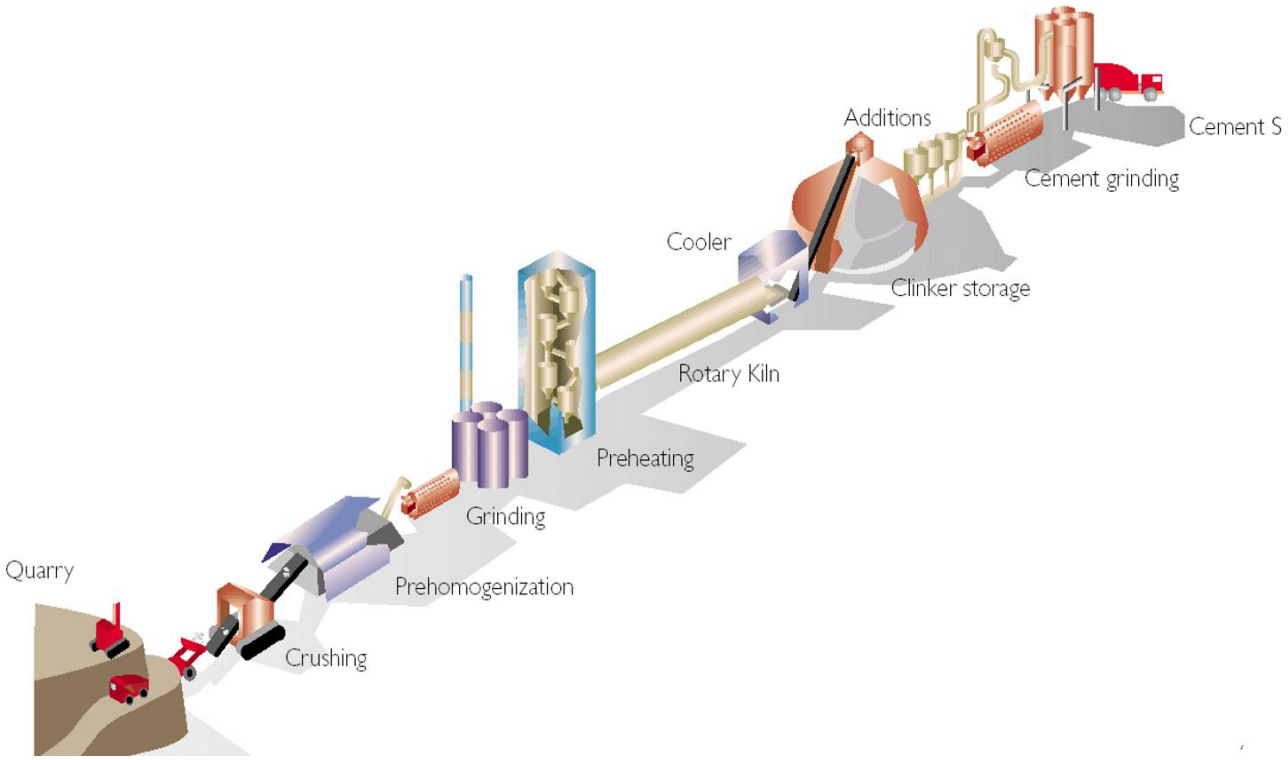
## TECHNICAL DATA / PHYSICAL CHARACTERISTICS

Further information can be found at *www.danucem.com.*

## PRODUCT RAW MATERIAL COMPOSITION

| Material | Weight % | Post-consumer % | Renewable % | Country region of origin |
|---|---|---|---|---|
| Clinker | 87.18 | - | - | SK |
| Gypsum | 4.80 | | | CZ |
| Limestone | 8.00 | - | - | SK |
| Additional constituents | 0.02 | - | - | CZ |

## MANUFACTURING PROCESS




## SUBSTANCES, REACH - VERY HIGH CONCERN

White cement contains only traces of $Cr^{6+}$ and meets the requirements of Regulation No. 275/2004.

# PRODUCT LIFE CYCLE

**Manufacturing and packaging**

**A1-A3**

Cement production is a complex process that begins with mining and grinding raw materials that include limestone and clay, to a fine powder, called raw meal. Raw meal is heated to a sintering temperature in a cement kiln and then a fusion temperature, which is about 1350°C - 1400°C to sinter the materials into clinker. In this process, the chemical bonds of the raw materials are broken down and then they are recombined into new compounds. The result is called clinker. The clinker is ground to a fine powder in a cement mill and mixed with gypsum, limestone and other minor additional constituents to create cement.

Truck transport is carried out by trucks with a capacity of 3.5-7.5 tons and Euro 5 engine.

The environmental impacts considered for the production stage cover the manufacturing of the production materials and fuels used by machines as well as handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The environmental impacts of this stage have been calculated using the most recent data in regard to what applied in the factory. The data is from the year 2020. The study considers the losses of main raw materials occurring during the manufacturing process.

**Transport and installation**
**A4-A5**

Transportation impacts occurred from final products delivery to construction site cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. The transportation distance is defined according to PCR. Average distances of transportation from production plant to building site are assumed as 570 km and the transportation methods are assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients.

**Product use and maintenance**
**B1-B7**

This EPD does not cover the use phase. Air, soil and water impacts during the use phase have not been studied.

**Product end of life**
**C1-C4, D**

Since cement is an intermediate product, other modules than A1-A3 are not relevant. Therefore this EPD does not cover the end-of-life phase.

**Module A4 - calculation scenario**

| Parameter | Value |
|---|---|
| Vehicle type used for transport | EURO 5 truck with a trailer with an average load 3.5-7.5 t |
| Distance to the construction site | 570 km |
| Capacity utilization (including returns) | 100 % |
| Weight of transported products | 7.5 t |
| Capacity utilization factor | 1 |

## LIFE-CYCLE ASSESSMENT INFORMATION

| | |
|---|---|
| Period data | 2020 |

## DECLARED AND FUNCTIONAL UNIT

| | |
|---|---|
| Declared unit | 1 tonne |
| Mass per declared unit | 1 000 kg |

## BIOGENIC CARBON CONTENT

**Product's biogenic carbon content at the factory gate**

| | |
|---|---|
| Biogenic carbon content in product, kg C | 0.0 |
| Biogenic carbon content in packaging, kg C | 0.0 |

## SYSTEM BOUNDARY

This EPD covers cradle to gate with options scope following modules; A1 (Raw material supply), A2 (Transport), A3 (Manufacturing) and A4 (Transport). As cement is an intermediate product, no other lifecycle phases are included.

**System boundary (STN EN 15804+A2)**

| Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction /demolition | Transport | Waste processing | Disposal | Reuse, Recovery, Recycling |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| X | X | X | X | MNR | MNR | MNR | MNR | MNR | MNR | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| Geography | | | | | | | | | | | | | | | | |
| SK | SK | SK | EU | | | | | | | | | | | | | |

*Module not relevant = MNR*

## CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and 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 are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total excluded input and output flows do not exceed 5% of energy usage or mass.
The life cycle analysis includes all industrial processes from raw material acquisition to production.

## ALLOCATION, ESTIMATION AND ASSUMPTIONS

Allocation is made in accordance with the requirements EN 15804+A2 and the PCR.

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 t of the produced product which is 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.

## AVERAGES AND VARIABILITY

Any average and variation are not considered since this EPD refers to one specific product produced in one production plant.

**The International EPD System additional data requirements**
Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

| | |
|---|---|
| Supply-chain specific data for GWP-GHG | >98% |

# ENVIRONMENTAL IMPACT DATA

## Core environmental impact indicators - EN 15804+A2

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GWP – total** | kg CO2e | 8,24E2 | 2,64E0 | 9,87E2 | 1,81E3 | 5,13E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **GWP – fossil** | kg CO2e | 8,1E2 | 2,64E0 | 9,89E2 | 1,8E3 | 5,18E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **GWP – biogenic** | kg CO2e | 1,36E1 | 1,37E-3 | -2,3E0 | 1,13E1 | 3,76E-2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **GWP – LULUC** | kg CO2e | 9,12E-2 | 1,32E-3 | 1,03E-1 | 1,96E-1 | 1,56E-2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Ozone depletion** | kg | 2,52E-5 | 5,78E-7 | 2,27E-5 | 4,85E-5 | 1,22E-5 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Acidification** | mol H+e | 1,81E0 | 1,06E-2 | 8,14E0 | 9,97E0 | 2,18E-1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **EP-freshwater2)** | kg Pe | 7,85E-3 | 2,89E-5 | 3,82E-2 | 4,61E-2 | 4,21E-4 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **EP-marine** | kg Ne | 4,85E-1 | 2,91E-3 | 9,24E-1 | 1,41E0 | 6,56E-2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **EP-terrestrial** | mol Ne | 5,71E0 | 3,23E-2 | 1,04E1 | 1,61E1 | 7,24E-1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **POCP (“smog”)** | kg | 1,43E0 | 1,02E-2 | 2,99E0 | 4,43E0 | 2,33E-1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **ADP-minerals &** | kg Sbe | 2,78E-3 | 1,11E-4 | 5,65E-4 | 3,45E-3 | 8,84E-4 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **ADP-fossil** | MJ | 2,86E3 | 3,95E1 | 1,05E4 | 1,34E4 | 8,06E2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Water use[1])** | m3e depr. | 3,56E1 | 1,6E-1 | 1,83E2 | 2,19E2 | 3E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health: The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.Eutrophication aquatic freshwater is reported as *kg PO4 eq,* although the reference given (“EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe”) uses the unit *kg P eq.*

## Use of natural resources

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Renew. PER as energy** | MJ | 1,42E2 | 7,66E-1 | 2,7E2 | 4,12E2 | 1,01E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Renew. PER as materials** | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Total use of renew. PER** | MJ | 1,42E2 | 7,66E-1 | 2,7E2 | 4,12E2 | 1,01E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Non-renew. PER used as energy** | MJ | 2,86E3 | 3,95E1 | 1,05E4 | 1,34E4 | 8,06E2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Non-renew. PER used as materials** | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Total use of non-renew. PER** | MJ | 2,86E3 | 3,95E1 | 1,05E4 | 1,34E4 | 8,06E2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Use of secondary materials** | kg | 8,9E-1 | 0E0 | 0E0 | 8,9E-1 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Use of renew. secondary fuels** | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Use of non-renew. secondary fuels** | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Use of net fresh water** | m3 | 4,5E0 | 7,47E-3 | 2,86E0 | 7,37E0 | 1,68E-1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |

## End of life – Waste

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hazardous waste** | kg | 1,15E1 | 5,24E-2 | 8,84E1 | 9,99E1 | 7,83E-1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Non-hazardous** | kg | 3,3E2 | 2,9E0 | 1,51E3 | 1,84E3 | 8,66E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Radioactive waste** | kg | 1,42E-2 | 2,65E-4 | 3,41E-2 | 4,86E-2 | 5,53E-3 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |

# LIFE CYCLE ASSESSMENT RESULTS

## End of life - Output flows

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Components for reuse** | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Materials for recycling** | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Materials for energy recovery** | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Exported energy** | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |

## Environmental impacts – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GWP – GHG** | kg CO2e | 8,1E2 | 2,64E0 | 9,89E2 | 1,8E3 | 5,18E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator Is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

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

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global Warming Pot.** | kg CO2e | 8,06E2 | 2,62E0 | 9,55E2 | 1,76E3 | 5,13E1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Ozone depletion Pot.** | kg CFC11e | 2,1E-5 | 4,61E-7 | 1,81E-5 | 3,95E-5 | 9,68E-6 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Acidification** | kg SO2e | 1,37E0 | 5,69E-3 | 7,25E0 | 8,62E0 | 1,05E-1 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **Eutrophication** | kg PO4 3e | 3,79E-1 | 1,32E-3 | 1,3E0 | 1,68E0 | 2,13E-2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **POCP (“smog”)** | kg C2H4e | 4,88E-2 | 3,69E-4 | 3,09E-1 | 3,58E-1 | 6,68E-3 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **ADP-elements** | kg Sbe | 2,78E-3 | 1,11E-4 | 5,65E-4 | 3,45E-3 | 8,84E-4 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |
| **ADP-fossil** | MJ | 2,86E3 | 3,95E1 | 1,05E4 | 1,34E4 | 8,06E2 | MNR | MNR | MNR | MNR | MNR | MNR | MNR |

## SCENARIO DOCUMENTATION

**Manufacturing energy scenario documentation**

| Scenario parameter | Value |
|---|---|
| Electricity data source and quality | Electricity, Slovak Republic, residual mix year: 2019 |
| Electricity CO2e / kWh | 0.28 |
| District heating data source and quality | Heat production, at hard coal industrial furnace 1-10mw (Reference product: heat, district or industrial, other than natural gas) Slovak Republic, Ecoinvent 3,6, year: 2019 |
| Energy CO2e / MJ | 0.13 |
| District heating data source and quality | Heat production, natural gas, at industrial furnace >100kw (Reference product: heat, district or industrial, natural gas) Slovak Republic, Ecoinvent 3,6, year: 2019 |
| Energy CO2e / MJ | 0.0687 |

## BIBLIOGRAPHY

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+A2 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

The CEN standard EN 15804+A2 serves as the core PCR. In addition, the EPD International PCR 2019:2014 version 1.11 (2021-02-05) is used.

EPD. General Programme Instructions of the international EPD® system. Version 4.0

LCA background report, 05.04.2022

# ADDITIONAL INFORMATION

## ABOUT THE MANUFACTURER

DANUCEM (Slovakia) a.s. is the largest producer and supplier of building materials - cement, aggregates and ready-mixed concrete and related services in Slovakia. Premium quality cements are produced in DANUCEM cement plants Rohožník and Turňa nad Bodvou. DANUCEM (Slovakia) a.s. has implemented the quality management system EN ISO 9001, the environmental management system EN ISO 14001 and the occupational health and safety management system EN ISO 45001.
For DANUCEM and CRH Company sustainability is the key value and we commit us to the highest standards of environmental management in all our activities. Our management systems are implemented optimally and checked regularly, with respect to the best available practices in this industry. Sharing of knowledge in the DANUCEM Group plays a significant role in this process. Our policy, applied in all our groups, obliges us to:

- to follow all relevant environmental regulations,
- to improve environmental management in order to achieve the best practices,
- to monitor and report on the performance of environmental management in accordance with our policy,
- to maintain open communication and ensure that our employees and contractors carry out their environmental obligations,
- to handle challenges of the climate change proactively,
- to prevent environmental pollution, reduce emissions and optimize the consumption of energy, water and other natural resources,
- to promote sustainable products, processes and new business innovations,
- to develop positive relationships with other parties and to aim to be good neighbours in every community in which we operate.

## EPD AUTHOR AND CONTRIBUTORS

| | |
|---|---|
| **Manufacturer** | DANUCEM Slovakia, a. s. |
| **EPD author** | Silvia Vilčeková, Marcela Ondová, SALVIS, s.r.o. |
| **EPD verifier** | Bárbara M Civit |
| **EPD program operator** | EPD International AB |
| **Background data** | This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases. |
| **LCA software** | The LCA and EPD have been created using One Click LCA EPD Generator. |

# VERIFICATION STATEMENT

## VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? Read more online.

## VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

| EPD verification information | Answer |
|---|---|
| Independent EPD verifier | Bárbara M Civit |
| EPD verification started on | 2022-05-03 |
| EPD verification completed on | 2022-06-29 |
| Supply-chain specific data % | 98 |
| Approver of the EPD verifier | The International EPD System |

| Author & tool verification | Answer |
|---|---|
| EPD author | Silvia Vilčeková, Marcela Ondová, SALVIS, s.r.o. |
| EPD author training completion | - |
| EPD Generator module | Cementitious Products |
| Independent software verifier | Ugo Pretato, Studio Fieschi & soci Srl. |
| Software verification date | 2021-05-11 |

## THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Bárbara M Civit

## VERIFICATION AND REGISTRATION (ENVIRONDEC)

| ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR) | |
|---|---|
| PCR | PCR 2019:14 Construction products, version 1.11 |
| PCR review was conducted by: | The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact. |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006: | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal certification ☑ External verification |
| Third party verifier | Bárbara M Civit |
| | Approved by: The International EPD® System Technical Committee, supported by the Secretariat |
| Procedure for follow-up during EPD validity involves third party verifier | ☐ yes ☑ no |

EPD®

THE INTERNATIONAL EPD® SYSTEM

EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com