ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EcoIntellect re-binder E65

EcoIntellect Oy

EPD HUB, HUB-5352
Published on 12.02.2026, last updated on 12.02.2026, valid until 11.02.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	EcoIntellect Oy
Address	Pajulahdentie 4 B, 70260 Kuopio, Finland
Contact details	henry@ecointellect.fi
Website	https://www.ecointellect.fi/en/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025 EN 16908 Cement and building lime
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate
EPD author	Jori Jokela, Macon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer 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 and if they are not compared in a building context.

PRODUCT

Product name	EcoIntellect re-binder E65
Additional labels	E65 Basic, E65 Low
Place(s) of raw material origin	Finland
Place of production	Hämeenlinna, Finland
Place(s) of installation and use	Finland
Period for data	Year 2024
Averaging in EPD	No grouping
A1-A3 Specific data (%)	64,7

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton of re-binder
Declared unit mass	1000 kg
Mass of packaging	No packaging
GWP-fossil, A1-A3 ($kgCO_2e$)	136
GWP-total, A1-A3 ($kgCO_2e$)	137
Secondary material, inputs (%)	3,68
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	904
Net freshwater use, A1-A3 (m^3)	0,21

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

EcoIntellect is a circular economy company that manufactures and sells customized binders for infrastructure builders. EcoIntellect recycled binders are crafted from carefully selected raw materials, sourced primarily from high-quality side streams generated in the energy, mining, and construction industries. Our vision is: “We are replacing traditional construction materials with an ash-based binder in stabilization.

PRODUCT DESCRIPTION

E65 binders are low-carbon, ash-based stabilization binders for infrastructure and environmental construction. EcoIntellect recycled binders are manufactured from carefully selected raw materials, consisting mainly of by-products from the energy, mining, and construction industries.

Stabilization improves the reuse of low-quality soils and reduces the need for virgin materials as well as logistics costs. Application areas are reinforcement of road bases, field structures, ground improvements, peat field stabilization, port construction, noise barriers, landfill structures, mine backfill, contaminated soil stabilization, treatment of sulfate-rich soils and similar applications. EcoIntellect binders are suitable for both mass stabilization and column stabilization.

Further information can be found at: https://www.ecointellect.fi/en/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	39	Finland, EU
Fossil materials	-	-
Bio-based materials	61	Finland

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

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

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 ton of re-binder
Mass per declared unit	1000 kg

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND		
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

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory. The electricity used during production is supplied in a combination of the grid electricity (100% renewable).

The environmental impacts of raw material supply (A1) include emissions generated when raw materials are taken from nature or waste materials are recycled, transported to industrial unit for processing and processed, along with waste handling from the various production processes. All major upstream processes are taken into consideration, including infrastructure. This stage includes all the aforementioned for the raw materials which end up in the final product as well as the electricity production which is consumed during the manufacturing process at the plant. Raw material transport is carried out by road transport (A2). EcoIntellct re-binder is produced by grinding and mixing the raw materials used in the grinding and mixing processes (A3). Waste material is internally recycled back to product production.

Packaging is not needed. The product is delivered in bulk.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the transportation impacts occurred from final products delivery to construction site (A4) or installation (A5), because installation situations vary case by case and are not managed by EcoIntellect Oy.

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)

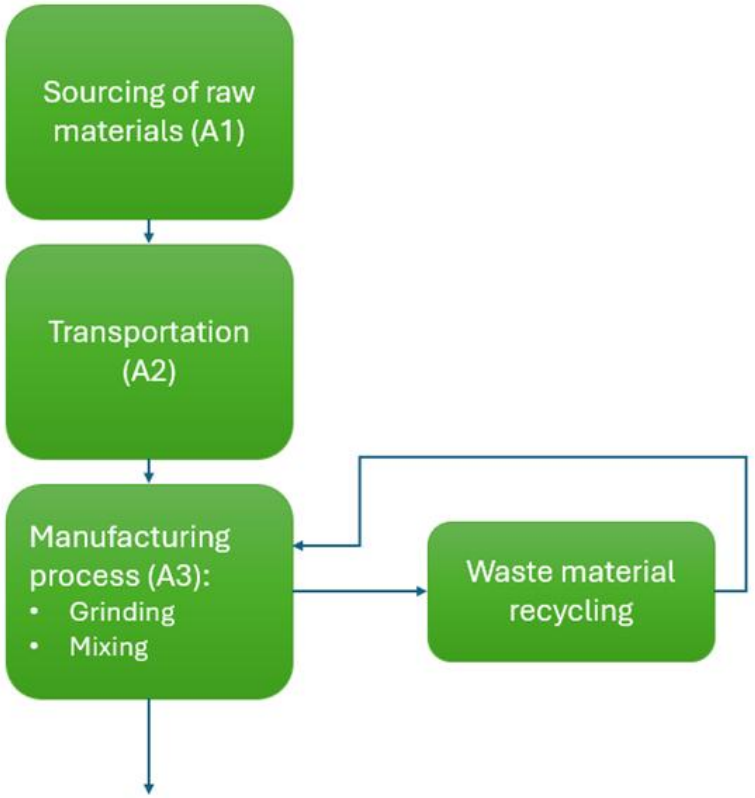
This EPD does not cover end of life phases.

MANUFACTURING PROCESS

EcoIntellect re-binder E65 is a mix of bio-based fly ash and recycled and virgin inorganic materials. Needed raw materials are transported to the facility of Hämeenlinna using truck transports.

In the manufacturing process raw materials are grinded and mixed to a fine powder, resulting in the finished E65 product. The production process is automated, and all raw materials are conveyed pneumatically throughout the entire process.

Packaging materials are not used.



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

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

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Not applicable
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	Not applicable

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3
GWP – total[1)]	kg CO_2e	1,23E+02	1,44E+01	0,00E+00	1,37E+02
GWP – fossil	kg CO_2e	1,22E+02	1,44E+01	0,00E+00	1,36E+02
GWP – biogenic	kg CO_2e	7,94E-01	3,15E-03	0,00E+00	7,98E-01
GWP – LULUC	kg CO_2e	1,65E-02	5,62E-03	0,00E+00	2,21E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	1,72E-06	3,01E-07	0,00E+00	2,02E-06
Acidification potential	mol H^+e	1,32E+00	3,41E-02	0,00E+00	1,36E+00
EP-freshwater[2)]	kg Pe	3,03E-03	1,01E-03	0,00E+00	4,04E-03
EP-marine	kg Ne	1,69E-02	8,94E-03	0,00E+00	2,58E-02
EP-terrestrial	mol Ne	7,94E-01	9,66E-02	0,00E+00	8,90E-01
POCP (“smog”)[3)]	kg NMVOCe	2,62E-01	5,92E-02	0,00E+00	3,22E-01
ADP-minerals & metals[4)]	kg Sbe	2,21E-05	4,13E-05	4,98E-09	6,34E-05
ADP-fossil resources	MJ	5,13E+02	2,17E+02	1,47E+02	8,77E+02
Water use[5)]	m^3e depr.	6,34E+00	1,11E+00	0,00E+00	7,45E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterization method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and 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.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3
Particulate matter	Incidence	2,92E-06	1,41E-06	0,00E+00	4,33E-06
Ionizing radiation[6)]	kBq U235e	4,34E+03	2,61E-01	0,00E+00	4,34E+03
Ecotoxicity (freshwater)	CTUe	4,33E+04	2,55E+01	0,00E+00	4,34E+04
Human toxicity, cancer	CTUh	1,57E-07	2,40E-09	0,00E+00	1,60E-07
Human tox. non-cancer	CTUh	3,44E-06	1,40E-07	0,00E+00	3,58E-06
SQP[7)]	-	4,96E+02	2,18E+02	0,00E+00	7,14E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3
Renew. PER as energy[8)]	MJ	7,13E+01	3,53E+00	2,18E+03	2,25E+03
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	7,13E+01	3,53E+00	2,18E+03	2,25E+03
Non-re. PER as energy	MJ	4,99E+02	2,17E+02	1,62E+02	8,77E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	4,99E+02	2,17E+02	1,62E+02	8,77E+02
Secondary materials	kg	3,68E+01	9,37E-02	0,00E+00	3,69E+01
Renew. secondary fuels	MJ	6,06E+01	1,18E-03	0,00E+00	6,06E+01
Non-ren. secondary fuels	MJ	6,34E+01	0,00E+00	0,00E+00	6,34E+01
Use of net fresh water	m^3	8,40E-02	3,20E-02	9,06E-02	2,07E-01

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3
Hazardous waste	kg	1,84E-01	3,14E-01	5,61E-03	5,03E-01
Non-hazardous waste	kg	1,38E+02	6,28E+00	1,11E+01	1,56E+02
Radioactive waste	kg	2,58E-03	6,46E-05	4,37E-04	3,08E-03

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,37E-01	0,00E+00	0,00E+00	1,37E-01
Materials for energy rec	kg	8,67E-03	0,00E+00	0,00E+00	8,67E-03
Exported energy	MJ	4,62E+00	0,00E+00	0,00E+00	4,62E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3
GWP-GHG[9)]	kg CO_2e	1,22E+02	1,44E+01	0,00E+00	1,36E+02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterization factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	EKOenergia (Renewable Energy Sources – Quarantee of Origin), supplied by Lumme Energia. Modelled with Green electricity, Finland (solar 10 %, water 30 %, wind 60 %), Finland, One Click LCA
Electricity CO2e / kWh	0,0221

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
12.02.2026