ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	ISOCELL GmbH und Co KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ISC-20240568-CCA1-EN
Issue date	02/05/2025
Valid to	01/05/2030

ISOCELL Zellulose Einblasdämmung

ISOCELL GmbH und Co KG

Institut Bauen und Umwelt e.V.

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General Information

ISOCELL GmbH und Co KG

Programme holder

IBU – Institut Bauen und Umwelt e.V.
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10117 Berlin
Germany

Declaration number

EPD-ISC-20240568-CCA1-EN

This declaration is based on the product category rules:

Blow-in insulation materials made from cellulose and wood fibres, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

02/05/2025

Valid to

01/05/2030

ISOCELL Zellulose Einblasdämmung

Owner of the declaration

ISOCELL GmbH und Co KG
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Austria

Declared product / declared unit

The declared unit is 1 kg of loose fill cellulose insulation. Note: the density for the declared unit is 45 kg/m^3. However, for calculations at the building level, different densities may be assumed depending on the application (see Technical Data). The products can be used for different types of applications. Conversion factors for different applications are given in the table below. These factors are for the insulation of 1 m^2 that gives an overall thermal resistance of 7 (m²·K/W) (R-value).

- Open blowing attic: 9.044 kg/m^2
- Pitched roof: 13.832 kg/m^2
- Wall: 14.63 kg/m^2

Several commercial references exist for this product:

- Isocell
- Trendisol
- Dobry-Ekovilla
- FibraNatur
- Renocell
- Isolare
- Poesis
- Domexcell
- greenwool
- isEco
- Isodek
- Naturafloc
- Isocell Evolution
- greenwool Evolution
- isECO green

These references are produced on two manufacturing sites: CPB in Belgium and CPH in Austria. The following references covered by this EPD are produced on a third manufacturing site: Dämmstatt GmbH in Germany.

- DAEMMSTATT D
- DAEMMSTATT D bf
- DÄMMSTATTs Cl 040
- DÄMMSTATTs Cl 040 bf
- KLIMA-TEC-FLOCK
- KLIMA-TEC-FLOCK bf Biocell
- biocell bf
- DÄMMSTATTs Cl Dämmschüttung
- DÄMMSTATTs Cl Dämmschüttung bf
- Isocell D
- Trendisol D
- Isocell P
- Dobry-Ekovilla D
- Isocell for you

The reference products listed are similar products produced in three different sites and the EPD is a multiple product based on an average of 1kg for each site.

Scope:

This EPD is for the following products by Isocell:

- Zellulosedämmstoff
- Daemmstatt D
- Klima-Tec-Flock
- Isocell D
- Isocell for you

Three production sites are considered in this EPD:

- CPB, which produces Zellulosedämmstoff in Blegium
- CPH, which produces Zellulosedämmstoff in Austria
- Berlin, which produces Daemmstatt D, Klima-Tec-Flock, Isocell D and Isocell for you in Germany.

These are all different references for the same product, there are no variation through the composition, the installation, the use and the end-of-life of these products.
This EPD is for the average product from the three aforementioned production sites.

They are loose fill cellulose insulation products sold in Germany. Modelling was made on LCA for Experts (GaBi) version 10.7.1.28, the secondary data comes from Sphera. The data collection for the assessment is plant-specific data.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
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Mr Stephen Forson ,
(Independent verifier)

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Product

Product description/Product definition

This EPD background report covers the following products produced by Isocell:

- Zellulosedämmstoff
- Daemmstatt D
- Klima-Tec-Flock
- Isocell D
- Isocell for you

They are insulation product that are mainly applied as loose fill cellulose insulation and applied in a blowing process. Cellulose Insulation material is made from recycled newspaper and inorganic flame-retardant minerals. The products are used for thermal and acoustic insulation of buildings. The products are used to insulate walls, roofs, attics and mezzanine floors.

Three production sites are considered for this EPD. The EPD is an average by market share (in Germany) of the three production sites. A variability analysis has been conducted on the three production sites over modules A1-A3. Three reference indicators have been analysed:

- Climate Change Total (-3% to +3%)
- Climate Change Biogenic (-6% to +4%)
- Total non renewable primary energy (PENRT) (-23% to +15%)

It is considered that the average product presented in this report is representative for all three production sites. For the placing of the product on the market in the European Union/European Free Trade Association /EU/EFTA) (with the exception of Switzerland) the Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration ETA 06 / 0076 and the CE-marking. For the application and use the respective national provisions apply.

Application

The products covered by this EPD have several applications:

- Open blowing attic applications
- Roof applications (pitched roof)
- Wall applications

Technical Data

The following technical data apply for the products:

Constructional data

Name	Value	Unit
Settlement behaviour due to shock (EN 15101-1, Annex B3 and EAD)	sv=4	%
Settlement behaviour due to vibration (EN 15101-1, Annex B2)	SC 0	(38kg/m^3)
Settlement behaviour due to cyclic changes in Humidy (EN 15101-1, Annex B1)	SH 20	(28kg/m^3)
Settlement behaviour due to cyclic changes in Humidy (EN 15101-1, Annex B1)	SH 10	(40kg/m^3)
Water absorption, short-term (EN 1609, method A)	<14.1	kg/m² (29 kg/m³)
Water vapour diffusion resistance (EAD, clause 2.2.4)	μ=3	
Airflow resistance (EN 29053, method A)	r = 6,6 (bei 28 kg/m³) ; r = 8,1 (bei 30 kg/m³) ; r = 25,1 (bei 45 kg/m³) ; r = 34,5 (bei 50 kg/m³) ; r = 46,3 (bei 55 kg/m³) ; r = 74 (bei 65 kg/m³)	kPa s/m²
Nominal value of the thermal conductivity (EAD, Annex A)	λD = 0.037	W/m.K
Reaction to fire: 40mm < 100mm (EN 13501-1:2009)	Euro-class E	
Reaction to fire: ≥ 100mm (EN 13501-1:2009)	Euro-class B-s2, d0	
Corrosion resistance (EN 15101-1 Annex E)	CR	
Resistance to mould infestation (EAD, Annex B)	Class 0	

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to ETA 06/0076

Base materials/Ancillary materials

Name	Value	Unit
Recovered paper	92	%
Mineral flame retardants	8	%

This product contains substances listed in the Substance of Very High Concern (SVHC) candidate list (https://echa.europa.eu/de/candidate-list-table, date: 31.03.2025) exceeding 0.1 percentage by mass:
Boric acid, CAS no. 10043-35-3, toxic to reproduction, certificates and safety instruction can be found on this link: https://www.isocell.com/en/product/zellulose
Concentration does not exceed 3.5%.

This product/article/at least one partial article contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): no

Reference service life
If the product is applied and maintained following the installation and maintenance instructions, the Reference Service Life (RSL) of the product is 50 years.

LCA: Calculation rules

Declared Unit
The declared unit is 1 kg of loose fill cellulose insulation. Note: the density for the declared unit is 45 kg/m^3. However, for calculations at the building level, different densities may be assumed depending on the application (see Technical Data).

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	kg
Density (in relation to thermal conductivity)	45	kg/m^3

A variability analysis has been conducted over modules A1-A3 following the three reference indicators: Climate Change Total, Climate Change Biogenic and Total non renewable primary energy (PENRT). The differences in environmental impacts for these indicators do not exceed +/- 35% the impacts of the average product. Therefore, the average product is considered representative for the three production sites according to EN 15804+A2.

System boundary
Type of the EPD: cradle-to-grave including module D.

Three production sites are considered in this EPD. Each site has been modelled individually. The average product is then calculated by the average (weighted by market share in Germany) of the three production sites.

Product Stage (A1-3)
The recovered paper is transported to the cellulose insulation production plant. The end-of-waste state is reached after sorting and treatment, before transport to the manufacturing plant. Therefore, no impacts are attributed to the production of recovered paper (A1), but the transport from the sorting site to the manufacturer is considered (A2). The impurities (consisting of metal staples) are separated and sent for recycling, and the paper is shredded. Paper, which still contains tiny amounts of impurities, is recycled into the process. When milling the shredded paper, fire retardants are added. The final product is packed and transported to the retailer or the construction site.

Transport to building site (A4)
The final product is packed and transported to the construction site. As the product is low-density, it is compressed during distribution in order to transport more product in one lorry.

Installation of the product in the building (A5)
The products are applied into the construction by a machine. Therefore, the energy consumption of the blowing or spraying machine is considered. 0.5% losses during installation is considered as a conservative approach. The scenario for end-of-life of packaging follows the CFF parameters, as follows:

- PE film: 27.5% recycling, 71.8% incineration, 0.7% landfill
- Wooden pallets: 30% recycling, 69.3% incineration, 0.7% landfill

Use Stage (B1-7)
If installed correctly according to the manufacturers' and suppliers' guidelines, the product needs no further maintenance, repair, replacement or refurbishment during its full lifespan. If the product is applied following the installation instructions, a lifespan of 50 years is applicable.

Demolition (C1)
The dismantling scenario is the following: the cellulose material can be sucked with a hose to a lorry. This process is a fast reverse of the installation process. Although cellulose is easily reclaimed as recyclable and reusable, incineration is the current practice in Germany.

Transport (C2)
Assumptions for the transport phase: 100 km to the incineration site. Transport with a Euro 5, with a 16-32 t total weight lorry.

Waste processing (C3-C4)
Although cellulose is easily recyclable and reusable, these scenarios are not yet mainstreamed in Germany. Incineration with energy recovery is defined as waste scenario.

Benefits and Loads Beyond the System Boundary (D) The avoided energy production due to the incineration of the product is considered as a benefit beyond the system boundary. Avoided production of virgin materials due to recycling (for packaging) is also considered in this module.

More than 95% of materials and energy per module and more than 99% of the total life cycle materials and energy are included.

Data quality
The inventory data is highly accurate as the data to produce the product has been provided by Isocell: drawn from databases containing third-party verified data. The data is from the production year 2021. All data used in this study meet 'good and fair' quality standards.

Geographic Representativeness
Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Germany

Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon
Cellulose insulation material is mainly made from recovered paper with a high biogenic carbon content. As long as cellulose insulation is in use, this carbon is stored in the product. For cellulose insulation material, this amount is assessed based on the following formula and is provided in the overall LCA results. Calculation: CO_2 content kg in air = (paper content) x (carbon

content in paper) x (mol ratio CO_2 – C) / (1+ humidity ratio) presented in kg CO_2 / kg Cellulose materials

During the End-of-Life (EoL) of cellulose insulation, as the product is 100% incinerated, all the biogenic CO_2 stored in the product is re-emitted in air.

The same calculations are made for the biogenic carbon stored in the packaging (wooden pallets). The considered parameters are detailed below:

- Carbon content for cellulose: 44.4%
- Carbon content for wood: 50%
- Humidity rate for cellulose: 1 (0%)
- Humidity rate for wood: 1.1 (10%)
- Mol ratio CO_2/C: 3.67

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	0.406	kg C
Biogenic carbon content in accompanying packaging	0.0174	kg C

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

Transport from the gate to the site (A4)

Name	Value	Unit
Transport distance	-	km
Gross density of products transported	208	kg/m^3

Assembly (A5)

Name	Value	Unit
Electricity consumption	0.0035	kWh
Material loss	0.005	kg

If installed correctly according to the manufacturers' guidelines, the product needs no further maintenance, repair, replacement or refurbishment during its full life span. If the product is applied and maintained following the installation and maintenance instructions the life span of 50 years is applicable based on requirements.

Reference service life

Name	Value	Unit
Reference service life	50	years

End of life (C1-C4)

Name	Value	Unit
Reuse	-	kg
Recycling	-	kg
Energy recovery	1	kg
Landfilling	-	kg

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LCA: Results

Below are the results of the Impact assessment. Results are presented for the declared unit of 1 kg of product, with an average density of 45 kg/m^3.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2:

Parameter	Unit	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	-1.45E+00	4.75E-02	-2.08E-02	5.14E-02	7.57E-02	0	0	0	0	0	0	0	7.69E-04	1.93E-02	1.53E+00	0	-4.99E-01
GWP-fossil	kg CO_2 eq	4.22E-02	4.67E-02	4.27E-02	5.05E-02	1.97E-02	0	0	0	0	0	0	0	7.02E-04	1.89E-02	3.81E-02	0	-4.83E-01
GWP-biogenic	kg CO_2 eq	-1.49E+00	0	-6.38E-02	0	5.6E-02	0	0	0	0	0	0	0	0	0	1.49E+00	0	-1.55E-02
GWP-luluc	kg CO_2 eq	6.87E-06	8.66E-04	3.17E-04	9.38E-04	1.97E-05	0	0	0	0	0	0	0	6.73E-05	3.52E-04	2.52E-05	0	-5.21E-05
ODP	kg CFC11 eq	4.57E-14	1.42E-14	7.33E-13	1.54E-14	6.2E-14	0	0	0	0	0	0	0	1.1E-15	5.78E-15	3.32E-13	0	-7.11E-12
AP	mol H^+ eq	2.89E-04	2.61E-04	9.07E-05	3.24E-04	2.46E-05	0	0	0	0	0	0	0	2.65E-06	1.21E-04	4.54E-04	0	-4.59E-04
EP-freshwater	kg P eq	4.97E-08	1.23E-07	1.88E-07	1.33E-07	1.67E-08	0	0	0	0	0	0	0	9.52E-09	4.98E-08	8.54E-08	0	-1.38E-06
EP-marine	kg N eq	7.23E-05	1.27E-04	3.14E-05	1.59E-04	8.01E-06	0	0	0	0	0	0	0	7.13E-07	5.98E-05	1.53E-04	0	-1.55E-04
EP-terrestrial	mol N eq	9.2E-04	1.42E-03	3.41E-04	1.77E-03	1.15E-04	0	0	0	0	0	0	0	9.26E-06	6.65E-04	2.1E-03	0	-1.62E-03
POCP	kg NMVOC eq	1.86E-04	2.54E-04	1.06E-04	3.15E-04	1.94E-05	0	0	0	0	0	0	0	2.67E-06	1.18E-04	3.99E-04	0	-4.43E-04
ADPE	kg Sb eq	2.92E-09	7.66E-09	1.05E-08	8.3E-09	6.09E-10	0	0	0	0	0	0	0	5.95E-10	3.11E-09	2.85E-09	0	-1.09E-07
ADPF	MJ	6.89E-01	5.91E-01	1.27E+00	6.4E-01	5.92E-02	0	0	0	0	0	0	0	4.59E-02	2.4E-01	4.63E-01	0	-7.25E+00
WDP	m^3 world eq deprived	4.01E-03	3.23E-04	4.55E-03	3.5E-04	8.01E-03	0	0	0	0	0	0	0	2.51E-05	1.31E-04	1.75E-01	0	-4.9E-03

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2:

Parameter	Unit	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	6.71E-02	6.54E-02	6.9E-01	7.09E-02	4.37E-01	0	0	0	0	0	0	0	5.08E-03	2.66E-02	1.36E+01	0	-3.38E+00
PERM	MJ	1.35E+01	0	5.85E-01	0	-5.1E-01	0	0	0	0	0	0	0	0	0	-1.35E+01	0	1.75E-01
PERT	MJ	1.35E+01	6.54E-02	1.27E+00	7.09E-02	-7.34E-02	0	0	0	0	0	0	0	5.08E-03	2.66E-02	1.61E-01	0	-3.2E+00
PENRE	MJ	6.95E-01	5.91E-01	1.27E+00	6.4E-01	2.64E-01	0	0	0	0	0	0	0	4.59E-02	2.4E-01	4.63E-01	0	-7.25E+00
PENRM	MJ	0	0	2.85E-01	0	-2.82E-01	0	0	0	0	0	0	0	0	0	0	0	7.84E-02
PENRT	MJ	6.95E-01	5.91E-01	1.55E+00	6.4E-01	-1.78E-02	0	0	0	0	0	0	0	4.59E-02	2.4E-01	4.63E-01	0	-7.17E+00
SM	kg	9.2E-01	0	0	0	1.97E-03	0	0	0	0	0	0	0	0	0	0	0	1.3E-02
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	2.1E-04	6.11E-05	4.63E-04	6.62E-05	1.97E-04	0	0	0	0	0	0	0	4.75E-06	2.48E-05	4.11E-03	0	-9.82E-04

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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:

Parameter	Unit	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	7.68E-11	2.88E-11	1.07E-09	3.12E-11	6.61E-11	0	0	0	0	0	0	0	2.24E-12	1.17E-11	3.72E-10	0	-7.68E-09
NHWD	kg	8.78E-03	9.99E-05	9.63E-04	1.08E-04	1.25E-03	0	0	0	0	0	0	0	7.76E-06	4.06E-05	3E-02	0	-4.2E-03
RWD	kg	1.21E-05	9.41E-07	9.26E-05	1.02E-06	3.02E-06	0	0	0	0	0	0	0	7.31E-08	3.82E-07	1.43E-05	0	-2.96E-04
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	8.26E-04	0	1.49E-02	0	0	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	3.38E-03	0	1.34E-01	0	0	0	0	0	0	0	0	0	1.75E+00	0	0
EET	MJ	0	0	6.65E-03	0	3.53E-01	0	0	0	0	0	0	0	0	0	3.44E+00	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:

Parameter	Unit	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	4.87E-09	1.13E-09	2.99E-09	1.31E-09	1.63E-10	0	0	0	0	0	0	0	3.16E-11	4.93E-10	2.54E-09	0	-4.16E-09
IR	kBq U235 eq	1.12E-03	9.92E-05	7.31E-03	1.08E-04	3.06E-04	0	0	0	0	0	0	0	7.71E-06	4.03E-05	1.52E-03	0	-3.17E-02
ETP-fw	CTUe	2.11E+00	4.59E-01	5.63E-01	4.97E-01	3.71E-02	0	0	0	0	0	0	0	3.56E-02	1.86E-01	1.81E-01	0	-1.2E+00
HTP-c	CTUh	6.9E-12	9.16E-12	2.19E-11	9.93E-12	1.26E-12	0	0	0	0	0	0	0	7.1E-13	3.72E-12	1.17E-11	0	-1.91E-10
HTP-nc	CTUh	2.65E-10	3.85E-10	4.56E-10	4.18E-10	2.54E-11	0	0	0	0	0	0	0	2.99E-11	1.57E-10	2.51E-10	0	-2.21E-09
SQP	SQP	3.58E-02	3.93E-01	3.57E+00	4.26E-01	4.51E-02	0	0	0	0	0	0	0	3.05E-02	1.6E-01	1.64E-01	0	-2.15E+00

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

References

Standards

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