

# Environmental Product Declaration



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

## Votec Flexible coupling

from

**Saint-Gobain Building Distribution (SGDS)**



Program:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
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*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](http://www.environdec.com)*



## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
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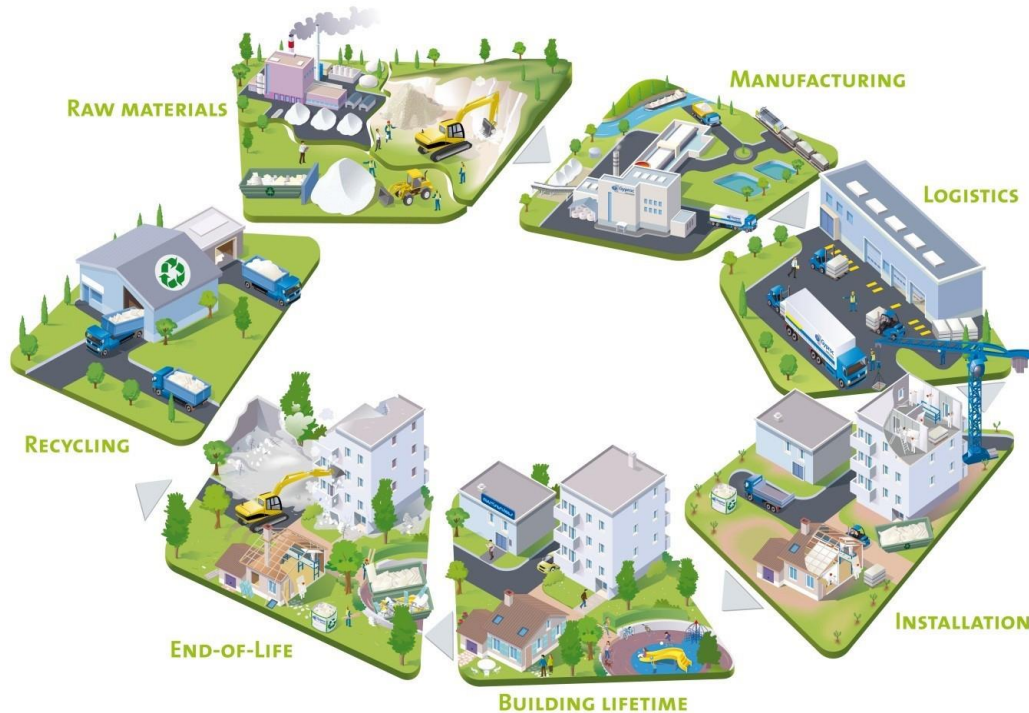
<b>Accountabilities for PCR, LCA and independent, third-party verification</b>
<b>Product Category Rules (PCR):</b> Construction Products PCR 2019:14 version 1.2.3
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
PCR review was conducted by: <i>The Technical Committee of the International EPD® System.</i>
<b>Life Cycle Assessment (LCA)</b>
LCA accountability: <i>Nadeen Hassan, EANDO AB</i>
<b>Third-party verification</b>
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:  <input type="checkbox"/> EPD verification by individual verifier  Third-party verifier: prof. Vladimír Kočí, PhD, LCA Studio, Czech Republic, <a href="mailto:vladimir.koci@lcastudio.cz">vladimir.koci@lcastudio.cz</a>  Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes 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

<b>Owner of the EPD</b>	Saint-Gobain Distribution Sweden
<b>Contact</b>	SGDS - Beriar Maroof ( <a href="mailto:beriar.maroof@sgdsgruppen.se">beriar.maroof@sgdsgruppen.se</a> )
<b>Description of the organisation</b>	<p>SGDS Gruppen - specialists in collaboration for more efficient business in construction and installation. SGDS Gruppen AB is the head company of some of Sweden's leading trading companies in construction, sheet metal, tiles and installation. All the companies have a long and solid industry experience and provide most of Sweden's craftsmen with materials for various projects. Customers in different companies can also buy support items from the sister companies in the group, and in selected cases we take joint projects to facilitate the logistics of the supply of goods, which is then often critical for a smooth construction project.</p> <ul style="list-style-type: none"> <li>• Optimera - construction trade for professional carpenters</li> <li>• Dahl – heat, plumbing and sanitary specialist</li> <li>• Bevego - building sheet metal, ventilation and technical insulation</li> <li>• Kakelspecialisten and Konradsson's Tiles - tiles, tiling and bathroom fittings</li> </ul> <p>The company's focus on sales and services with direct contact to about 150,000 customers regularly.</p> <p>Saint-Gobain Distribution Sweden group (SGDS) is owned by Saint-Gobain with presence in 64 countries and having over 190 000 employees worldwide.</p>
<b>Name and location of production site</b>	Bursa, Turkey

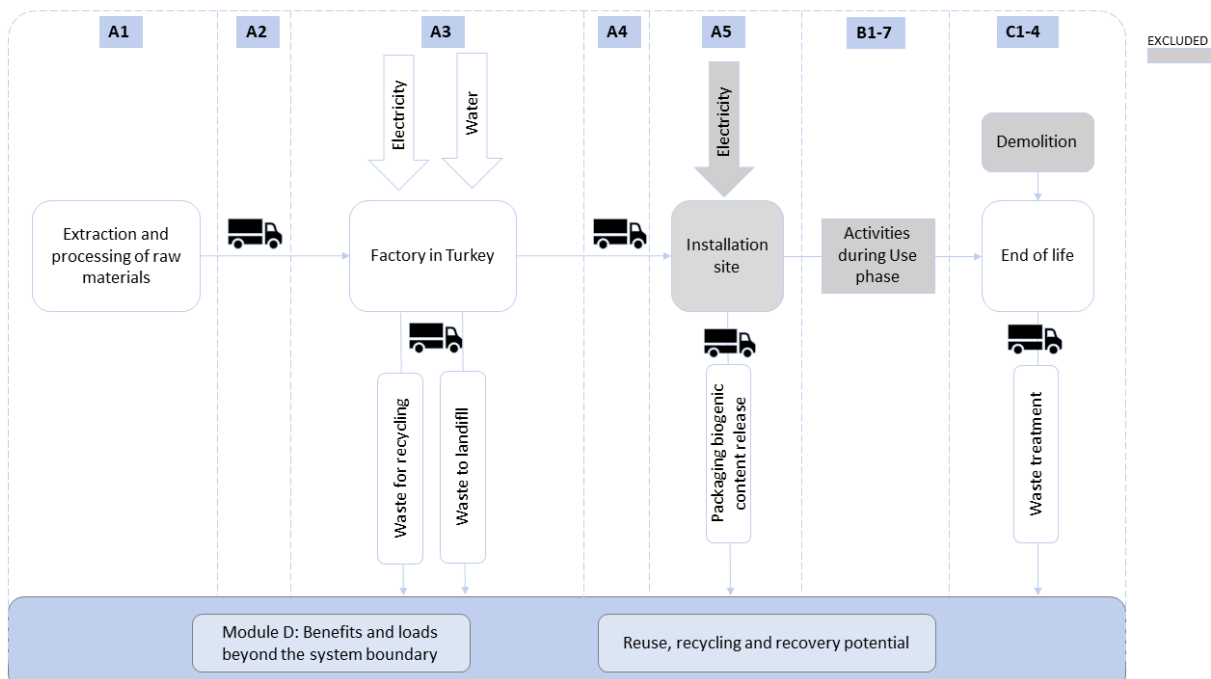


## Product information

<b>Product name</b>	Votec Flexible coupling
<b>Product identification</b>	Pipe fittings  The EPD is a specific EPD for this product and not an average.
<b>Product description</b>	This product is a series of couplings in EPDM 60 with tension bands in acid-resistant stainless steel. The couplings are intended to be used for joining sewer pipes. Even pipes of different materials are connected, for example in a Flexible from cast iron to plastic. The coupling can be used both in ground and inside the building for diverting normal wastewater from households as well as day and rainwater
<b>UN CPC code</b>	34800 - Synthetic rubber and factice derived from oils, and mixtures thereof with natural rubber and similar natural gums, in primary forms or in plates, sheets or strip.
<b>Use</b>	This product is used in indoor wastewater and rainwater installations.

## LCA information

<b>Functional unit / declared unit</b>	1 kg of pipe fitting
<b>Reference service life</b>	50 years
<b>Database(s) and LCA software used</b>	Calculation completed in GaBi v10.6.2.9 with an integrated Ecoinvent database 3.8
<b>System boundaries</b>	Cradle to grave, with options. (A1-A3, A4,C1-C4, D)



### **More information**

The EPD covers the following range of products from DAHL:

- Votec Flexible coupling

All products within this range are produced in the same factory and have the same material composition with a slight difference in ratios.

The worst-case product is represented in this EPD.

#### **A1, Raw material supply**

*This module considers the extraction and processing of all raw materials, energy, and transportation which occur upstream to the studied manufacturing process.*

#### **A2, transport to the manufacturer**

*The raw materials are transported to the manufacturing site.*

#### **A3, manufacturing**

*This module includes all resources used during the production of Votec flexible coupling and waste produced. This also includes additives and packaging material.*

#### **A4, Transport**

*Transportation from the manufacturing site in Turkey to SGDS Gruppen's distribution centre and then from the distribution centre to the building site is included.*

#### **A5, Construction installation**

*This stage is partially included to balance the biogenic content in packaging.*

#### **B1-B7 Use stage**

*This stage is not declared.*

#### **C1 Deconstruction/Demolition**

*This stage includes the de-construction and/or demolition of the building. This is not relevant as the product included in this study is not used in the construction process.*

#### **C2 Transport**

*This stage represents the transport distance to the waste processing facility.*

#### **C3 Waste processing**

*This stage includes any waste treatment needed.*

#### **C4 Final disposal**

*This includes any material that is landfilled.*

#### **D Benefits and loads beyond the system boundary**

*Emission credits obtained from energy recovery and/or recycling materials.*

#### **Cut-off criteria:**

*All input and output flows in a unit process were considered i.e., taking into account the value of all flows in the unit process and the corresponding LCI where data was available. Data gaps were filled by conservative assumptions with average or generic data. Any assumptions in such case were*

documented. The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%).

## Content declaration

### Content

Content declaration*	Amount (kg)
EPDM	0,254
Carbon black	0,267
Paraffin oil	0,224
Limestone	0,107
Stainless steel	0,109
Sulphur	0,0132
Zinc oxide	0,0132
Stearic acid	0,0132
<b>Total</b>	<b>1</b>

\*Content declaration for Votec Flexible coupling (RAK) – representing the “Worst case” scenario.

Packaging materials	Weight, kg	Weight-% (versus the product)
Polyethylene film	0,004	0,4%
Cardboard box	0,001	0,1%
Wood pallet	0,031	3,1%
<b>Total</b>	<b>0,036</b>	<b>3,6%</b>

No substances that appear in the REACH candidate list of SVHC (Candidate List of Substances of Very High Concern) are present or used in the product concerning this EPD.

**Modules declared and geographical scope**

	Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary	
	Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
<b>Modules</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A4</b>	<b>A5</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>B5</b>	<b>B6</b>	<b>B7</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>C4</b>	<b>D</b>	
Modules declared	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X	
Geography	TR	TR	TR	EU	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU	
Specific data used	Specific data used in module A3				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	>10%*				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0%				-	-	-	-	-	-	-	-	-	-	-	-	-	-

\*The difference between the heaviest product in the Votec Flexible coupling range (Rak, reducerade, reducerade excentriska)

## Environmental Information

### Potential environmental impact – indicators according to EN 15804+A2

		Results per functional or declared unit: 1 kg										
Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	2,1E+00	1,6E-02	-6,6E-02	2,0E+00	2,4E-01	5,4E-02	0,0E+00	6,0E-03	1,6E+00	2,6E-04	-1,3E+00
GWP-fossil	kg CO2 eq	2,1E+00	1,5E-02	1,8E-02	2,1E+00	2,4E-01	0,0E+00	0,0E+00	6,0E-03	1,6E+00	2,6E-04	-1,3E+00
GWP-biogenic	kg CO2 eq	3,5E-02	7,1E-04	-8,4E-02	-4,8E-02	-3,3E-04	5,4E-02	0,0E+00	-8,2E-06	6,2E-05	-2,8E-06	-7,1E-03
GWP-luluc	kg CO2 eq	9,1E-04	9,1E-07	7,4E-05	9,9E-04	1,3E-03	0,0E+00	0,0E+00	3,3E-05	6,1E-06	1,6E-07	-9,8E-04
ODP	kg CFC-11 eq	5,5E-07	3,5E-09	1,7E-09	5,6E-07	1,4E-14	0,0E+00	0,0E+00	3,6E-16	9,6E-14	3,5E-16	-1,8E-07
AP	mole H+ eq	9,6E-03	1,0E-04	1,2E-04	9,8E-03	4,5E-04	0,0E+00	0,0E+00	1,1E-05	1,6E-04	8,3E-07	-6,8E-03
EP-freshwater	kg P eq	2,4E-04	1,6E-07	5,4E-06	2,4E-04	7,2E-07	0,0E+00	0,0E+00	1,8E-08	4,2E-08	2,0E-10	-2,1E-04
EP-marine	kg N eq	1,6E-03	4,5E-05	3,5E-05	1,6E-03	1,9E-04	0,0E+00	0,0E+00	4,7E-06	4,1E-05	2,0E-07	-9,9E-04
EP-terrestrial	mole N eq	1,7E-02	4,9E-04	3,3E-04	1,8E-02	2,1E-03	0,0E+00	0,0E+00	5,3E-05	7,4E-04	2,2E-06	-1,1E-02
POCP	kg NMVOC eq	5,8E-03	8,9E-05	1,1E-04	6,0E-03	4,0E-04	0,0E+00	0,0E+00	1,0E-05	1,2E-04	6,4E-07	-4,3E-03
ADP-minerals & metals	kg Sb eq	2,1E-05	2,7E-09	1,2E-07	2,1E-05	2,0E-08	0,0E+00	0,0E+00	5,0E-10	2,4E-09	1,8E-11	-2,4E-05
ADP-fossil	MJ	6,4E+01	2,2E-01	3,3E-01	6,5E+01	3,2E+00	0,0E+00	0,0E+00	8,0E-02	2,5E-01	3,7E-03	-2,9E+01
WDP	m3	4,0E-01	2,3E-04	1,1E-02	4,1E-01	2,2E-03	0,0E+00	0,0E+00	5,4E-05	1,4E-01	-2,5E-06	-6,1E-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											

\*NOTE: the biogenic content in packaging contributing to the GWP-biogenic is balanced out in A5 as positive as the packaging leaves the system boundary.



## Use of resources

Results per functional or declared unit: 1 kg												
Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2,9E+00	5,6E-04	3,0E-01	3,2E+00	1,8E-01	0,0E+00	0,0E+00	4,5E-03	6,0E-02	3,1E-04	-1,8E+00
PERM	MJ	0,0E+00	0,0E+00	6,3E-01	6,3E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	MJ	2,9E+00	5,6E-04	9,3E-01	3,9E+00	1,8E-01	0,0E+00	0,0E+00	4,5E-03	6,0E-02	3,1E-04	-1,8E+00
PENRE	MJ	3,8E+01	2,2E-01	2,9E-01	3,9E+01	3,2E+00	0,0E+00	0,0E+00	8,0E-02	2,6E-01	3,7E-03	-2,9E+01
PENRM	MJ	2,6E+01	0,0E+00	4,6E-02	2,6E+01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PENRT	MJ	6,4E+01	2,2E-01	3,3E-01	6,5E+01	3,2E+00	0,0E+00	0,0E+00	8,0E-02	2,6E-01	3,7E-03	-2,9E+01
SM	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00	1,0E+00	1,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m3	1,0E-02	5,3E-06	2,6E-04	1,0E-02	2,1E-04	0,0E+00	0,0E+00	5,1E-06	3,3E-03	5,2E-08	-1,5E-02
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											

## Additional voluntary indicators

		Results per functional or declared unit: 1 kg										
Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG <sup>2</sup>	kg CO2 eq	2,0E+00	1,5E-02	1,8E-02	2,0E+00	2,4E-01	0,0E+00	0,0E+00	5,9E-03	1,6E+00	2,5E-04	-1,2E+00
Acronyms	GWP-GHG global warming potential - greenhouse gases											

## Waste and output flows

### Waste

		Results per functional or declared unit: 1 kg										
Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2,0E-09	0,0E+00	1,8E-05	1,8E-05	1,5E-11	0,0E+00	0,0E+00	3,8E-13	2,3E-11	5,6E-13	-7,8E-10
NHWD	kg	1,2E-02	0,0E+00	7,0E-07	1,2E-02	4,6E-04	0,0E+00	0,0E+00	1,1E-05	4,9E-02	5,5E-03	-3,8E-02
RWD	kg	3,7E-04	0,0E+00	3,9E-10	3,7E-04	4,0E-06	0,0E+00	0,0E+00	9,8E-08	1,4E-05	4,5E-08	-1,7E-04
Acronyms	HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed											

<sup>2</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

### Output flows

		Results per functional or declared unit: 1 kg										
Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
MFR	kg	0,0E+00	0,0E+00	1,9E-05	1,9E-05	0,0E+00	0,0E+00	0,0E+00	0,0E+00	3,7E-01	0,0E+00	0,0E+00
MER	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	6,2E-01	0,0E+00	0,0E+00
EEE	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
EET	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	2,5E+00	0,0E+00	0,0E+00
Acronyms	CRU Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy											

### Information on biogenic carbon content

Biogenic carbon content	Unit per DU	Amount
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	1,46E-02

1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

## Disclaimers

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
	Potential Human exposure efficiency relative to U238 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
Disclaimer 1 – 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.		
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.		

## References

General Programme  
Instructions of the  
International EPD® System.  
Version 4.

General Programme Instructions of the International EPD® System.  
Version 4.

ISO 14020:2000  
Environmental labels and  
declarations — General  
principles

ISO 14020:2000 Environmental labels and declarations — General  
principles

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

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

ISO 14044:2006  
Environmental management  
- Life cycle assessment -  
Requirements and guidelines

ISO 14044:2006 Environmental management - Life cycle assessment -  
Requirements and guidelines

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

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

Construction Products  
PCR 2019:14 version 1.2.3

EPD International (2021): PCR 2019:14 Construction products and  
construction services, version 1.2.3