

Environmental Product Declaration



In accordance with ISO 14025 and EN 15804

UN CPC 369: Other plastic products and underlying classes and subclasses for construction products.



fitnice
FLOOR

REGISTRATION NUMBERS: S-P-01029

ISSUE DATE: 2017/03/29




VALID UNTIL: 2022/03/28

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1. General Information

Table 1. General Information.

EPD® PROGRAM HOLDER	The International EPD® System operated by EPD® international AB www.environdec.com Valhallavagen 81, 11427 Stockholm, Sweden	
PRODUCT CATEGORY RULES (PCR)	CEN standard EN 15804 served as the core PCR PCR 2012:01 version 2.1 Construction products and construction services. Valid until 2019-03-03. This PCR covers products within the group UN CPC 369: <i>Other plastic products</i> and underlying classes and subclasses for construction products.	
GENERIC PCR REVIEW CONDUCTED BY	Technical committee of the International EPD® System Chair Massimo Morano Contact via info@environdec.com	
INDEPENDENT VERIFICATION	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
THIRD PARTY VERIFIER	Marcel Gómez, Marcel Gómez Consultoría Ambiental Email: info@marcelgomez.com	
ACCREDITED OR APPROVED BY	The International EPD® System	
COMPANY RESPONSIBLE OF EPD PUBLICATION	FITNICE® IS A BRAND OF VERTISOL INTERNACIONAL, SRL Vertisol Internacional S.R.L. C-17, 18, 08403 Granollers (Spain) Phone: +34 93 840 14 44 Email: mkt@vertisol.es Website: http://en.vertisol.es/	
GEOGRAPHICAL SCOPE OF THE EPD®	Global	
REGISTRATION NUMBERS	S-P-01029	
ISSUE DATE	2017 – 03 – 29	
VALID TO	2022 – 03 – 28	
PREVIOUS VERSIONS	There is no previous version to this EPD®	

2. Company

Vertisol was founded in 1982, when its first fabrics were manufactured at the plant in Lliçà de Munt. The company currently has two factories in Spain, one in Granollers (Barcelona) and another in Moraña (Pontevedra), which allows it to efficiently develop each one of the different production processes, researching new solutions and guaranteeing high production capacity.

Vertisol's facilities in Barcelona are, besides being the company headquarters, the site where the fabrics are manufactured by coating and impregnation processes. The company not only manufactures fabrics, but also carpet tiles and rolls of FITNICE® among many other products. FITNICE® production starts in Moraña where the warp and the weft are intertwined to create the yarn and it finishes in Vertisol's facilities where the carpet is finished and packed ready to be sent and installed.

FITNICE® is a registered brand of Vertisol Internacional SRL.

3. Product

3.1. Product description and application

FITNICE® comes from the way that grape is grown in Galicia and inspired by the widely recognized streets of Barcelona.

FITNICE® collection offers a range of aesthetic and functional flooring solutions. Four collections are featured in the FITNICE® Floor catalogue: Chroma, Memphis, Panama and Wicker.

FITNICE® is a highly technical material, easy to use and practical, with a textile appearance. It is adequate for heavy commercial use and applicable to a wide variety of uses (hotels, offices, schools, museums, etc.).

FITNICE® is manufactured in carpet tiles or rolls or as a wall covering and rugs.

Further information such as product specifications from FITNICE® whole family is available at <http://fitnice.com/> and info@fitnice.com.

According to the use class as defined in EN 1307:2014 the products can be used in all areas which require class 33 or less. Woven vinyl flooring is commonly used in commercial (heavy and light) and residential interiors.

This EPD includes the environmental performance of Chroma, Memphis, Panama and Wicker products since the environmental impact of their life cycle differs less than 10%.

3.2. Content of Materials and Chemical substances

FITNICE® woven vinyl flooring is made of a PES monofilament yarn coated with Phthalate free PVC. The PVC backing laminated with the woven fabric provides a high level of dimensional stability.



Figure 1. FITNICE® detail.

Detailed composition of FITNICE® is proprietary and it can't be published, but it has been used in the Life Cycle Assessment included in this EPD®. There's no variation in the main materials content (according to Table 2), and the differences within FITNICE® product family are related to the finishes. An approximation of main components is as follows for the whole family:

Table 2. FITNICE® Composition.

	COMPONENT	% IN TOTAL WEIGHT
YARN	Vinyl	75% – 91%
	Polyester	9% – 25%
BACKING	PVC	100% vinyl

3.3. Use, Environmental & Health information

The proper use of the described products is not a hazard to water, air and soil. It is inert in its proper use. No damage to health is expected under normal use. FITNICE® is REACH compliant since any substance contained in the product is listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" in a content exceeding 0,1% of the weight of the product), which assures no harmful substances released to the environment or users.

LCA for FITNICE® has been conducted according to EN 15804+A1 and supplemented with health and quality information.

Through this document, it is intended to provide accessible, accurate and comparable information on the environmental and health performance of a finished product, defined by its functional unit. It also determines FITNICE® contribution to the control of health risks and the quality of life inside a building.

Table 3. Assessment of health risks (NF P 01-010 § 7.2) and product's contribution to standards of living inside buildings (NF P 01-010 § 7.3).

		TVOC		
			Emission after 28 days	<90 µg/m ³ according to ISO 16000.
ASSESSMENT OF HEALTH RISKS	Sanitary quality of interior spaces	<i>Other components</i>		
		Formaldehyde	< 3 µg/m ³ according to ISO 16000.	
		Acetaldehyde	< 3 µg/m ³ according to ISO 16000.	
		Toluene	< 2 µg/m ³ according to ISO 16000.	
		Tétrachloroethylene	< 2 µg/m ³ according to ISO 16000.	
		Ethylbenzene	< 2 µg/m ³ according to ISO 16000.	
		Xylene	< 2 µg/m ³ according to ISO 16000.	
		Styrene	< 2 µg/m ³ according to ISO 16000.	
		2-Butoxyethanol	< 2 µg/m ³ according to ISO 16000.	
		Trimethylbenzene	< 2 µg/m ³ according to ISO 16000.	
		1,4-Dichlorobenzene	< 2 µg/m ³ according to ISO 16000.	
		The emission of the tested product FITNICE® Floor corresponds to the emission class A+ of the French regulation on the labeling of product for construction or wall cladding or flooring and paint and varnish on their emissions of volatile pollutants (Arrêté April 2011).		
	Radioactive emissions	Not expected, negligible.		
	Sanitary quality of water	This is not applicable, as the product is not in contact with water used for human consumption, or with runoff water, infiltration water, the water table or surface water.		
QUALITY OF LIFE	Hygrothermal comfort	FITNICE® holds Thermal Resistance properties with a value <0,15 m ² K/W according to EN 12667:2001.		
	Acoustic comfort	FITNICE® holds Sound Insulation properties with a value between 12 – 15 dB according to EN ISO 10140-3:2011.		
	Visual comfort	FITNICE® product range offers colors with a low Reflection coefficient which contributes to visual comfort in the building.		
	Olfactory comfort	Odor emissions have been quantified according to PV 3900 standard, determined as not relevant if used inside a vehicle.		
	Electrostatic discharges	Static Electricity measurement: ≤ 2.0 kV according to EN 1815:1997.		
	Antibacterial activity	Inhibition of bacterial growth according to ASTM E 2180-07(2012). Antifungal activity according to ASTM G21:2013.		

Moreover, FITNICE® holds additional characteristics:

- Phthalate free: Phthalates are plasticizers widely used to get flexibility in PVC products. Some of them—not all—are considered very harmful. Going a step ahead, FITNICE® range is free of Phthalates since 2014.
- Floorscore: FITNICE® Floor holds the prestigious FloorScore® certification for indoor air quality which guarantees low emission level of volatile substances.
- REACH Compliance certified and validated with ISO14001. Also, Health Product Declaration (HPD) is available upon request.
- Antimony free: Antimony compounds are prominent additives for improving fire-retardant properties however they are considered carcinogenic in some countries.

Likewise for Phthalates, Vertisol goes one step ahead in replacing this component from FITNICE® Floor.

- Thermofixed: Warp and weft are welded in order to give more stability to the fabric and prevent fraying.
- Strong Yarn: FITNICE® yarns are made of polyester with completely circular section covered with PVC. Some advantages of this type of spinning are high resistance to abrasion and high dimensional stability of the final product.
- Frayless: The inner polyester core used in PVC yarns is made of a single fiber (monofilament) to avoid fraying edges.

3.4. Reference service life (RSL)

Reference Service Life (RSL) is not indicated in this EPD® as the use stage is not included in the system boundaries.

4. LCA: Calculation rules

4.1. Declared unit

The declared unit for all FITNICE® family products is 1 m² of product packed, leaving the factory for its commercialization and including the transport to customer.

4.2. System boundaries

The scope for the EPD® is “cradle-to-gate” with options (A4 included). Other stages are very dependent on particular scenarios and are better developed for specific building or construction works.

Following PCR 2012-01 V2.01, Product stage modules A1 (Upstream processes); A2 and A3 (Core processes); and A4 (Transport to customer) of a construction product have been included, as follows:

- Module A1) Raw material supply considers the supply of raw materials and energy for the manufacturing of the product.
- Module A2) Transportation includes external transport of materials to the factory.
- Module A3) Manufacturing refers to processes for the manufacturing, assembling and packaging of the product. Ancillary products and packaging materials were included, as well as recycling processes at the factory, and treatment of waste generated from the manufacturing processes.
- Module A4) includes transport to customer.

The table below describes the scope of the inventory performed in the LCA according to PCR 2012:01 version 2.1 Construction products and construction services.

Table 4. Scope of the inventory according to PCR 2012:01 version 2.1 Construction products and construction services.

Product stage			Construction process stage		Use stage							End of stage				Resource recovery stage	
Raw materials	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	
																	A1
X	X	X	X	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD

X: Module accounted for

MND: Module not determined

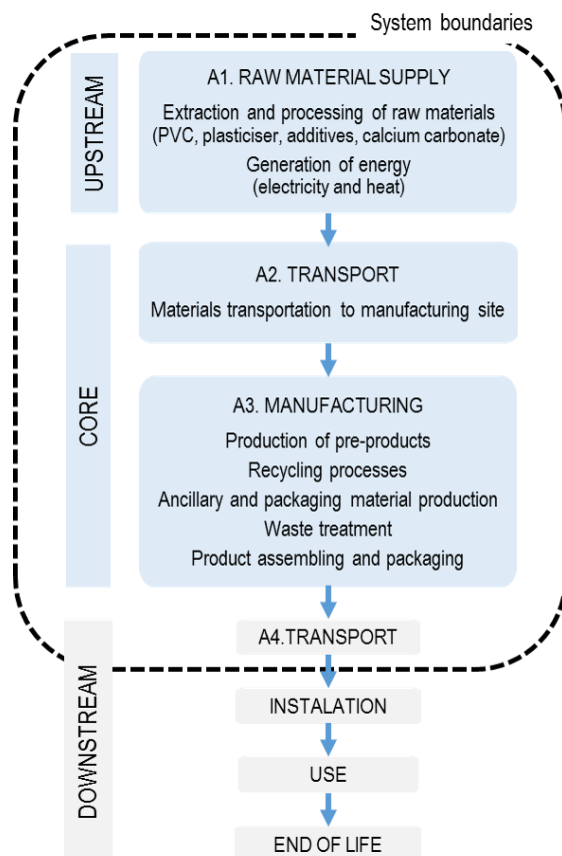


Figure 2. Flow diagram with system boundaries, stages and processes for the production of 1m² of FITNICE® floor covering.

4.3. Geographical boundaries

Primary inventory data were provided by the manufacturer and are representative of the manufacturing processes of the product.

4.4. Period under review

Data gathered from the companies engaged in the study refer to the production in 2015.

4.5. Data quality

The data quality in the LCA followed the requirements in the referenced PCR document. Primary data collection were provided by the manufacturer, including all relevant foreground processes and flows, and were specific for the production sites. Secondary data were selected accordingly for background processes, with technological, geographical and temporary representativeness.

4.6. Secondary data

Secondary data for the environmental analysis were obtained from the ecoinvent database 3.3 (Wernet et al., 2016). The most similar processes to the ones in the production system were selected to model the production system.

The electricity production mix was specific for each manufacturing stage, according to the information provided by the manufacturer, the electricity mix of the distributor and the electricity mix in the country (REE, 2015).

The highest electricity consumption was for the manufacturing of woven yarn. The electricity production mix for each manufacturing process stage is presented in Figure 3. Global warming potential for the different electricity production mix (high voltage) at three stages were 0.459 kg CO₂ eq./kWh, 0.261 kg CO₂ eq./kWh and 0.260 kg CO₂ eq./kWh respectively.

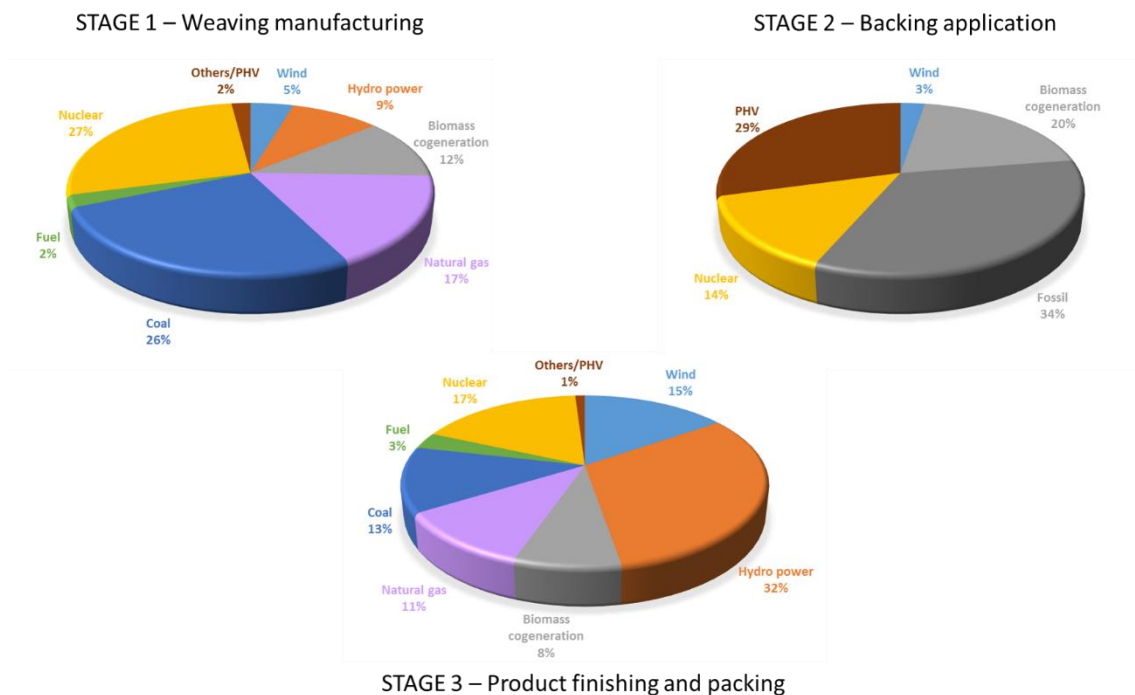


Figure 3. Electricity production mix in different stages.

In accordance with PCR, generic data were used for those chemicals for which environmental data were not available. The equivalent amounts of generic organic chemicals were used for stabilizers, filters and plasticizers; and the equivalent amount of generic inorganic chemical was used in substitution of smoke suppressant.

4.7. Cut-off rules

The inventory was developed considering all available data from the manufacturing processes, covering all raw materials use and energy consumption. Therefore, it can be assumed that neglected data were less than 5% of total mass and energy inflows in the upstream and core processes.

4.8. Allocations

The product manufacturing produced only this product. All materials and energy consumption, as well as waste generated, were allocated to this only product.

4.9. Environmental assessment methods

The indicators and impact categories selected for the environmental assessment were those indicated in PCR 2012:01 version 2.1 *PCR 2012:01 version 2.1 Construction products and construction services*, using the environmental assessment methods CML-IA baseline version 4.1 and EDIP.

The SimaPro program version 8.3 has been used for the environmental assessment, with ecoinvent v3.3 LCA database.

4.10. Comparability

The environmental performance of the product is comparable with the environmental performance of other similar products that has been calculated according to the construction products EN 15804+A1 standard and within the same environmental program.

EPD® of construction products may not be comparable if they do not comply with EN 15804.

Environmental product declarations within the same product category from different programs may not be comparable.

5. Environmental performance-related information

The environmental performance for the production of 1 m² of FITNICE® family products is represented by Wicker and is presented in the following tables.

5.1. Potential environmental impact

Table 5. Potential environmental impact results.

Impact category	Acronym	Unit	TOTAL	UPSTREAM PROCESSES	CORE PROCESSES		DOWNSTREAM PROCESSES
				Module A1 RAW MATERIALS	Module A2 TRANSPORTS	Module A3 MANUFACTURING	Module A4 TRANSPORT
Global warming potential, (GW100a)	GWP	kg CO ₂ eq	9,03E+00	7,69E+00	1,04E+00	1,57E-02	2,79E-01
Ozone layer depletion potential	ODP	kg CFC-11 eq	7,30E-07	4,72E-07	2,00E-07	-2,47E-10	5,83E-08
Acidification potential	AP	kg SO ₂ eq	3,47E-02	3,14E-02	2,56E-03	7,73E-05	7,20E-04
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	7,26E-03	6,57E-03	5,23E-04	1,55E-05	1,44E-04
Photochemical oxidation potential	POP	kg C ₂ H ₄ eq	2,24E-03	2,03E-03	1,62E-04	5,68E-06	4,37E-05
Abiotic depletion potential (elements)	ADPe	kg Sb eq	1,23E-05	8,70E-06	3,00E-06	6,62E-08	5,66E-07
Abiotic depletion potential (fossil fuels)	ADPf	MJ	1,89E+02	1,66E+02	1,70E+01	4,31E-01	4,88E+00

5.2. Use of resources

Table 6. Use of resources results.

Impact category	Unit	TOTAL	UPSTREAM PROCESSES	CORE PROCESSES		DOWNSTREAM PROCESSES
			Module A1 RAW MATERIALS	Module A2 TRANSPORTS	Module A3 MANUFACTURING	Module A4 TRANSPORT
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	1,07E+01	1,01E+01	2,36E-01	2,76E-01	7,53E-02
Use of renewable primary energy resources used as raw materials	MJ	6,64E+01	6,64E+01	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	7,71E+01	7,65E+01	2,36E-01	2,76E-01	7,53E-02
Use of non- renewable primary energy excluding non- renewable primary energy resources used as raw materials	MJ	1,89E+02	1,66E+02	1,70E+01	4,31E-01	4,88E+00
Use of non- renewable primary energy resources used as raw materials	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	1,89E+02	1,66E+02	1,70E+01	4,31E-01	4,88E+00
Use of secondary material	kg	9,20E-02	0,00E+00	0,00E+00	9,20E-02	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	5,10E-02	4,66E-02	3,27E-03	-1,81E-05	1,11E-03
Direct use of water in the core process	m ³	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

5.3. Other indicators describing waste categories

Table 7. Other indicators results.

Impact category	Unit	TOTAL	UPSTREAM PROCESSES	CORE PROCESSES		DOWNSTREAM PROCESSES
			Module A1 RAW MATERIALS	Module A2 TRANSPORTS	Module A3 MANUFACTURING	Module A4 TRANSPORT
Non-hazardous waste	Kg	1,02E+00	3,64E-01	9,16E-01	-6,73E-01	4,09E-01
Hazardous waste	Kg	1,42E-04	1,31E-04	9,04E-06	1,93E-07	2,29E-06
Radioactive waste	kg	4,50E-04	3,01E-04	1,16E-04	-1,16E-07	3,41E-05
Components for re-use	kg	9,95E-04	0,00E+00	9,95E-04	0,00E+00	0,00E+00
Materials for recycling	kg	3,62E-02	0,00E+00	0,00E+00	3,62E-02	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy (electricity)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy (electricity)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

6. Interpretation of results

The current EPD® represents FITNICE®-Wicker and it is also representative for¹: Chroma, Panama and Memphis. Results from the LCA for FITNICE® family products showed that Module A1-Raw materials made the highest contributions to all impact categories selected, with contributions between 65% and 91% of impact category total impact. Module A2-Transport was the second contributor and made impacts between 7% and 27% of total impacts. Module A3-Manufacturing made negligible impacts, being the highest for Abiotic depletion potential 0.5% of impact category total impact. Module A4-Transport from factory to customer made contributions to impact categories total impact between 2% and 8%, being the highest impacts to Ozone layer depletion potential. In Module A1, raw materials contributions were between 43% and 85%, and energy resources contributions were between 15% and 57%. In Module A2-Transport, the product material transport to the factory made most of the impacts to all impact categories (between 99.4% and 99.6%), meanwhile packaging transport was a negligible impact (between 0.4% and 0.6%).

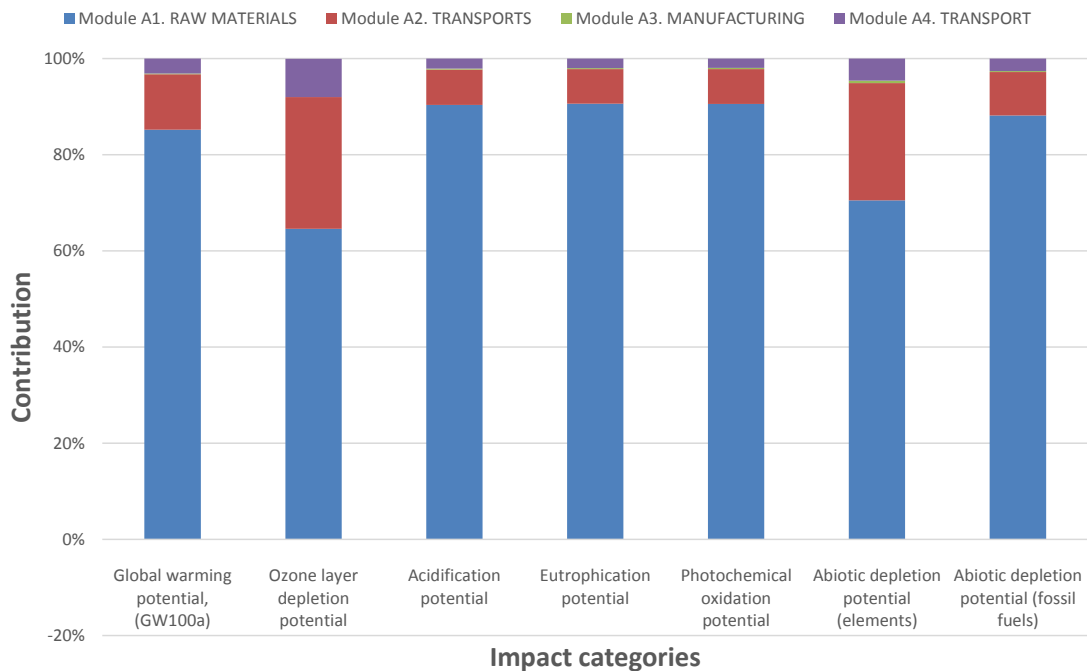


Figure 4. Relative module contribution to impact categories.

¹ Products with a variation in their impacts lower than 10% compared with FITNICE® Wicker

7. References

The underlying LCA

ISO 14040:2006. Environmental management -- Life cycle assessment -- Principles and framework

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

ISO 14025:2006. Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures

EN 15804:2012+A1:2013 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

Complément national à la NF EN 15804+A1: Contribution des ouvrages de construction au développement durable - Déclarations environnementales sur les produits - Règles régissant les catégories de produits de construction (2016)

PCR 2012:01 version 2.1, Construction products and construction services, valid until 2019-03-03. The International EPD® System.

General Programme Instructions for the International EPD® System, version 2.5.

Central Product Classification (CPC) v 2.1 of the UN's Statistical Division. 2015. <http://unstats.un.org/unsd/cr/registry/cpc-21.asp>

REE. Red Eléctrica de España. <http://www.ree.es/es/>

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: <<http://link.springer.com/10.1007/s11367-016-1087-8>> [Accessed 23 03 2017].