

# ENVIRONMENTAL PRODUCT DECLARATION

AS PER NF EN ISO 14025, NF EN 15804+A1 AND NF EN 15804/CN



**FIBROFOR GREEN**  
Contec Fiber AG



# INTRODUCTION

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## GENERALITIES

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The information contained in this declaration is given under the responsibility of the declarer. Any use of the information thus provided, whether in full or in part, must always at least be accompanied by the full reference of the original declaration: "Producer, Full title, Publication date". For any further information concerning the drawing up of this EPD or the products it covers, please contact the declarer.

This document is an Environmental product declaration for a building material drawn up in compliance with the NF EN ISO 14025 (August 2010) standard. This EPD is supplemented by additional information in compliance with the NF EN 15804+A1 (April 2014) standard and French legal requirements on EPDs.

## ABBREVIATIONS USED IN THE DOCUMENT

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LCA	Life Cycle Assessment
EPD	Environmental Product Declaration
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
MNA	Module Not Assessed
PCR	Product Category Rule

## UNITS OF MEASURE USED IN THE DOCUMENT

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MJ	Megajoule (unit of energy)
kWh	Kilowatt-hour (unit of energy)
kg	Kilogram (unit of weight)
g	Gram (unit of weight)
m	Metre (unit of length)
mm	Millimetre (unit of length)
m <sup>2</sup>	Square metre (unit of area)
m <sup>3</sup>	Cubic metre (unit of volume)

## RESULT DISPLAY FORMAT

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The LCIA results are displayed in scientific format with three significant digits: 1.23E+02 reads 1.23x10<sup>2</sup>.

## PRECAUTIONS WHEN USING THE EPD TO COMPARE PRODUCTS

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EPDs for building materials may not be comparable if they do not comply with NF EN 15804+A1, are not drawn up on the same harmonised scientific basis, do not cover the same functional units, are not based on the use of the products and their impacts on the building, and do not take into account the complete life cycle (all information modules).

## 1. GENERAL INFORMATION

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<b>Declarer</b>	Contec Fiber AG Via Innovativa 21, CH 7013 Domat/Ems- Switzerland
<b>Production</b>	Esteanza 26 rue Mège 83220 Le Pradet - France
<b>Type of LCA</b>	"Cradle-to-gate"
<b>Products covered</b>	The products covered by this EPD are Fibrofor Green kenaf fibres manufactured by Contec Fiber and available from Viersen, Germany.
<b>Declared impacts</b>	The declared impacts are those of Fibrofor Green kenaf fibres.

## 2. FUNCTIONAL UNIT AND TYPICAL PRODUCT DESCRIPTION

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<b>Declared unit</b>	Composed of 1 kg of packed kenaf fibre, available from Viersen, Germany, ready to be shipped to the customer. This choice of declared unit makes it easy to multiply the environmental results by the amount of fibre corresponding to a specific application.
<b>Technical specifications not included in the functional unit</b>	Crack prevention in concrete (recommended use)
<b>Unit</b>	kg
<b>Typical product description</b>	<p>The typical product subject of this EPD is a natural kenaf fibre. Kenaf fibre, commonly known as kenaf, comes from kenaf bark. The product comes in the form of multi filaments of this natural bio-sourced fibre. The fibres are about ten millimetres long and have a unit diameter of 20 to 250 µm.</p> <p>Once assembled, the fibres form this multi filament of a density equal to 200kg/m<sup>3</sup></p>
<b>Description of use</b>	- Green Fibre can be included to eliminate plastic shrinkage from cement-based formulations. Green Fibre is used for the production of concrete floors, precast elements, screeds, stucco, shotcrete and renders. The recommended dosage is 300 to 600 g/m <sup>3</sup> depending on the materials and applications.
<b>Main constituents</b>	Kenaf fibre Water (moisture in the fibres) Co-polymerisation products Kenaf oil
<b>Declaration of content</b>	The typical product does not contain more than 0.1% by weight of substances classified as substances of very high concern (SVHC) according to the candidate list provided by Annex XIV of the REACH Regulation.

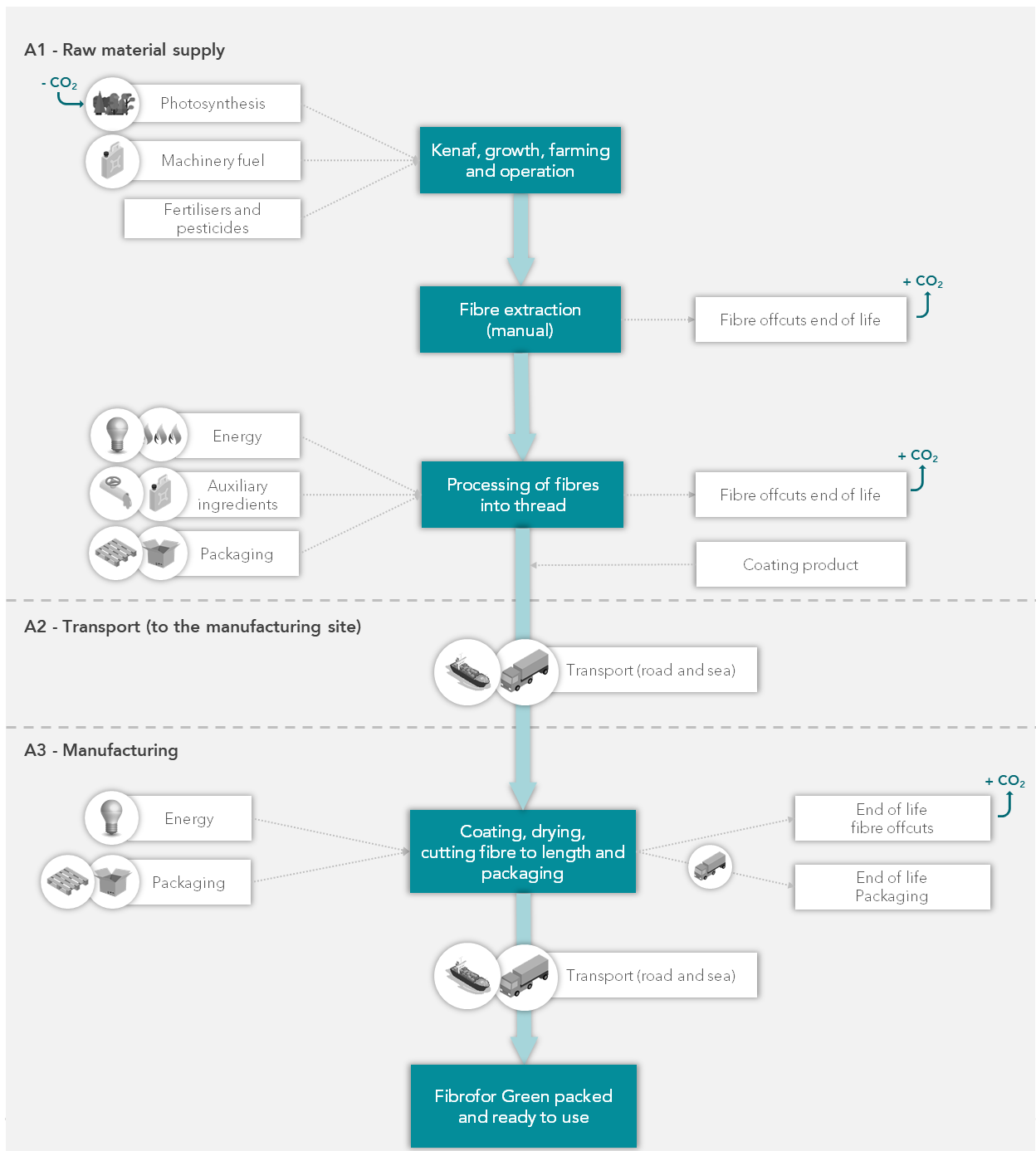
## DETAILS OF THE MAIN CONSTITUENTS FOR THE REFERENCE PRODUCT

Main constituents	Materials	Weight for the reference product
<b>Green Fibre</b>		<b>1.00 kg</b>
Of which kenaf fibre	Fibre	0.980 kg
Of which co-polymerisation products		0.012 kg
Of which jute oil	Oil	0.008 kg
<b>Packaging</b>		<b>0.53 kg</b>
Of which paper bag	Paper	0.43 kg
Of which cardboard	Cardboard	0.09 kg
Of which plastic pallet	PP	0.01 kg

## EXPLANATIONS COVERING THE REFERENCE SERVICE LIFE (RSL)

Parameter	Value
Reference service life duration	Not concerned
Declared product properties (ex works) and finishes	Products leaving the plant are finished and ready-to-use
Design parameters (if specified by the manufacturer), including references to appropriate practices	
Quality implementation according to the manufacturer's instructions	Not concerned
Outdoor environment (for outdoor applications), for example: bad weather, pollutants, UV and wind exposure, building orientation, shade, temperature	Not concerned
Indoor environment (for indoor applications), for example: temperature, humidity, exposure to chemicals	Not concerned
Conditions of use, for example: frequency of use, mechanical exposure	Not concerned
Maintenance, for example: required frequency, type and quality of replaceable components	Not concerned

### 3. STEPS, SCENARIOS AND ADDITIONAL INFORMATION



#### A1 - RAW MATERIAL SUPPLY

- Soil preparation (ploughing, harrowing...), kenaf planting, kenaf growth, use of fertilisers (N, P, K, lime), pesticides, water, as well as windrowing and bundling. The processes especially include carbon dioxide capture and material renewable energy by photosynthesis, and the production and combustion of fuels for kenaf growing machinery.
- Transport of the kenaf (fibres, chaff and seeds) from the harvest location to the fibre extraction location.
- Fibre extraction process carried out entirely manually: from retting to fibre extraction, rinsing and sun drying before batching.

- Transport of the kenaf fibres from the fibre extraction location to the company processing the fibres into kenaf threads.
- Sorting according to quality, fibre softening, bundling, carding and drawing of the fibres before batching. The processes include electricity consumption as well as machine lubricant consumption.
- End of life of kenaf fibre off-cuts generated during the fibre extraction process and the processing of the fibres into kenaf threads. This includes all processes related to their processing up to the waste exit status.
- Extraction of raw materials and production of kenaf fibre packaging (pallet, paper, cardboard, plastic film and plastic strap). The processes are included up to the exit gate from the packaging production site.
- Availability of co-polymerisation products for fibre coating.

## A2 - TRANSPORT TO THE MANUFACTURING SITE

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- Transport of the packed kenaf fibres between their production site and the manufacturing site in South Korea. The processes especially include the production and combustion of the fuel consumed by the ships and trucks.
- Transport of fibre coating co-polymerisation products from their production site and the manufacturing site in South Korea. The processes especially include the production and combustion of the fuel consumed by the trucks.

## A3 - MANUFACTURING

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- Provision of electricity for fibre coating, drying, fibre cutting, sorting and packaging (raw material extraction, production, transport).
- Extraction of raw materials and production of Fibrofor Green packaging (plastic pallet, cardboard, paper and water-soluble bags). The processes are included up to the exit gate from the packaging production site.
- End of life of the kenaf fibre waste generated during the Fibrofor Green production process. This includes all processing-related processes up to the waste exit status.
- End of life of recyclable kenaf thread packaging (wooden pallets). Includes all packaging waste transport and processing related processes to the waste exit status (before recycling). "Materials for Recycling" flows are declared.
- End of life of non-recyclable kenaf thread packaging (paper, cardboard, strapping and plastic film). This includes all processes related to the transport of packaging waste and its processing until complete elimination (landfill or incineration). "Exported energy" flows are declared for the incinerated part.
- Transport of the packed Fibrofor Green from the manufacturing site to Viersen, Germany. The processes especially include the production and combustion of the fuel consumed by the ships and trucks.

## 4. LIFE CYCLE ASSESSMENT METHODOLOGY

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<b>PCR used</b>	NF EN 15804+A1 standard "Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products", accompanied by its national supplement NF EN 15804/CN.
<b>System Boundaries</b>	<p>The system boundaries have been set in compliance with the EN 15804+A1 standard, in particular concerning the "modularity" rules (processes are allocated to the module in which they take place) and "polluter pays" rules (waste treatment processes are allocated to the processes that generate the waste).</p> <p>The processes included in each life cycle step are summarised in the life cycle diagram and the paragraphs in section 3.</p> <p>By convention, the following processes have been considered outside the boundaries:</p> <ul style="list-style-type: none"><li>▪ For step A1: production site lighting</li><li>▪ For step A2: employee transport</li><li>▪ For all the steps: manufacturing and heavy maintenance of the production tool and transport systems (trucks, roads, electricity pylons, buildings and heavy equipment on the manufacturing site, etc.). However, some generic data used for this work has been included with the infrastructure contributions.</li></ul>
<b>Cut-off rule</b>	<p>The cut-off rules set out in EN 15804+A1 have been complied with (1% per process, 5% per module, in terms of weight and primary energy consumption). The unreported flows for this EPD are as follows:</p> <ul style="list-style-type: none"><li>▪ Provision of kenaf oil</li><li>▪ Provision of sodium salt</li></ul>
<b>Assignments</b>	<p>The co-product allocation rules defined by the EN 15804+A1 standard have been complied with:</p> <ul style="list-style-type: none"><li>▪ Allocation avoided as much as possible;</li><li>▪ Allocation based on physical properties (e.g. weight, volume) when the difference in revenue generated by co-products is small;</li><li>▪ In all other cases, allocation based on economic values;</li><li>▪ Flows of materials with specific inherent properties, e.g. energy content, elemental composition (for example biogenic carbon content), always allocated to reflect the physical flows, regardless of the selected allocation for the process.</li></ul>
<b>Representativeness</b>	<p>Most of the generic LCI data used is taken from the Ecoinvent V3.5 "allocation, cut-off by classification", database which was last updated in August 2018. It corresponds to processes taking place in the countries concerned or around the world, the most precise data having been given priority, and adjustments having been made if necessary.</p>
<b>Result variability</b>	<p>Calculations were carried out on all sensitive parameters related to the manufacture of Green Fibre covered by this EPD in order to assess result variability for the following control indicators:</p> <ul style="list-style-type: none"><li>• Global warming</li><li>• Non-renewable primary energy technique</li><li>• Non-hazardous waste</li></ul> <p>The results of these calculations show that all products covered have indicators less than 1.4 times the declared value.</p>

## 5. LIFE CYCLE IMPACT ASSESSMENT RESULTS

TABLE 1 - PARAMETERS DESCRIBING ENVIRONMENTAL IMPACTS










	A1-A3 - Production step			A4-A5 - Implementation step		B - Use step							C - End of life step				D - Benefits and burdens beyond system boundaries
	A1 - Raw material supply	A2 - Transport	A3 - Production	A4 - Transport	A5 - Construction-installation process	B1 - Use	B2 - Maintenance	B3 - Repair	B4 - Replacement	B5 - Rehabilitation	B6 - Energy use	B7 - Water Use	C1 - Demolition-deconstruction	C2 - Transport	C3 - Waste processing	C4 - Waste elimination	
 <b>Global warming</b> in eq. kg CO <sub>2</sub> /FU	6.75E-01	1.06E-01	1.03E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Ozone layer depletion</b> in eq. kg CFC 11 /FU	3.20E-07	1.83E-08	1.10E-07	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Soil and water acidification</b> in eq. kg SO <sub>2</sub> /FU	8.62E-03	1.24E-03	8.50E-03	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Eutrophication</b> in eq. kg PO <sub>4</sub> <sup>3-</sup> /FU	1.16E-03	1.15E-04	1.30E-03	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Photochemical ozone formation</b> in eq. kg Ethene/FU	4.18E-04	5.03E-05	3.60E-04	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Abiotic resource depletion - elements</b> in eq. kg Sb /FU	3.37E-06	1.93E-07	1.37E-06	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Abiotic resource depletion - fossil fuels</b> in MJ PCI /FU	3.89E+01	1.59E+00	1.72E+01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Air Pollution</b> in m <sup>3</sup> /FU	1.15E+02	1.29E+01	1.34E+02	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Water pollution</b> in m <sup>3</sup> /FU	4.70E-01	1.99E-01	1.05E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA



TABLE 2 - PARAMETERS DESCRIBING THE USE OF PRIMARY ENERGY RESOURCES







	A1-A3 - Production step			A4-A5 - Implementation step		B - Use step							C - End of life step				D - Benefits and burdens beyond system boundaries
	A1 - Raw material supply	A2 - Transport	A3 - Production	A4 - Transport	A5 - Construction-installation process	B1 - Use	B2 - Maintenance	B3 - Repair	B4 - Replacement	B5 - Rehabilitation	B6 - Energy use	B7 - Water Use	C1 - Demolition-deconstruction	C2 - Transport	C3 - Waste processing	C4 - Waste elimination	
 <b>procédé</b> Use of renewable primary energy, excluding renewable primary energy resources used as raw materials in MJ /FU	4.96E-01	2.58E-02	5.49E-01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>matière</b> Use of renewable primary energy resources as raw materials in MJ /FU	1.56E+01	0.00E+00	1.80E+01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>total</b> Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) in MJ /FU	1.61E+01	2.58E-02	1.85E+01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>procédé</b> Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials in MJ /FU	3.89E+01	1.62E+00	1.85E+01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>matière</b> Use of non-renewable primary energy resources as raw materials in MJ /FU	3.64E-01	0.00E+00	5.01E-01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>total</b> Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) in MJ /FU	3.93E+01	1.62E+00	1.90E+01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

TABLE 3 - PARAMETERS DESCRIBING THE USE OF SECONDARY MATERIALS AND ENERGY RESOURCES AND WATER USE





	A1-A3 - Production step			A4-A5 - Implementation step		B - Use step							C - End of life step				D - Benefits and burdens beyond system boundaries
	A1 - Raw material supply	A2 - Transport	A3 - Production	A4 - Transport	A5 - Construction-installation process	B1 - Use	B2 - Maintenance	B3 - Repair	B4 - Replacement	B5 - Rehabilitation	B6 - Energy use	B7 - Water Use	C1 - Demolition-deconstruction	C2 - Transport	C3 - Waste processing	C4 - Waste elimination	
 <b>Use of secondary material</b> in MJ /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Use of renewable secondary fuels</b> in MJ /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Use of non-renewable secondary fuels</b> in MJ /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Net fresh water use</b> in m <sup>3</sup> /FU	7.81E-03	2.43E-04	1.63E-02	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

TABLE 4 - OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES










	A1-A3 - Production step			A4-A5 - Implementation step		B - Use step							C - End of life step				D - Benefits and burdens beyond system boundaries
	A1 - Raw material supply	A2 - Transport	A3 - Production	A4 - Transport	A5 - Construction-installation process	B1 - Use	B2 - Maintenance	B3 - Repair	B4 - Replacement	B5 - Rehabilitation	B6 - Energy use	B7 - Water Use	C1 - Demolition-deconstruction	C2 - Transport	C3 - Waste processing	C4 - Waste elimination	
 <b>Eliminated hazardous waste</b> in kg /FU	1.52E-01	1.23E-03	4.46E-02	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Eliminated non-hazardous waste</b> in kg /FU	2.62E-01	5.57E-02	5.52E-01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Eliminated radioactive waste</b> in kg /FU	8.05E-05	1.05E-05	7.82E-05	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

TABLE 5 - ADDITIONAL ENVIRONMENTAL INFORMATION DESCRIBING OUTFLOWS

	A1-A3 - Production step			A4-A5 - Implementation step		B - Use step							C - End of life step				D - Benefits and burdens beyond system boundaries
	A1 - Raw material supply	A2 - Transport	A3 - Production	A4 - Transport	A5 - Construction-installation process	B1 - Use	B2 - Maintenance	B3 - Repair	B4 - Replacement	B5 - Rehabilitation	B6 - Energy use	B7 - Water Use	C1 - Demolition-deconstruction	C2 - Transport	C3 - Waste processing	C4 - Waste elimination	
 <b>Components for reuse</b> in kg /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Materials for recycling</b> in kg /FU	0.00E+00	0.00E+00	1.72E-02	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Materials for energy recovery</b> in kg /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Externally supplied energy - electricity</b> in MJ /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Externally supplied energy - steam</b> in MJ /FU	0.00E+00	0.00E+00	1.86E-01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA
 <b>Externally supplied energy - gas</b> in MJ /FU	0.00E+00	0.00E+00	0.00E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

**TABLE 6 - SUMMARY OF ENVIRONMENTAL PARAMETERS AND INFORMATION (INDICATOR OF EN 15804)**

Parameter/information	Unit	TOTAL Production step	TOTAL Implementation step	TOTAL Use step	TOTAL End of Life step	TOTAL A1-A3	Module D
<b>■ Environmental Impacts</b>							
Global warming	eq. kg CO <sub>2</sub> /FU	1.81E+00	MNA	MNA	MNA	1.81E+00	MNA
Ozone layer depletion	eq. kg CFC 11 /FU	4.48E-07	MNA	MNA	MNA	4.48E-07	MNA
Soil and water acidification	eq. kg SO <sub>2</sub> /FU	1.84E-02	MNA	MNA	MNA	1.84E-02	MNA
Eutrophication	eq. kg PO <sub>4</sub> <sup>3-</sup> /FU	2.57E-03	MNA	MNA	MNA	2.57E-03	MNA
Photochemical ozone formation	eq. kg Ethene/FU	8.28E-04	MNA	MNA	MNA	8.28E-04	MNA
Abiotic resource depletion - elements	eq. kg Sb /FU	4.93E-06	MNA	MNA	MNA	4.93E-06	MNA
Abiotic resource depletion - fossil fuels	MJ PCI /FU	5.77E+01	MNA	MNA	MNA	5.77E+01	MNA
Air Pollution	m <sup>3</sup> /FU	2.62E+02	MNA	MNA	MNA	2.62E+02	MNA
Water pollution	m <sup>3</sup> /FU	1.72E+00	MNA	MNA	MNA	1.72E+00	MNA
<b>■ Use of primary energy resources</b>							
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ/FU	1.07E+00	MNA	MNA	MNA	1.07E+00	MNA
Use of renewable primary energy resources as raw materials	MJ/FU	3.36E+01	MNA	MNA	MNA	3.36E+01	MNA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ/FU	3.47E+01	MNA	MNA	MNA	3.47E+01	MNA
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ/FU	5.91E+01	MNA	MNA	MNA	5.91E+01	MNA
Use of non-renewable primary energy resources as raw materials	MJ/FU	8.65E-01	MNA	MNA	MNA	8.65E-01	MNA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ/FU	5.99E+01	MNA	MNA	MNA	5.99E+01	MNA
<b>■ Use of secondary resources and water</b>							
Use of secondary material	kg/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA
Use of renewable secondary fuels	MJ/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA
Use of non-renewable secondary fuels	MJ/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA
Net fresh water use	m <sup>3</sup> /FU	2.43E-02	MNA	MNA	MNA	2.43E-02	MNA
<b>■ Waste categories</b>							
Eliminated hazardous waste	kg/FU	1.98E-01	MNA	MNA	MNA	1.98E-01	MNA
Eliminated non-hazardous waste	kg/FU	8.69E-01	MNA	MNA	MNA	8.69E-01	MNA
Eliminated radioactive waste	kg/FU	1.69E-04	MNA	MNA	MNA	1.69E-04	MNA
<b>■ Outgoing flows</b>							
Components for reuse	kg/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA
Materials for recycling	kg/FU	1.72E-02	MNA	MNA	MNA	1.72E-02	MNA
Materials for energy recovery	kg/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA
Externally supplied energy - electricity	MJ/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA
Externally supplied energy - steam	MJ/FU	1.86E-01	MNA	MNA	MNA	1.86E-01	MNA
Externally supplied energy - gas	MJ/FU	0.00E+00	MNA	MNA	MNA	0.00E+00	MNA

**TABLE 7 - SUMMARY OF ENVIRONMENTAL PARAMETERS AND INFORMATION  
(EXTRA INDICATORS OUT OF EN 15804)**

Parameter/information	Unit	TOTAL Productio n step	TOTAL Implement ation step	TOTAL Use step	TOTAL End of Life step	TOTAL A1-A3	Module D
<b>■ Indicators out of EN 15804</b>							
Human toxicity	kg eq.1,4-DB-/UF	9,73E-02	MNA	MNA	MNA	9,73E-02	MNA
Photochemical oxidant formation	kg eq. NMVOC-/UF	1,25E-02	MNA	MNA	MNA	1,25E-02	MNA
Particulate matter formation	kg eq.PM10-/UF	6,60E-03	MNA	MNA	MNA	6,60E-03	MNA
Ionizing radiation	kg eq.U235-/UF	1,25E-01	MNA	MNA	MNA	1,25E-01	MNA
Freshwater eutrophication	kg eq. P-/UF	7,84E-04	MNA	MNA	MNA	7,84E-04	MNA
Marine eutrophication	kg eq. N-/UF	9,45E-04	MNA	MNA	MNA	9,45E-04	MNA
Terrestrial ecotoxicity	kg eq.1,4-DB-/UF	1,00E-03	MNA	MNA	MNA	1,00E-03	MNA
Freshwater ecotoxicity	kg eq.1,4-DB-/UF	2,85E-02	MNA	MNA	MNA	2,85E-02	MNA
Marine ecotoxicity	kg eq.1,4-DB-/UF	1,80E-02	MNA	MNA	MNA	1,80E-02	MNA
Land use	m <sup>2</sup> a/UF	3,44E+00	MNA	MNA	MNA	3,44E+00	MNA
Environmental Cost Indicator (ECI)	€/UF	2,01E-01	MNA	MNA	MNA	2,01E-01	MNA

## 6. ADDITIONAL INFORMATION ON THE RELEASE OF HAZARDOUS SUBSTANCES INTO INDOOR AIR, SOIL AND WATER DURING THE USE STEP

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### INDOOR AIR EMISSIONS

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The studied products do not fall within the scope of French decree No. 2011-321 of 23 March 2011 on the labelling of construction products or wall or floor coverings and paints and varnishes on their emissions of volatile pollutants (see the indicative list of 26 January 2016 issued by the French Ministry of Ecology, Sustainable Development and Energy and the Ministry of Housing, Equality of Territories and Rural Areas).

No tests concerning the health quality of the interior spaces have been carried out.

### EMISSIONS IN SOIL AND WATER

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No tests for emissions in soil and water were carried out.

## 7. CONTRIBUTION OF THE PRODUCT TO THE ASSESSMENT OF HEALTH RISKS AND QUALITY OF LIFE INSIDE BUILDINGS

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In addition to the information required by the NF EN 15804+A1 standard presented in section 6 of this EPD, information concerning health and quality of life aspects is presented below in the format required by the NF EN 15804/CN national supplement.

### PRODUCT SPECIFICATIONS CONTRIBUTING TO THE CREATION OF HEAT AND HUMIDITY COMFORT CONDITIONS IN BUILDINGS

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The products covered by this EPD do not claim any performance regarding heat and humidity comfort.

### PRODUCT SPECIFICATIONS CONTRIBUTING TO THE CREATION OF ACOUSTIC COMFORT CONDITIONS IN THE BUILDING

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The products covered by this EPD do not claim any performance regarding acoustic comfort.

### PRODUCT SPECIFICATIONS THAT CONTRIBUTE TO CREATING THE CONDITIONS FOR VISUAL COMFORT IN THE BUILDING

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The products covered by this EPD do not claim any performance regarding visual comfort.

### PRODUCT SPECIFICATIONS CONTRIBUTING TO THE CREATION OF OLFACTORY COMFORT CONDITIONS IN BUILDINGS

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The products covered by this EPD do not claim any performance regarding olfactory comfort.