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## ENVIRONMENTAL AND HEALTH PRODUCT DECLARATION SHEET

### BIII Glazed Earthenware Tile

Product environmental declaration in accordance with NF EN ISO 14025, NF EN 15804+A1 and its national supplement NF EN 15804/CN



Declaration Owner: Newker  
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## Content

Disclaimer.....	3
Reading guide .....	3
Precaution for using the FDES for product comparison.....	4
1 General information.....	5
1.1 Statement scope .....	6
1.2 Company information .....	6
2 Description of the product.....	7
2.1 Functional unit .....	7
2.2 Product description .....	7
2.3 Intended use of the product .....	7
2.4 Technical characteristics of the product .....	8
2.5 Description of main components and/or materials .....	8
2.6 Description of the Reference Service Life .....	9
3 System limits: LCA Stages.....	10
3.1 Production Stage (A1-A3) .....	11
3.2 Construction Stage (A4-A5).....	11
3.3 Use Stage (B1-B7).....	13
3.4 End of Life (C1-C4) .....	13
3.5 Module D: Benefits and burdens across system boundaries.....	14
4 Calculation rules for the Life Cycle Analysis.....	15
5 Results of the Life Cycle Analysis .....	17
5.1 Newker BIII ceramic tiles with destination France .....	18
5.2 Results interpretation .....	20
6 Contribution of the product to the health risk assessment and quality of life Inside buildings .....	21
6.1 Contribution of the product to the health risk assessment.....	21
6.2 Contribution of the product to the quality of life.....	22
7 Other environmental information .....	23
7.1 Newker BIII ceramic tiles with destination Spain .....	23
8 References.....	26

## Disclaimer

The information contained in this declaration is provided under the responsibility of NEWKER (producer and owner of the FDES) according to standard NF EN 15804+A1 and its national supplement NF EN 15804/CN.

Any use, total or partial, of the information provided by this document must at least be accompanied by the complete reference to the original FDES as well as the supplier who can provide a complete copy.

It is important to remember that the results of the study are based solely on facts, circumstances and assumptions that were submitted during the study. If these facts, circumstances and assumptions differ, the results may change.

In addition, the results of the study should be considered as a whole, with regard to the hypotheses, and not taken in isolation. The CEN standard EN 15804+A1 serves as the Product Category Definition Rule (PCR).

## Reading guide

The display of inventory data complies with the requirements of standard NF EN 15804+A1.

The results of the indicators are presented in scientific format with 3 significant digits including 2 digits after the decimal point.

The units used in the tables are:

- Kilogram « kg »,
- Gram « g »,
- Cubic meters « m<sup>3</sup> »,
- Kilowatt hour « kWh »,
- Megajoule « MJ ».

Abbreviations:

- LCA: Life Cycle Analysis
- RSL: Reference Service Life
- FU: Functional Unit
- LHV: Lower Heat Value
- EPD: Environmental Product Declaration
- PE: Polyethylene
- PES: Polyester

## Precaution for using the FDES for product comparison

The EPD of construction products may not be comparable if they do not comply with standard NF EN 15804 + A1.

Standard NF EN 15804 + A1 defined in § 5.3 Comparability of EPDs<sup>1</sup> for construction products, establishes the conditions under which construction products can be compared, on the basis of information provided by the EPD.





“A comparison of the environmental performance of construction products using EPD information must be based on the use of the products and their impacts on the building, and must take into account the entire life cycle (all modules of information)”.

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<sup>1</sup> “The literal French translation of EPD (Environmental Product Declaration) is DEP (Déclaration Environnementale de Produit). However, in France, the term FDES (Environmental and Health Declaration Sheet) is commonly used, which includes both the Environmental Declaration and Health information for the product covered by this FDES. The FDES is therefore a "DEP" supplemented by health information.

# 1 General information

Table 1. General information

<b>MANUFACTURER'S NAME AND ADDRESS</b>	NEWKER C / Sta. Magdalena de Pulpis 10 12006 Castellón de la Plana Castellón, SPAIN Tel: +34 964 914 001 Email: <a href="mailto:info@newker.com">info@newker.com</a> Website: <a href="http://www.newker.com">www.newker.com</a>	
<b>PRODUCTION SITE</b>	Castellón de la plana, Castellón, España.	
<b>TYPE OF FDES</b>	From cradle to the grave. This declaration is individual.	
<b>DISTRIBUTION CHANNEL</b>	BtoB & BtoC	
<b>VERIFICATION PROGRAM</b>	FDES-INIES program Address: Association HQE. 4 Avenue du Rector Poincaré 750116 Paris Web: <a href="http://www.inies.fr/acceuil/">http://www.inies.fr/acceuil/</a>	
<b>PRODUCT CATEGORY RULES (RCP)</b>	NF EN 15804+A1 and its national complement NF EN 15804/CN	
<b>TYPE OF VERIFICATION</b>	The EN 15804 standard serves as a reference PCR. Verification by independent third party in accordance with ISO 14025 and EN 15804 as well as the specific PCRs cited above. <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
<b>DATE OF VERIFICATION</b>	07/07/2022	
<b>DATE OF PUBLICATION</b>	15/07/2022	
<b>THIRD-PARTY VERIFIER</b>	Sylvain Cléder, Evea Conseil Email : <a href="mailto:s.cleder@evea-conseil.com">s.cleder@evea-conseil.com</a> Web: <a href="http://www.evea-conseil.com">www.evea-conseil.com</a>	
<b>TECHNICAL SUPPORT</b>	Marcel Gómez Consultoría Ambiental <a href="http://www.marcelgomez.com">www.marcelgomez.com</a> Email: <a href="mailto:info@marcelgomez.com">info@marcelgomez.com</a>	
<b>PREVIOUS VERSIONS</b>	v.1.1 (1 <sup>st</sup> version)	
<b>COMMERCIAL REFERENCES INCLUDED</b>	BIII Newker glazed earthenware tile	
<b>THICKNESS INCLUDED IN THIS FDES</b>	8 mm to 12 mm	
<b>RESULT VARIABILITY</b>	Between -11% and +25% over the included thickness range.	

## 1.1 Statement scope

This Environmental and Health Declaration Sheets (FDES) includes environmental information on a group of products commercialized by NEWKER, in a geographical and technological setting in Spain and France.

The results shown present the environmental behavior of the average glazed earthenware, weighted by sales. The scope of this FDES is from cradle to grave.

## 1.2 Company information

Newker was born with a clear vocation for customer service. Newker's mission is to provide the best solutions to the professional in their projects. We know your needs and offer a suitable solution for each project or client. This is possible thanks to our flexibility and our constant efforts in R+D+I, as well as in terms of quality and respect for the environment.

We want to be the reference company in the promotion and construction sector. For this, we have created a wide range of products taking into account our customers and their needs.

Our values are service, flexibility and customer satisfaction. We want to provide the best service to our customers by having immediate availability in most of our products. Flexibility to develop with them the best solution for their needs and customer satisfaction by making your purchasing process a unique experience.

With more than ten delegations between Spain and France, and a wide variety of projects (including offices, public and residential building) at Newker, we seek to facilitate the work of property developers from the start of their projects, thanks to the use of multiple tools that will help them to enhance any project's plans.

## 2 Description of the product

### 2.1 Functional unit

The functional unit considered is “Covering of 1 m<sup>2</sup> of floor with installed BIII glazed earthenware tiles (8 mm to 12 mm) with a service life of 50 years (cradle to grave)”.

### 2.2 Product description

The ceramic tiles included in this study belong to the BIII group, a classification based on the UNE-EN 14411:2016 standard (equivalent to the ISO 13006:2018 standard), defined as ceramic products with a water absorption above 10%. Its common name is earthenware tile.

The earthenware tiles include different models with different formats. Specifically, the product formats considered in the study have a thickness that varies between 8 mm and 12 with an average weight of 18,6 kg/m<sup>2</sup>. In Table 2 the product series covered by the present FDES are presented.

Table 2 Product series of BIII ceramic tiles

Product category	Product name (model)	Thickness range
NEWKER Ceramic tile BIII	Alpine, Artes, Atelier, Aura, Blink, Candor, Casale, Chester, Chroma, Constructa, Contact, Craft, Cromatt, Dorian, Dream, Elite, Essence, Gala, Icon, Land, Lounge, Luxe, Marble+, Museum, Nacar, Nature, Orna, Puls, Pure, Qstone, Quartz, Royal, Select, Shine, Soho, Soul, State, Stonework, Tactile, Tempo, Terra, Tevere, Tresor, Unique, Urban, Velvet	8 mm to 12 mm

### 2.3 Intended use of the product

The function of the product is to cover surfaces. In this study, the environmental behavior of using earthenware tiles as wall covering inside a house was evaluated; however, the versatility of these pieces allows them to be installed in other places (offices, shops, hotels, hospitals, etc.).

## 2.4 Technical characteristics of the product

Table 3 refers to the technical performance of all ceramic coverings and are those required by the UNE-EN 14411:2016 standard.

Table 3. Technical specifications of the product

Technical Specification	Calculation Method	Value
Water Absorption	ISO 10545-3	Eb > 10%
Breaking Load	ISO 10454-4	Thickness $\geq 7,5$ mm, Individual minimum 12 N/mm <sup>2</sup>
Resistance to Chemical Attack	ISO 10454-13	For low and high concentration acid and alkali, ask the manufacturer for the technical sheet according to the model. For household products and swimming pool salts, minimum class B.
Stain Resistance	ISO 10454-14	Minimum class 3
Anti-Slip Properties	DIN 51130	-
Deep Abrasion Resistance	ISO 10545-6	-
Resistance to Surface Abrasion	ISO 10545-7	-

## 2.5 Description of main components and/or materials

The composition by main components of the product is shown in Table 4. None of the components of the final product are included in the candidate list of substances of very high concern subject to authorization.

Table 4. Product composition

SETTING	VALUE
Clay, feldspars, sands and deflocculants	94%
Feldspars, carbonates, quartz, silicates, kaolin, zirconium oxides, clays, alumina, zinc oxide	6%



## 2.6 Description of the Reference Service Life

The Reference Service Life of the product is the same as that of the building where it is installed, as long as it is installed correctly, since it is a long-lasting product and does not require replacement. A Reference Service Life of 50 years has been considered. In Table 5 the Reference Service Life of the product is further described.

Table 5. Description of Reference Service Life

SETTING	VALUE
Reference Service Life	Minimum 50 years
Declared product properties (ex-factory) and finishes, etc.	Minimum values of the pertinent characteristics according to Annex G of the UNE-EN 14411 standard. For more information, request the technical sheet from the manufacturer according to the model.
Theoretical application parameters	Request technical sheet from the manufacturer according to model
Presumed quality of the work, when the installation complies with the manufacturer's instructions	Request technical sheet from the manufacturer according to model
Outdoor environment	Results of the values of the relevant characteristics according to Annex G of the UNE-EN 14411 standard. For more information, request the technical sheet from the manufacturer according to the model.
Indoor environment	Results of the values of the relevant characteristics according to Annex G of the UNE-EN 14411 standard. For more information, request the technical sheet from the manufacturer according to the model.
Terms of use	For more information, request the technical sheet from the manufacturer according to the model.
Maintenance	A typical domestic scenario has been considered in this study (see Table 9). For more information, request the technical sheet from the manufacturer according to the model.

### 3 System limits: LCA Stages

According to standard NF EN 15804 + A1 and its national complement NF EN 15804 / CN, the modules included are shown in Figure 1.

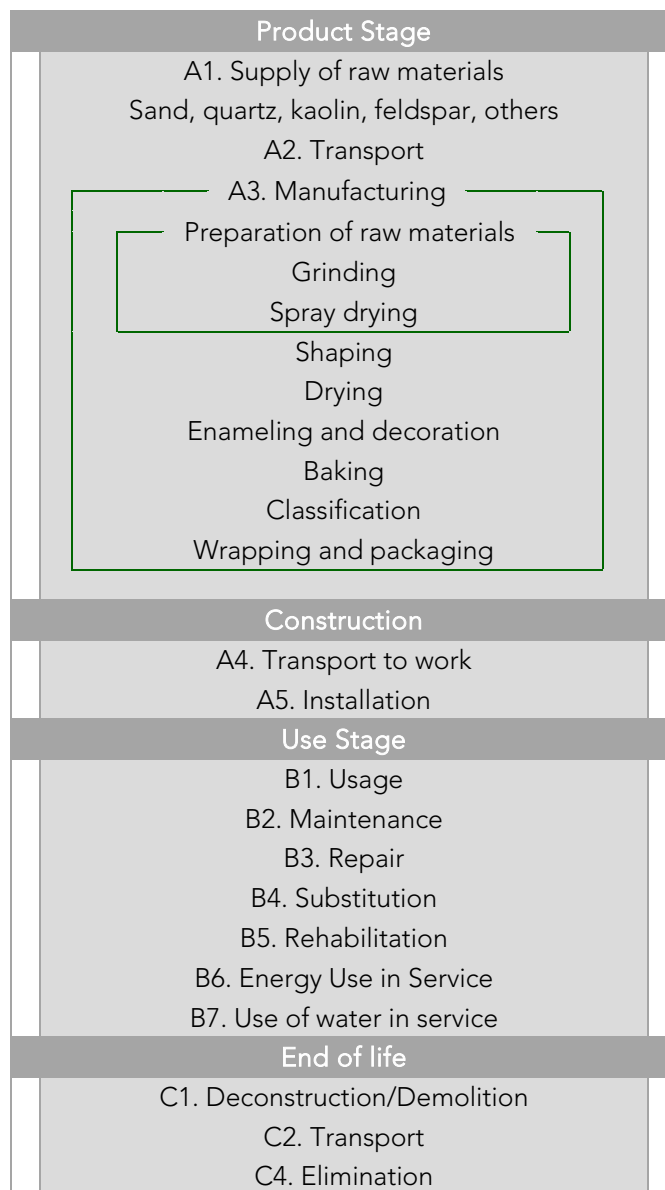


Figure 1. Diagram with system boundaries, steps and processes for the production of 1 m<sup>2</sup> of BIII ceramic tile

Table 6 shows the lifecycle modules included in the system boundaries. For the quantification of the environmental impacts in the LCA, all the data collected was grouped according to the modules of the selected life stages under the scope of cradle to grave.

Table 6. Lifecycle modules included in system boundaries

Production Stage			Construction		Use Stage							End of Life			Module D	
Supply of raw materials	Transport to factory	Manufacturing	Transport to work	Installation	Usage	Maintenance	Repair	Substitution	Rehabilitation	Energy use in service	Use of water in service	Deconstruction/Demolition	Transport	Waste Management	Elimination	Benefits beyond the system
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	NR	X	NR	NR	NR	NR	NR	NR	X	NR	X	X

X: Module included in the LCA, NR: Not relevant, MNE: Module not evaluated

### 3.1 Production Stage (A1-A3)

Stages A1 to A3 include the extraction of raw materials, their transport to the factory and the manufacture of the product.

### 3.2 Construction Stage (A4-A5)

**A4. Transport:** Once packaged, the product is sent to the user. The transportation of earthenware ceramic tiles is calculated based on a scenario with the parameters described in Table 7.

Table 7. Specifications of the different types of transport used

SETTING	VALUE
Average distance to the site	Destination France: 1306 km Destination Spain: 719 km
Fuel type and vehicle consumption or type of vehicle used for transport, for example truck on long distance, boat, etc.	Truck with a payload of 21,23-ton, diesel consumption of 25 liters for 100 km.
Capacity used	30%
Volumetric capacity utilization coefficient	<1
Density of the transported product	1928 kg/m <sup>3</sup>

**A5. Construction-Installation:** The materials shown in Table 8 are used during the installation of the product. Packaging waste management has been taken into account.

Table 8. Parameters applied in Stage A5

SETTING	VALUE
Auxiliary inputs for the installation (specified by material)	Cement glue: 3,3 Kg
Water use	0,80 liters
Use of other resources	-
Quantitative description of energy type (regional mix) and consumption during the installation process	-
Waste produced on the construction site prior to treatment: Waste generated by the Installation of the product (specified by type)	Product breakage: 1862 g PE plastics: 336 g PES plastics: 17 g Wood: 660 g Cardboard: 188 g
Materials (specified by type) produced by the processing of waste on the construction site, for example collection in view of recycling, energy recovery, disposal (specified per channel)	Product waste for landfill: 1862 g PE incinerated: 209 g PE for landfill: 127 g PES incinerated: 10 g PES for landfill: 6 g Incinerated wood: 410 g Landfill wood: 250 g Incinerated Cardboard: 117 g Landfill Cardboard: 72 g
Direct emissions to ambient air, soil and water	-

### 3.3 Use Stage (B1-B7)

Once installed, the tile does not require any energy input for its use nor does it require any maintenance after installation on site, except for normal cleaning operations. For this reason, of all the mentioned modules in Figure 1, impacts are only produced during product maintenance (module B2). Stage B2 is characterized in Table 9.

Table 9. Parameters applied in stages B1-B7

SETTING	VALUE
Maintenance Process	Residential use: Cleaning every three months with detergent and water.
Maintenance Cycle	4 cycles / year
Auxiliary Inputs for Maintenance (For Example, Cleaning Product, Specify Materials)	Detergent: $1,34 \times 10^{-4}$ kg / cycle
Wastes generated during maintenance (specify wastes materials)	-
Net Freshwater Consumption During Maintenance	$1,00 \times 10^{-4}$ m <sup>3</sup> / cycle
Energy Input During Maintenance (Per Example Vacuum Cleaning), Vector Type Energy, For Example Electricity, And Quantity, If Applicable and Relevant	-

### 3.4 End of Life (C1-C4)

The specifications for the end-of-life scenarios are shown in Table 10.

**C1. Deconstruction/Demolition:** After the end of its useful life, the product will be removed, either as part of a rehabilitation of the building, or during its demolition. In the context of the demolition of a building, the impacts attributable to the removal of the product are negligible. In any case, none impact is produced during deconstruction.

**C2. Transport to waste treatment:** The product waste is transported by truck (50 km) to the manager of the waste.

**C3. Treatment of waste:** None of the waste is considered being recovered or recycled.

**C4. Waste disposal:** 100% of the product is destined for landfill.

Table 10. End-of-life scenario specifications

SETTING	VALUE
Collection process specified by type	Collection with mixed construction waste: 21,9 kg (100%) of the product
Recovery system specified by type	-
Disposal specified by type	21,9 kg are disposed in landfill (100%)
Assumptions for developing scenarios	Truck with a payload of 21,23-ton, diesel consumption of 25 liters for 100km. Transport distance: 50 km

### 3.5 Module D: Benefits and burdens across system boundaries

As the product is assumed to be 100% landfilled, no potential environmental savings due to recycling – reuse has been calculated.

## 4 Calculation rules for the Life Cycle Analysis

Information about the rules for the calculations of the Life Cycle analysis are shown in Table 11 and the manufacturer's electricity mix is shown in Figure 2.

Table 11. Information for the calculations of the Life Cycle Analysis

SETTING	VALUE
Product category rules	This FDES has been developed in accordance with the NF EN ISO 14025:2010, NF EN 15804:2012 standards and its national complement NF EN 15804 / CN and the NF EN 17160.
Data quality	Data quality in the LCA followed the requirements of the referenced RCP document. Primary data collection was provided by the manufacturer, including all relevant foreground processes and flows, and were specific for production sites. The secondary data has been selected accordingly for background processes, with technological representativeness, geographical and temporary.
Geographical boundaries	Primary inventory data has been provided by Newker and is representative of the product manufacturing. The product is manufactured in Spain and used in France.
Period under review	The data collected from Newker refer to production in 2020.
Secondary data	Secondary data for environmental analysis was obtained from Ecoinvent Databases 3.6. The processes most similar to those of the production system were chosen to model the production system. The electricity generation mix was provided by the manufacturer. The global warming potential of the power generation mix is 0,367 kg CO <sub>2</sub> eq / kWh while the radioactive waste disposed is 4,89x10 <sup>-5</sup> kg / kWh. Also, part of the electricity used is produced with cogeneration.
Allocation	Priority was given to establishing an existing physical relationship between the inputs and outputs of the system and its various products and processes. When this was not possible, the criteria of mass and area were used depending on the type of parameters and type of process.
Cutoff criteria	The inventory was developed taking into account all available data on manufacturing processes, covering all of the use of raw materials and energy consumption. Therefore, the neglected data is less than 5% of the total mass and energy inputs in the "upstream" and "core" processes.
Environmental assessment methods	The indicators and impact categories used for the environmental assessment were those indicated in standard NF EN 15804+A1 and its national complement. The openLCA version 1.10.3 program was used for the environmental assessment, with the Ecoinvent database 3.6.
Variability of results	The reported LCA results correspond to an average product thickness of 9,2 mm. When the thickness range of 8 mm to 12 mm cover by the FDED is considered, the results are expected to have a variation range between -11% and +25%.

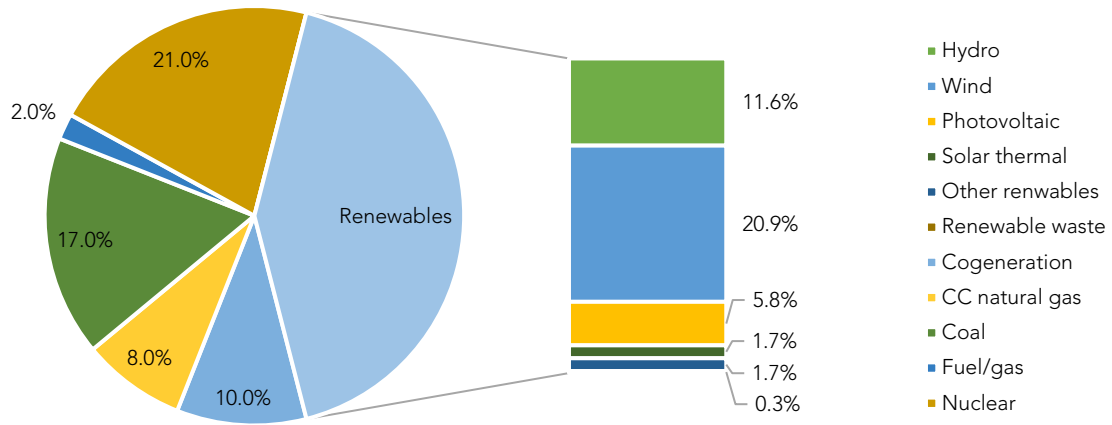


Figure 2. Manufacturer's electricity mix supply



## 5 Results of the Life Cycle Analysis

The results of the average thickness product are shown in Table 12 through Table 14. The relative contribution of each module to the total lifecycle environmental impact is shown in Figure 3. The following abbreviations are used:

<p><b>Environmental impacts:</b></p> <ul style="list-style-type: none"> <li>-GWP: Global Warming Potential</li> <li>-ODP: Ozone Depletion Potential</li> <li>-AP: Acidification Potential</li> <li>-EP: Eutrophication Potential</li> <li>-POCP: Photochemical Ozone Creation Potential</li> <li>-ADPE: Depletion of Abiotic Resources (Elements)</li> <li>-ADPF: Depletion of Abiotic Resources (Fossil)</li> </ul>	<p><b>Waste management:</b></p> <ul style="list-style-type: none"> <li>-HWD: Hazardous Waste Disposal</li> <li>-NHWD: Non-Hazardous Waste Disposal</li> <li>-RWD: Radioactive Waste Disposal</li> </ul>
<p><b>Use of resources:</b></p> <ul style="list-style-type: none"> <li>-PERE: Use of renewable primary energies excluding renewable primary energy resources used as raw materials</li> <li>-PERM: Use of renewable primary energies used as raw materials</li> <li>-PERT: Total use of renewable primary energy resources (Primary energies and primary energy resources used as raw materials)</li> <li>-PENRE: Use of non-renewable primary energies excluding non-renewable primary energy resources used as raw materials</li> <li>-PENRM: Use of non-renewable primary energy used as raw materials</li> <li>-PENRT: Total use of primary energy resources not renewables (primary energies and primary energy resources used as raw materials)</li> <li>-SM: Use of secondary materials</li> <li>-RSF: Use of renewable secondary fuels</li> <li>-NRSF: Use of non-renewable secondary fuels</li> <li>-NFW: Net use of fresh water</li> </ul>	<p><b>Other feeds and indicators:</b></p> <ul style="list-style-type: none"> <li>-CRU: Components intended for reuse</li> <li>-MFR: Materials for recycling</li> <li>-MER: Materials for energy recovery</li> <li>-EEE: Exported Electrical Energy</li> <li>-EET: Exported Thermal Energy</li> <li>-PA : Air Pollution</li> <li>-PW : Water Pollution</li> </ul>

## 5.1 Newker BIII ceramic tiles with destination France

Table 12. Environmental Impacts of Newker BIII ceramic tiles with destination France.

Indicator	Units	Total	Production Stage	Construction			Use Stage	End of life		Module D
			A1-A3	A4	A5	B2	C2	C4	D	
GWP	Kg CO <sub>2</sub> eq	1,84E+01	9,29E+00	4,88E+00	3,77E+00	7,58E-02	1,63E-01	2,27E-01	0,00E+00	
ODP	Kg CFC 11 eq	2,50E-06	1,26E-06	8,68E-07	2,67E-07	1,97E-08	2,90E-08	6,01E-08	0,00E+00	
AP	Kg SO <sub>2</sub> eq	4,97E-02	3,03E-02	1,00E-02	6,96E-03	5,30E-04	3,40E-04	1,50E-03	0,00E+00	
EP	Kg PO <sub>4</sub> <sup>3-</sup> eq	1,57E-02	8,31E-03	2,12E-03	3,88E-03	7,80E-04	7,08E-05	4,90E-04	0,00E+00	
POCP	Kg C <sub>2</sub> H <sub>4</sub> eq	2,75E-03	1,70E-03	5,50E-04	3,90E-04	3,49E-05	1,85E-05	6,12E-05	0,00E+00	
ADPE	Kg Sb eq	3,06E-04	7,65E-05	1,40E-04	7,84E-05	3,61E-06	4,71E-06	2,48E-06	0,00E+00	
ADPF	MJ	2,58E+02	1,51E+02	6,97E+01	2,85E+01	1,42E+00	2,33E+00	5,34E+00	0,00E+00	
PA	m <sup>3</sup>	1,31E+04	1,18E+04	8,69E+01	1,21E+03	1,41E+00	2,91E+00	6,64E+00	0,00E+00	
PW	m <sup>3</sup>	7,14E+01	4,74E+01	9,56E+00	1,05E+01	1,84E+00	3,20E-01	1,74E+00	0,00E+00	

Table 13. Use of Resources of Newker BIII ceramic tiles with destination France.

Indicator	Units	Total	Production Stage	Construction			Use Stage	End of life		Module D
			A1-A3	A4	A5	B2	C2	C4	D	
PERE	MJ	8,71E+00	6,25E+00	8,78E-01	1,29E+00	1,87E-01	2,94E-02	8,56E-02	0,00E+00	
PERM	MJ	1,44E+01	1,29E+01	0,00E+00	1,29E+00	1,62E-01	0,00E+00	0,00E+00	0,00E+00	
PERT	MJ	2,31E+01	1,92E+01	8,78E-01	2,58E+00	3,49E-01	2,94E-02	8,56E-02	0,00E+00	
PENRE	MJ	2,65E+02	1,57E+02	6,95E+01	2,93E+01	1,41E+00	2,32E+00	5,37E+00	0,00E+00	
PENRM	MJ	1,55E+01	1,39E+01	0,00E+00	1,39E+00	1,65E-01	0,00E+00	0,00E+00	0,00E+00	
PENRT	MJ	2,80E+02	1,71E+02	6,95E+01	3,07E+01	1,58E+00	2,32E+00	5,37E+00	0,00E+00	
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
NFW	m <sup>3</sup>	1,02E-01	5,63E-02	5,39E-03	1,13E-02	2,32E-02	1,80E-04	5,71E-03	0,00E+00	

Table 14. Other output flows of Newker BIII ceramic tiles with destination France

Indicator	Units	Total	Production Stage			Construction		Use Stage		End of life		Module D
			A1-A3	A4	A5	B2	C2	C4	D			
HWD	kg	1,14E-03	8,00E-04	2,00E-04	1,20E-04	1,81E-06	6,64E-06	8,33E-06	0,00E+00	0,00E+00	0,00E+00	
NHWD	kg	2,46E+01	1,02E+00	8,59E-02	1,52E+00	1,31E-02	2,87E-03	2,20E+01	0,00E+00	0,00E+00	0,00E+00	
RWD	kg	9,92E-04	3,40E-04	4,90E-04	1,10E-04	3,61E-06	1,63E-05	3,25E-05	0,00E+00	0,00E+00	0,00E+00	
CRU	kg	1,14E-03	8,00E-04	2,00E-04	1,20E-04	1,81E-06	6,64E-06	8,33E-06	0,00E+00	0,00E+00	0,00E+00	
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

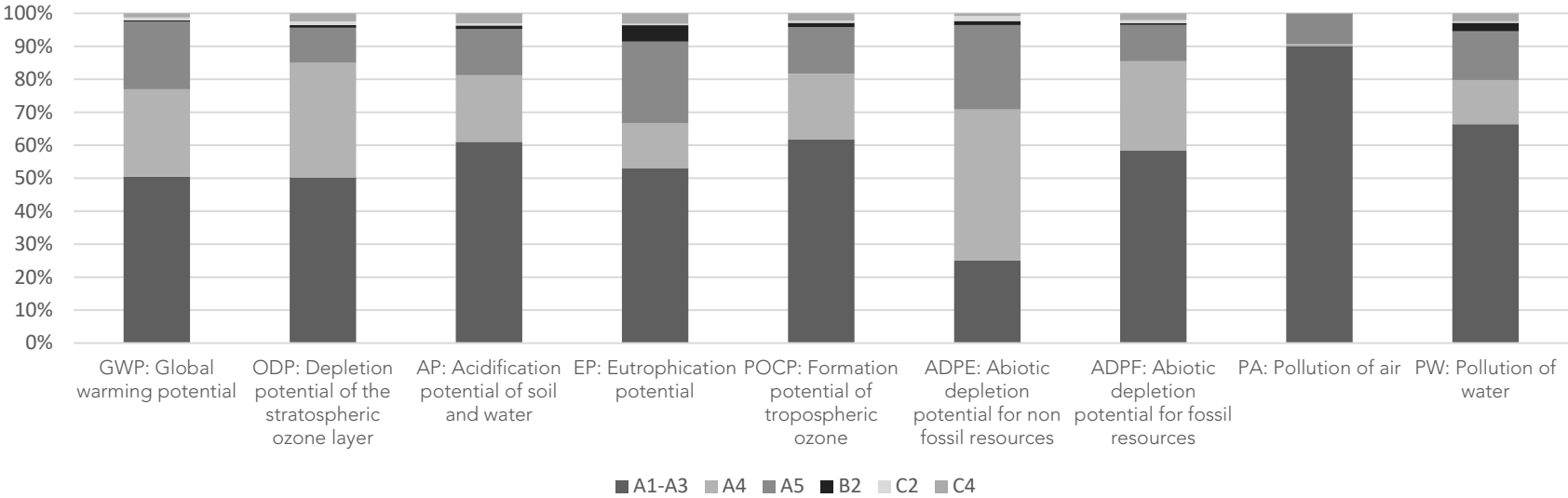


Figure 3. Relative contribution of the Life cycle modules to the potential environmental impacts of 1 m<sup>2</sup> of Newker BIII ceramic tiles with destination France

## 5.2 Results interpretation

- The following results for the environmental impacts are representative of the BIII ceramic glazed tiles including the product thickness in the range from 8 mm to 12 mm. To correct for variations per square meter, use equation (1):

$$I = \bar{I} \cdot \left( \frac{H}{9,23} + 0,0027 \right) \quad (1)$$

Where:

*I*: Impact at desired product thickness, in impact category units.

$\bar{I}$ : Average impact reported, in impact category units.

*H*: Desired product thickness, in mm.

- The product stage (A1-A3) is the life cycle stage with the greatest impact for all the impact categories analyzed with the exception of ADPE where the transport stage (A4) is the most relevant. The product stage represents between 25% (ADPE) and 66% (PW) of the total impact of the product life cycle, with the notable exception of a 90% contribution for PA.
- The construction stage (A4-A5) represents an intermediate impact for all the impact categories analyzed. Transport (A4) represents between 13% (PW) and 46% (ADPE) of the total life cycle impact. On the other hand, Installation module (A5), represents an average of 16% of the total impact for all impact indicators.
- The operations associated with the maintenance stage (B2) represent up to 5% of the total life cycle impact and have been defined according to a residential scenario. The change in frequency clean-up operations may have proportional changes in these impacts.
- In relation to End of life stages (C1-C4) the impact is low. Hence, the impact of C1 and C3 is considered negligible or zero. C2 Transport represents about 1% of the total impact. Finally, C4 Waste Treatment, represents an average impact of 2% for all impact categories.

## 6 Contribution of the product to the health risk assessment and quality of life Inside buildings

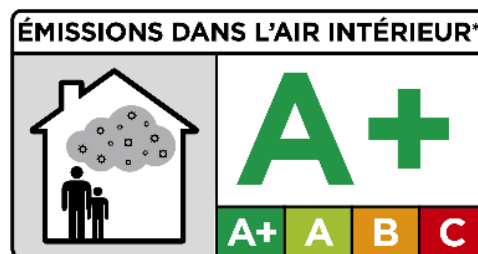
The correct use of the products described is not a hazard to water, air or soil. It is inert in its proper use. No harm health is expected under normal use. The Newker BIII ceramic tiles comply with the legislation REACH because no substance contained in the product is listed in the "List of substances of very high concern (SVHC) for an authorization" (with a content greater than 0,1% of the weight of the product), which guarantees that no harmful substances are released into environment or close to users.

The LCA for the Newker BIII ceramic tiles, was carried out according to standard NF EN 15804 + A1 and its complement national NF EN 15804/CN to develop Environmental and Health Data Sheets for Construction Products (FDES). This document aims to provide accessible, accurate and comparable information on environmental and health performance of a finished product, defined by its functional unit. It also determines the contribution of the Newker BIII ceramic tiles to the control of health risks and the quality of life inside a building.

### 6.1 Contribution of the product to the health risk assessment

#### Emissions of VOCs, formaldehyde and aldehydes:

The ceramic tiles distributed by Newker are, during manufacture, subjected to a process temperature reaching more than 1000° C. At these temperatures, any organic compound present in the compositions decomposes, resulting in an inert end product free of any organic compound that could be emitted during its use. Similarly, the tiles made by Newker which have been subjected to a mechanical surface treatment, do not show any type organic coating such as resins or filling products which could generate an emission.



\* Information sur le niveau d'émission de substances volatiles dans l'air intérieur, présentant un risque de toxicité par inhalation, sur une échelle de classes allant de A+ (très faibles émissions) à D (fortes émissions).

These ceramic tiles are classified as A+, in keeping with their low level of volatile substance emissions in indoor air. Technical parameters of tiles ceramics distributed by Newker can be consulted in Table 3.

## Radioactive Emissions

The possible radioactive emissions from Newker tiles are lower than the activity concentration indices established in the European Union. Contact Newker for specific information depending on the model.

## Emissions to soil and water

This is not applicable because the product is not in contact with water used for human consumption, or with water from runoff, seepage, groundwater or surface water.

## 6.2 Contribution of the product to the quality of life

### Hygrothermal comfort:

Low or zero hygrothermal capacity. Product suitable for placement in damp rooms. The enamel layer applied on the surface of the tiles distributed by Newker completely waterproofs the exposed face and the application of a union of low absorption junctions negates the already low hygroscopic capacity of the tiles. On the other hand, the coefficient of thermal expansion is  $5,40 \times 10^{-6} \text{C}^{-1}$  (UNE-EN ISO 10545-8). Water absorption by ceramic tiles distributed by Newker is practically zero,  $\leq 0,1\%$  (UNE-EN ISO 10545-3), and they meet the standard for resistance to frost (UNE-EN ISO 10545-12).

For more information on the technical characteristics, see Table 3, or ask for more information on the technical characteristics of the product.

### Acoustic comfort

This point is not applicable to ceramic tiles distributed by Newker.

### Visual Comfort

The versatility of the design of ceramic tiles allows you to create a multitude of environments with an infinity of designs, colors and gloss and/or matte finishes.

### Olfactory comfort

It is an inert product and therefore this point is not applicable to ceramic tiles distributed by Newker.

### Antibacterial activity

The glazed surface of the tiles distributed by Newker prevents the proliferation of bacteria and fungi.

## 7 Other environmental information

### 7.1 Newker BIII ceramic tiles with destination Spain

A LCA scenario in which the product is sold in Spain has been considered as additional environmental information. This scenario is characterized by the distance used in the Transport Stage (A4), see Table 7; and use of waste treatment processes representative of Spain instead of France in the Environmental Assessment whenever available. These considerations lead to different results in the A4 and A5 Stages respect to the scenario with destination France.

The results of the average thickness product are shown in Table 15 through Table 17. The relative contribution of each module to the total lifecycle environmental impact is shown in Figure 4.

Table 15. Environmental impacts of Newker BIII ceramic tiles with destination Spain

Indicator	Units	Total	Production Stage			Construction		Use Stage		End of life		Module D
			A1-A3	A4	A5	B2	C2	C4	D			
GWP	Kg CO <sub>2</sub> eq	1,54E+01	9,29E+00	2,69E+00	2,92E+00	7,58E-02	1,63E-01	2,27E-01	0,00E+00			
ODP	Kg CFC 11 eq	2,07E-06	1,26E-06	4,78E-07	2,28E-07	1,97E-08	2,90E-08	6,01E-08	0,00E+00			
AP	Kg SO <sub>2</sub> eq	4,47E-02	3,03E-02	5,52E-03	6,45E-03	5,30E-04	3,40E-04	1,50E-03	0,00E+00			
EP	Kg PO <sub>4</sub> <sup>3-</sup> eq	1,95E-02	8,31E-03	1,17E-03	8,70E-03	7,80E-04	7,08E-05	4,90E-04	0,00E+00			
POCP	Kg C <sub>2</sub> H <sub>4</sub> eq	2,54E-03	1,70E-03	3,00E-04	4,30E-04	3,49E-05	1,85E-05	6,12E-05	0,00E+00			
ADPE	Kg Sb eq	2,37E-04	7,65E-05	7,76E-05	7,19E-05	3,61E-06	4,71E-06	2,48E-06	0,00E+00			
ADPF	MJ	2,24E+02	1,51E+02	3,84E+01	2,53E+01	1,42E+00	2,33E+00	5,34E+00	0,00E+00			
PA	m <sup>3</sup>	1,31E+04	1,18E+04	4,79E+01	1,20E+03	1,41E+00	2,91E+00	6,64E+00	0,00E+00			
PW	m <sup>3</sup>	6,64E+01	4,74E+01	5,26E+00	9,79E+00	1,84E+00	3,20E-01	1,74E+00	0,00E+00			

Table 16. Use of Resources of Newker BIII ceramic tiles with destination Spain

Indicator	Units	Total	Production Stage	Construction			Use Stage	End of life		Module D
			A1-A3	A4	A5	B2	C2	C4	D	
PERE	MJ	8,28E+00	6,25E+00	4,83E-01	1,24E+00	1,87E-01	2,94E-02	8,56E-02	0,00E+00	
PERM	MJ	1,44E+01	1,29E+01	0,00E+00	1,29E+00	1,62E-01	0,00E+00	0,00E+00	0,00E+00	
PERT	MJ	2,27E+01	1,92E+01	4,83E-01	2,54E+00	3,49E-01	2,94E-02	8,56E-02	0,00E+00	
PENRE	MJ	2,30E+02	1,57E+02	3,82E+01	2,61E+01	1,41E+00	2,32E+00	5,37E+00	0,00E+00	
PENRM	MJ	1,55E+01	1,39E+01	0,00E+00	1,39E+00	1,65E-01	0,00E+00	0,00E+00	0,00E+00	
PENRT	MJ	2,46E+02	1,71E+02	3,82E+01	2,75E+01	1,58E+00	2,32E+00	5,37E+00	0,00E+00	
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
NFW	m <sup>3</sup>	9,88E-02	5,63E-02	2,97E-03	1,05E-02	2,32E-02	1,80E-04	5,71E-03	0,00E+00	

Table 17. Other output flows of Newker BIII ceramic tiles with destination Spain

Indicator	Units	Total	Production Stage	Construction			Use Stage	End of life		Module D
			A1-A3	A4	A5	B2	C2	C4	D	
HWD	kg	1,04E-03	8,00E-04	1,10E-04	1,10E-04	1,81E-06	6,64E-06	8,33E-06	0,00E+00	
NHWD	kg	2,47E+01	1,02E+00	4,73E-02	1,62E+00	1,31E-02	2,87E-03	2,20E+01	0,00E+00	
RWD	kg	7,54E-04	3,40E-04	2,70E-04	9,16E-05	3,61E-06	1,63E-05	3,25E-05	0,00E+00	
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	



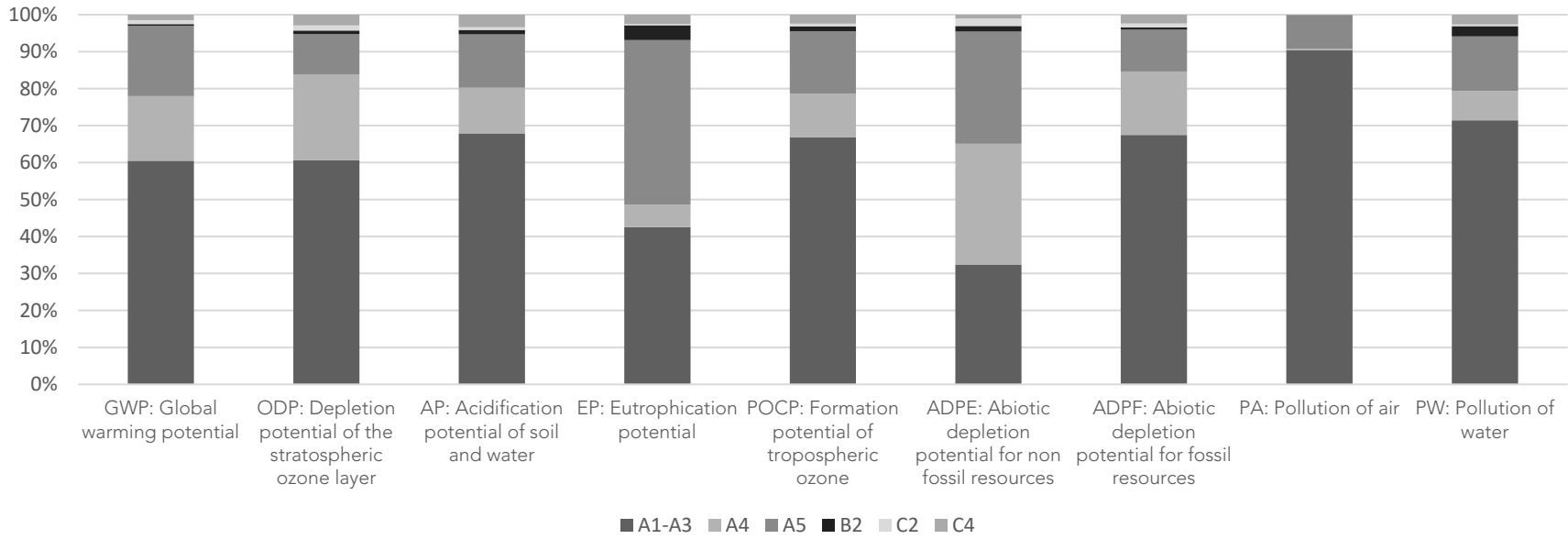


Figure 4. Relative contribution of the Life cycle modules to the potential environmental impacts of 1 m<sup>2</sup> of Newker BIII ceramic tiles with destination Spain.

## 8 References

- 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.
- NF EN 15804:2012+A1:2013 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
- EN 17160: Product category rules for ceramic tiles.
- Décret n° 2021-1674 du 16 décembre 2021 relatif à la déclaration environnementale de produits de construction et de décoration ainsi que des équipements électriques, électroniques et de génie climatique.
- Arrêté du 14 décembre 2021 relatif à la déclaration environnementale des produits destinés à un usage dans les ouvrages de bâtiment et à la déclaration environnementale des produits utilisée pour le calcul de la performance environnementale des bâtiments.
- National supplement to NF EN 15804+A1: Contribution of construction works to sustainable development - Environmental declarations on products - Rules governing the categories of construction products (2016).
- Regulation of the INIES verification program (2021).
- Marcel Gómez Consultoría Ambiental. LCA for Newker products: B1a, B11a, B111. Barcelona. Spain (2022).