ENVIRONMENTAL AND HEALTH
PRODUCT DECLARATION
EPD

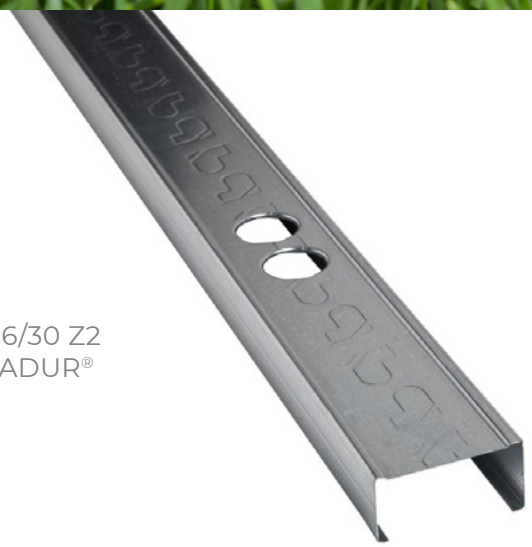
In accordance with NF EN 15804+A2 and its French national supplement NF EN 15804+A2/CN

PLADUR®

Pladur® Metal Framing

TRACKS AND CEILING PROFILES

PLADUR® C 48/30 Z1 PLADUR® C 70/30 Z1 PLADUR® C 36/30 Z2 PLADUR® C 48/30 Z2 PERFIL U30 PERFIL U31 PH-45 PLADUR® T-45 / PLADUR® NEO S-1200 / PLADUR® NEO S-1000



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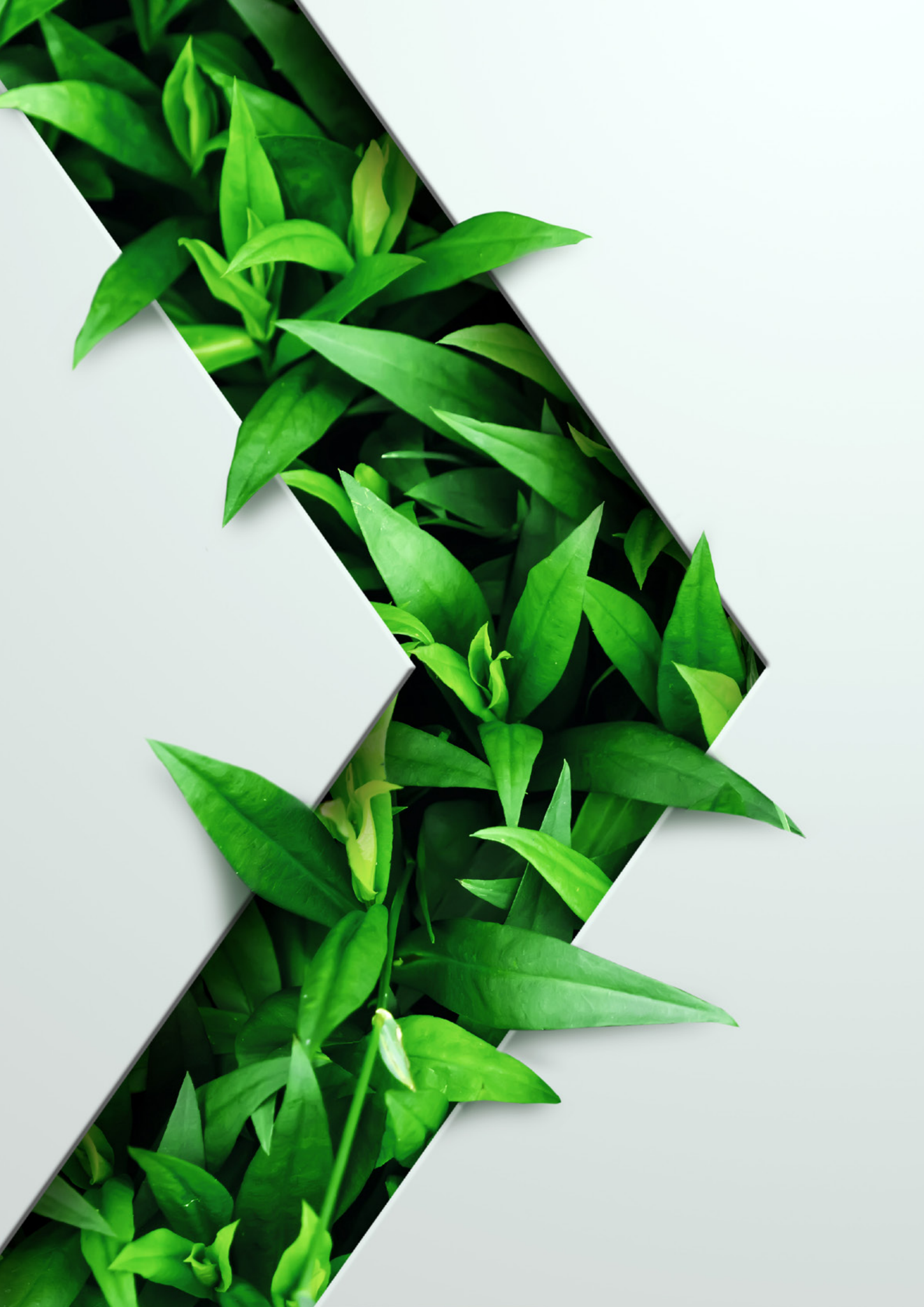

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WARNING

The information in this declaration has been furnished under the responsibility of PLADUR® GYPSUM, S.A.U., (EPD issuer), according to NF EN 15804+A2 and the French national supplement NF EN 15804+A2/CN. Furthermore, the French decrees of 2021[1,2] and 2022[3] on environmental declarations of construction products has been followed. The environmental performance of the products assessed in this study has been analyzed by a group of experts of Anthesis Lavola with the collaboration of Pladur® members that helped with the data gathering and information provision.

Any use, in part or in whole, of the information displayed in this document shall at the very least be accompanied by the full reference to the original FDES and to the issuer thereof who shall be able to provide a full copy. CEN standards NF EN 15804+A1 and NF EN 15804/CN serve as Product Category Definition Rules (PCR).

NOTE 1 The literal English translation of EPD (Environmental Product Declaration) is EPD (Environmental Product Declaration). 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 an "EPD" supplemented by health information.

READING GUIDE

Details for enhanced reading the declaration or the data contained in the declaration.

The display inventory data meets the requirements of the NF EN 15804+A2. In the following tables -9.0E-03 should be read as -9.0 x 10-3 (scientific writing).

The units used are specified to each stream, and they are:

- inear metre "**lm**"
- Kilogram "**kg**"
- Liter "**l**"
- Kilowatt hour "**kWh**"
- Mega joules "**MJ**"
- Square metre "**m^2**"
- Cubic metre "**m^3**"
- Carbon dioxide equivalent "**CO^2 eq**"
- Chlorofluorocarbon "**CFC**"
- Sulphur dioxide "**SO_2**"
- Phosphate "**PO_4^{3-}**"
- Antimony "**Sb**"

Abbreviations:

- **EPD:** Environmental Product Declaration
- **PCR:** Product Category Rules
- **FDES:** Environmental and Health Declaration Form
- **LCA:** Life Cycle Assessment
- **FU:** Functional Unit
- **DU:** Declared Unit
- **MND:** Module Not Declared

1 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.
ELI : https://www.legifrance.gouv.fr/eli/arrete/2021/12/14/LOGL2113185A/jo/texte

2. Arrêté du 14 décembre 2021 relatif à la vérification par tierce partie indépendante des déclarations environnementales des produits destinés à un usage dans les ouvrages de bâtiment et des déclarations environnementales des produits utilisées pour le calcul de la performance environnementale des bâtiments.
ELI : https://www.legifrance.gouv.fr/eli/arrete/2021/12/14/LOGL2113188A/jo/texte

3. Arrêté du 20 octobre 2022 modifiant l'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.
ELI : https://www.legifrance.gouv.fr/eli/arrete/2022/10/20/TREL2223870A/jo/texte

PRECAUTION FOR USE OF EPD FOR PRODUCT COMPARISON

Construction product EPDs cannot be comparable if they do not comply with standard NF EN 15804+A2.

Standard NF EN 15804+A2 defines in paragraph 5.3 Comparability of EPD for construction products, the conditions whereby construction products may be compared, based on the information provided by the FDES:

"Comparison of the environmental performance of construction products using the EPD information shall be based on the product's use in and its impacts on the building and shall consider the complete life cycle (all information modules)."

NOTE 2 For the assessment of the contribution of buildings to sustainable development, a comparison of environmental aspects and impacts should be undertaken together with the socio-economic aspects and impacts relating to the building.
NOTE 3 For the interpretation of a comparison, reference values are necessary.

1 GENERAL INFORMATION

Manufacturer:
PLADUR® GYPSUM, S.A.U.
Ctra. Andalucía km. 30, 200
28343 Valdemoro (Madrid) – Espagne
www.pladur.es
Coordonnées : David Sáenz de Villaverde
Courriel : david.saenz@pladur.com

Production sites: Valdemoro (Madrid, Spain) and Langreo (Asturias, Spain)

Type of EPD: Cradle-to-grave and module D (A, B, C and D)

Type of verification: An independent verification has been performed according to EN ISO 14025: 2010. This external verification has been carried out by a third part

Name of the verifier: Thomas Peverelli from ESTEANA
Date of issue of the verification certificate: 26 July 2023

Last date to check for an update: 26 July 2023

Registration number: 20230734701

Version: 1.0

Valid to: December 2028

Programme name:
Programme INIES http://www.inies.fr/

Programme operator: Association HQE.
Avenue du Recteur Poincaré, 4 - 75016 Paris

Product name: This EPD covers an average product of the Tracks and Ceiling profiles family of Pladur®

Product Category Rules: CEN standard NF EN 15804+A2 and the French national supplement NF EN 15804+A2/CN provide the Product Category definition Rules (PCR)

Scope: This LCA is based on production data of the period January 2021 - December 2021 corresponding to the manufacturing sites located in Spain

FDES destination: B2B
The LCA calculations, LCA report and the FDES document has been carried out by Anthesis Lavola.

2

DESCRIPTION OF THE FUNCTIONAL UNIT AND THE PRODUCT

DESCRIPTION OF THE FUNCTIONAL UNIT

Considering the features of this product, the functional unit can be described as:
Ensure, over one linear meter (1 lm), a metal frame function intended to support partitions, ceilings and plasterboard lining over a reference service life of 50 years.

DESCRIPTION OF THE PRODUCT AND USE OF THE PRODUCT

The Tracks and Ceiling profiles family of Pladur® consists of metal profiles that are part of the structure of Pladur® systems. They are made of DX51D steel. They are used both in partitions and in suspended ceilings and self-supporting cladding. The profiles are made of galvanized steel by cold rolling process. The combination of high-quality steel, a high level of coating (Z140 or Z275) and a production process that has the latest technological advances in profiling and stamping, provide Pladur® profiles with perfect protection against corrosion and high mechanical resistance. The metal framings of Pladur® are manufactured in two different production sites. The distribution of where they are produced it is specified in the following table.

The following references are included into the Tracks and Ceiling profiles family of Pladur®:

Family	References	Production (ml) Valdemoro	% Produced Valdemoro	Production (ml) Langreo	% Produced Langreo	Weight (kg/lm)	Thic-kness (mm)
Pladur® Metal Framing: Tracks and Ceiling profiles	PLADUR® C 48/30 Z1	6 305	86.1	1 017 900.00	13.9	0.45	0.55
	PLADUR® C 70/30 Z1	1 474	94.73	82 080.00	5.27	0.55	0.62
	PERFIL U30	-	0	129 984.00	100	0.4	0.55
	PERFIL U31	-	0	58 291.20	100	0.41	0.55
	PH-45	834 852.00	100	-	0	0.57	0.8
	PLADUR® C 36/30 Z2	-	0	11 760.00	100	0.4	0.55
	PLADUR® T-45 / PLADUR® NEO S-1200 / PLADUR® NEO S-1000	9 799 998.00	100	-	0	0.44	0.60
	PLADUR® C 48/30 Z2	2 808.00	100	-	0	0.45	0.55

More detailed technical documentation and further information for all the products listed in the table above can be found in the following webpage: https://corporativo.pladur.com/es -es/productos/perfileria-pladur/

OTHER TECHNICAL CHARACTERISTICS NOT INCLUDED IN THE FUNCTIONAL UNIT

Profiles are classified A1 (incombustible) concerning the reaction to fire of building materials according to 96/603/EC. Moreover, profiles have protection against corrosion by galvanization Z140 or Z275 depending on the profiles.

The average product of the Tracks and Ceiling profiles family of Pladur® is manufactured with the following specifications:

Parameter	Value	Production Valdemoro (lm)	% Produced Valdemoro	Production Lagreo (ml)	% Produced Langreo
Thickness (mm)	0.59	18 418 332.00	93.41	1 300 015.20	6.59
Weight (kg/lm)	0.46				

ESCRIPTION OF THE MAIN COMPONENTS AND/OR MATERIALS OF THE PRODUCT

The Tracks and Ceiling profiles family of Pladur® is composed principally by steel and a small amount of ink. After its manufacture, the final product is palletized and secured with polyester/polypropylene strapping and labelled.

Materials description considered per Functional Unit (FU):

Materials description	Value (kg/FU)
Steel	0.46
Ink	5.91E-06
Total	**0.46**

Auxiliary inputs for installation:

Scenario information	Units (expressed per functional unit or per functional unit)
- Screws – steel	0.08 kg
- Plugs – HDPE	0.02 kg
- Stake board - steel	0.01 kg

Packaging description considered per Functional Unit (FU):

Packaging description	Value (kg/FU)
Wood	7.95E-03
Polyester	1.26E-04
Polypropylene	8.75E-05
Label	1.27E-06
Total	**8.16E-03**

During the life cycle of the product, no substances listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” as hazardous substances are used (i.e. less than 0.1% in mass).

DESCRIPTION OF THE REFERENCE SERVICE LIFE

The reference service life of the products of the Studs, Furring and Ceiling profiles family of Pladur® has been estimated to be at least 50 years according to the NF EN 15804+A2 and the NF EN 15804+A2 CN, when the indicated conditions for packaging, transport, storage, installation, use, maintenance, and repair are met (i.e., when profiles are installed following the NF DTU 25.41 in France or the UNE 102043:2013 in Spain). Moreover, as they will be used on buildings, it coincides with the Building Reference Service Life, estimated as 50 years.

Paramètres	Valeur
Reference service life	50 years
Declared product properties (at the gate) and finishes, etc.	The declared product has the properties determined by the manufacturer specification and it is CE certified
Design application parameters (if instructed by the manufacturer), including references to any appropriate practices	The product shall be applied in accordance with the manufacturer's instructions
Assumed quality of work, when installed in accordance with the manufacturer's instructions	The product shall be installed in accordance with the NF DTU 25.41 in France or the UNE 102043:2013 in Spain
Outdoor environment, (for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	Not applicable
Indoor environment (for indoor applications), e.g. temperature, moisture, chemical exposure	The product is subject to sanitary labelling on indoor air quality
In-use conditions, e.g. frequency of use, mechanical exposure	The product shall be used under conditions that comply with the manufacturer's instructions
Maintenance e.g. required frequency, type and quality and replacement of components	No maintenance is necessary when using the product

3

LIFE CYCLE STAGES

LIFE CYCLE DIAGRAM

In the following figure, the modules and stages that have been taken into account for the study are represented.

PRODUCT LIFE CYCLE	**MODULES A1-A3 Product stage**	A1, Raw material extraction and processing
		A2, Transport to the manufacturer
		A3, Manufacturing
	MODULES A4-A5 Construction stage	A4, Transport to the building site
		A5, Installation into the building
	MODULES B1-B5 Use stage, information modules related to the building fabric	B1, Use or application of the installed product
		B2, Maintenance
		B3, Repair
		B4, Replacement
		B5, Refurbishment
	MODULES B6-B7 Use stage, information modules related to the operation of the building	B6, Operational energy use
		B7, Operational water use
	MODULES C1-C4 End-of-life stage	C1, De-construction, demolition
		C2, Transport to waste processing
		C3, Waste processing for reuse, recovery and/or recycling
		C4, Disposal
	MODULE D Benefits and loads beyond the system boundary	D, Reuse, recovery and/or recycling potentials, expressed as net impacts and benefits

The table below presents the modules and stages included in the study, which are the required modules for a cradle to grave study according with the NF EN 15804+A2, the NF EN 15804+A2 CN and the French Decrees. Thus, the calculation represent the environmental impacts associated to these stages.

DESCRIPTION OF THE SYSTEM BOUNDARIES (X = INCLUDED IN THE LCA; MND = MODULE NOT DECLARED			
PRODUCT STAGE	Product	A1-A3	X
CONSTRUCTION PROCESS STAGE	Transport	A4	X
	Installation	A5	
USE STAGE	Use	B1	X
	Manteinance	B2	
	Repair	B3	
	Replacement	B4	
	Refurbishment	B5	
	Use of energy	B6	
	Use of water	B7	
END-OF-LIFE STAGE	Deconstruction, Demolition	C1	X
	Transport	C2	
	Waste processing	C3	
	Landfill disposal	C4	
BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES	Reuse, recovery, recycling potential	D	X

PRODUCT STAGE, A1-A3

- Raw materials supply (A1): this module considers the extraction and processing of raw materials used for the manufacture of the studs is considered.

- Transport (A2): this module consists of the transport of all raw materials covered by module A1, from the place of extraction, production, and treatment to the factory gate, considering the specific distances of each material supplier.

- Manufacturing (A3): this module refers to the production process of the Studs XL family of Pladur® in the production plant. It includes the combustion of fuels (diesel and natural gas for forklifts) and the water consumed during the manufacturing process. It also considers the treatment and transport to the waste manager of the waste generated from the production process.

Furthermore, the electricity consumption necessary for the manufacturing process of the product is also considered and has been modified from the Ecoinvent process in order to represent the actual electricity mix used by each production site. Pladur® engage a revision of this FDES if the source of electricity changes in a significant way. Finally, it considers the transport to the factory and production of the product packaging (wood, polyester strapping, polypropylene strapping, and labels).

Manufacturing process

The Pladur® profiles are manufactured through an industrial process that involves several stages. Below is a brief description of the manufacturing process:

1. Steel coil cutting: in the first stage, the cold-rolled galvanised steel coil is cut into strips of the required width for the profile that will be manufactured.

2. Profiling and perforation: in this stage, the steel strips are passed through a series of profiling rollers that give them the required shape for the track or stud. Profiling is done in a single pass and the finished profile is obtained. During the process, some of the profiles are perforated to allow for the wires to pass through the wall or for other proposes.

3.Cutting and perforation: the finished profiles are cut to the required length according to the requirements of the Pladur® system.

4. Packaging: the final product is packed with strips and wooden blocks and boards.

5. Quality control: before being sent to the warehouse for distribution, the profiles undergo a quality control check to ensure that they meet the established technical and quality requirements.

To resume, the manufacturing process of studs and tracks for Pladur® systems involves several stages that include steel coil cutting, profiling, perforation, cutting, packaging and quality control. This industrial process allows for the efficient production of large quantities of high-quality profiles, which are used in the construction of walls and ceilings with plasterboard panels.

Each profile is labelled with the information related to the product such as the reference, length, quality marks (when applicable), information related to the CE market as well as the date, time and production line to ensure correct traceability.

The profiles are cut to the desired length and palletized with wooden boards and studs to prevent their movement during transport to the construction site. Finally, they are labelled with the reference and CE marking.

CONSTRUCTION PROCESS STAGE, A4-A5

- Transport to building site (A4): this module includes the environmental impacts associated with the transport of the manufactured products from the production site to the construction site. This information module also includes all impacts and aspects related to any losses during this construction process stage.

- Installation into the building (A5): this module includes provision of all materials, products and energy, as well as waste processing up to the end-of-waste state or disposal of final residues during the construction process stage. This information module also includes all impacts and aspects related to any losses during this construction process stage.

Transport to the construction site

Scenario information	Units (expressed per functional unit or per functional unit)
Type of fuel and vehicle consumption, or type of vehicle used for transportation, for example long-haul truck, boat, etc	Transport by 16-32 metric ton lorry. Euro V standard.
Distance	1500 km
Use of capacity (including empty returns)	32% load factors including empty returns
Bulk density of transported products.	419 kg/m^3
Capacity utilization coefficient (coefficient: =1 or <1 or ≥1 for compressed or nested products)	Coefficient <1

Installation within the building

Scenario information	Units (expressed per functional unit or per functional unit)
Auxiliary inputs for installation: - Screws – steel - Plugs – HDPE - Stake board - steel	 0.08 kg 0.02 kg 0.01 kg
Water usage	Not applicable
Use of other resources	Not applicable
Electricity consumption (French mix)	0.0089 kWh
Waste materials on the construction site prior to the treatment of waste generated by the product installation: - Wood - HDPE - PP - Paper and cardboard	The following table specifies the waste management scenario for the French market for those wastes generated during the installation process. The amount of waste generated shall be multiplied by both the landfill and incineration ratio. 7.95E-03 kg 1.26E-04 kg 8.75E-05 kg 1.27E-06 kg
Outgoing materials generated by waste treatment on the construction site: - Wood - HDPE - PP - Paper and cardboard	The following table specifies the waste management scenario for the French market for those wastes generated during the installation process. The amount of waste generated shall be multiplied by the recovery ratio. 7.95E-03 kg 1.26E-04 kg 8.75E-05 kg 1.27E-06 kg
Direct emissions to ambient air, soil, and water	Not applicable

The following table represent the end-of-life scenario that has been considered for those wastes generated during the installation of the products at the construction site. These values have been obtained from the Eurostat database and represent the ways of waste management by type in France.

	Paper and cardboard	Plastic	Wood
Disposal - landfill	0.00 %	1.10 %	0.60 %
Disposal - incineration	7.43 %	80.82 %	48.12 %
Recovery	92.57 %	18.08 %	51.28 %

USE STAGE, B1-B7

The use of the metal framing for plasterboard and tracks of Pladur® does not require any maintenance, repair, replacement or refurbishment. Moreover, no operational energy or water use is necessary. Therefore, the use stage has not impact.

- Use or application of the installed product (B1): not applicable.

- Maintenance (B2): not applicable.

- Repair (B3): not applicable.

- Replacement (B4): not applicable.

- Refurbishment (B5): not applicable.

- Operational energy use (B6): not applicable.

- Operational water use (B7): not applicable.

END-OF-LIFE STAGE, C1-C4

These modules collect the most likely end-of-life scenarios based on the best knowledge currently available.

- Deconstruction, demolition (C1): this module considers all processes and activities used on-site for the deconstruction of the building frame. This shall ideally include the use of equipment, supply of fuel and the quantification of other emissions due to the activities performed on-site. Currently, there is not much information about this life cycle stage to enable a comprehensive assessment of the corresponding potential environmental impacts. Since more accurate data is not available, a value of 0.239 MJ of burned diesel/kg of product has been used (Gervasio & Dimova, 2018).

- Waste transport (C2): this module includes the environmental impacts related to the transport of waste by lorry from the location of waste generation to the waste manager. The distance considered for the transport of the waste generated to the manager is 50 km.

- Waste processing (C3): this module includes the processing of products waste fractions from the deconstruction and waste processing of material flows intended for reuse, recycling, and energy recovery. In this study it is assumed that the steel that composes the product needs an additional sorting process before becoming part of primary steel.

- Disposal (C4): this module includes the final discharge of waste that has not been destined for recovery or treatment processes. According to the standard NF EN 15804+A2 CN, it has been considered that a 1% of the final product is disposed in a landfill as inert waste.

End-of-life

Parameter	Value
Demolition	A diesel consumption from bibliography has been considered: 0.239 MJ/kg of product
Collection process specified by type	0 kg/lm collected as mixed demolition waste (product and installation materials)
	0,46 kg/lm collected individually
Recovery system specified by type	0,455 kg/lm recycling (99%)
Disposal specified by type	0,005 kg/lm to landfill (1%)
Assumptions for scenario development, e.g. transportation	Waste is transported 50 km to final disposal by lorry 16-32 tonnes (Euro V) Waste is transported 345 km to recycling site by lorry >32 tonnes (Euro V)

BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES, D

Module D analyses the benefits and burdens related to the processes of recovery, reuse or recycling of waste from the products under study at their end of life, which could be part of the life cycle of a new product.

The output and/or input steps that are taken into account are as follows: this recycling potential concerns the 'net' quantity of steel scrap generated after the useful life cycle of the product, with which new steel can be produced. It is worth mentioning that the recycling potential of the packaging of the product (i.e. wood, polypropylene, labels, etc.) is not taken into account.

Module D has been calculated using the protocols/formulae stated in NF EN 15804+A2 Annex D, section D.3.4. Furthermore, a 95% yield was assumed in recycling/reuse operations according to prEN 17662.

Materials/materials recovered outside the boundaries of the system	Recycling process beyond the system boundaries	Materials/materials/energy saved	Associated quantities
Steel	Steelmaking in an Electric Arc Furnace (EAF)	Primary steel, low-alloyed, produced in a Basic Oxygen Furnace (BOF)	0.455 kg

4

INFORMATION FOR THE LIFE CYCLE ANALYSIS CALCULATION

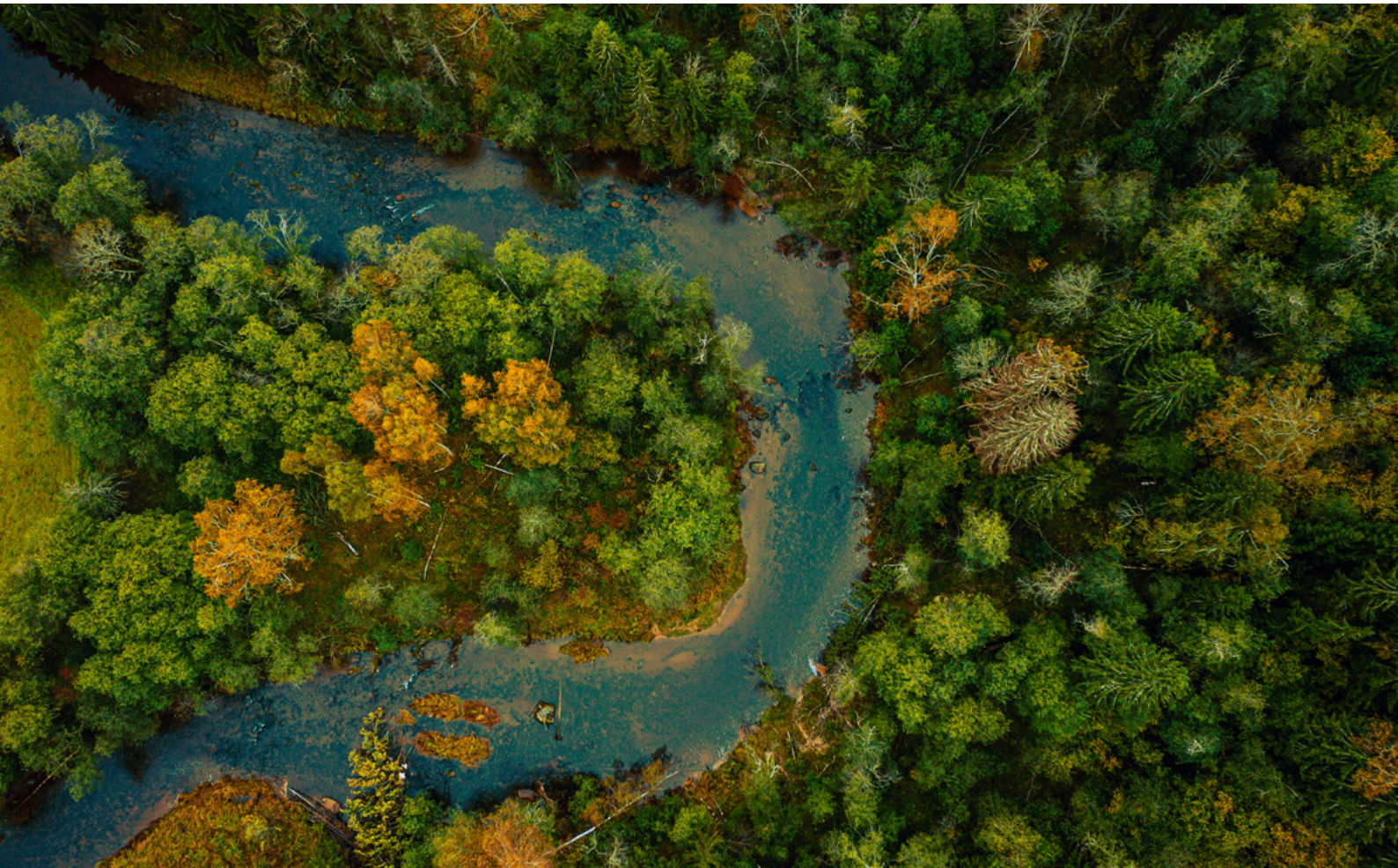
PCR used	CEN standard NF EN 15804+A2 and the French national supplement NF EN 15804+A2 CN provide the Product category definition rules (PCR)
System boundaries	Cradle-to-grave with module D (A + B + C + D)
Allocations	No allocation was needed since no co-products are generated during the manufacturing process
Geographic representativity and time-related representativity of primary data	The representativity is: - Geographic: manufactured in Spain for the French market - Temporal: manufactured during the period January 2021 - December 2021 Primary data obtained from the company (2021) and generic data from Ecoinvent version 3.8 (cut-off)
Results variability	The deviations between the GWP-total, PENRT, NHW and ADP Minerals&Metals results of the analyzed references respect to the average virtual product are shown in Annex A. The differences between the references and the average virtual product are affected principally by the quantity of steel and the percentage of recycled content in the steel used as raw material

5

RESULTS OF THE LIFE CYCLE ANALYSIS

ENVIRONMENTAL IMPACTS														
Environmental impacts	Production Stage	Construction Stage		Use Stage							End-of-life stage				D Benefits and loads beyond the system boundary
	A4 Transport	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Use of energy	B7 Use of water	C1 Deconstruction / Demolition	C2 Transport	C3 Waste processing	C4 Landfill disposal	
Climate change - total - kg CO_2 eq./FU	1.14E+00	7.31E-02	2.70E-01	0.00 E+00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.11E-02	4.43E-03	1.71E-02	2.90E-05	-6.73E-01
Climate change – fossil - kg CO_2 eq./FU	1.13E+00	7.30E-02	2.70E-01	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.11E-02	4.42E-03	1.70E-02	2.90E-05	-6.73E-01
Climate change - biogenic - kg CO_2 eq./FU	1.13E-03	2.62E-05	3.47E-04	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.72E-06	1.56E-06	6.72E-06	1.39E-08	2.42E-04
Climate change - land use and land use change - kg CO_2 eq./FU	6.12E-04	3.37E-05	1.43E-04	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.23E-06	2.11E-06	7.88E-06	1.71E-08	-9.23E-05
Ozone depletion - kg CFC 11 eq./FU	2.69E-08	1.55E-09	4.60E-09	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.73E-10	9.36E-11	3.65E-10	8.04E-13	-1.52E-08
Acidification - mol H+ eq./FU	1.39E-02	2.39E-04	1.09E-03	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.01E-04	1.40E-05	5.66E-05	2.09E-07	-2.37E-03
Eutrophication aquatic freshwater - kg P eq./FU	4.87E-05	5.75E-07	1.08E-05	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	3.92E-08	3.45E-08	1.38E-07	2.71E-10	1.96E-06
Eutrophication aquatic marine - kg N eq./FU	1.23E-03	8.19E-05	2.14E-04	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	4.66E-05	4.77E-06	1.92E-05	8.00E-08	-4.42E-04
Eutrophication terrestrial - mol N eq./FU	5.26E-02	8.76E-04	2.46E-03	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	5.07E-04	5.10E-05	2.05E-04	8.62E-07	-6.07E-03
Photochemical ozone formation - kg NMVOC eq./FU	5.23E-03	3.73E-04	1.14E-03	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.50E-04	2.10E-05	8.70E-05	3.00E-07	-3.28E-03
Depletion of abiotic resources (minerals & metals) - kg Sb eq./FU	1.44E-05	1.92E-07	1.87E-06	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	3.79E-09	1.38E-08	5.15E-08	3.86E-11	-5.57E-06
Depletion of abiotic resources (fossil fuels) - MJ/FU	1.23E+01	1.04E +00	4.21E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	1.42E-01	6.11E-02	2.61E-01	6.93E-04	-5.93E +00
Water use - m^3world eq. deprived/FU	3.84E-01	5.04E-03	5.81E-02	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	0.00E +00	3.13E-04	2.52E-04	1.22E-03	3.06E-05	-3.23E-01

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS														
Environmental impacts	Production Stage	Construction Stage		Use Stage							End-of-life stage				D Benefits and loads beyond the system boundary
	A4 Transport	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Use of energy	B7 Use of water	C1 Deconstruction / Demolition	C2 Transport	C3 Waste processing	C4 Landfill disposal	
Particulate Matter emissions - disease inc./FU	1.71E-07	7.17E-09	1.65E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-09	3.41E-10	1.67E-09	4.58E-12	-3.67E-08
Ionizing radiation, human health - kBq U-235 eq./FU	2.08E-02	5.01E-04	6.56E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E-05	3.06E-05	3.16E-04	1.83E-07	-1.62E-05
Ecotoxicity (freshwater) - CTUe/FU	5.56E+00	5.44E-01	6.91E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.23E-02	3.23E-02	1.27E-01	3.40E-04	1.34E+01
Human toxicity, cancer effects - CTUh/FU	6.29E-09	3.08E-11	1.18E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-12	1.96E-12	7.49E-12	1.18E-14	2.03E-09
Human toxicity, non-cancer effects - CTUh/FU	2.87E-08	9.80E-10	5.26E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.45E-11	5.72E-11	2.35E-10	3.42E-13	3.12E-08
Land use related impacts / Soil quality - Pt/FU	4.90E+00	1.06E+00	8.48E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.49E-03	3.63E-02	2.51E-01	1.38E-03	-2.04E+00



RESOURCE USE														
Resource Use	Production Stage	Construction Stage		Use Stage							End-of-life stage				D Benefits and loads beyond the system boundary
	A4 Transport	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Use of energy	B7 Use of water	C1 Deconstruction / Demolition	C2 Transport	C3 Waste processing	C4 Landfill disposal	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - MJ/FU	1.25E+00	1.52E-02	3.02E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.08E-04	9.47E-04	5.24E-03	5.87E-06	-5.04E-01
Use of renewable primary energy resources used as raw materials - MJ/FU	1.46E-01	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	0.00E+00	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/FU	1.39E+00	1.52E-02	3.02E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.08E-04	9.47E-04	5.24E-03	5.87E-06	-5.04E-01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - MJ/FU	1.20E+01	1.11E+00	3.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-01	6.49E-02	2.76E-01	7.37E-04	-6.25E+00
Use of non-renewable primary energy resources used as raw materials - MJ/FU	1.08E+00	0.00E+00	1.07E+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	0.00E+00	0.00E+00	0.00E+00
Total use of non-renew primary energy resources (primary energy and primary energy resources used as raw materials)- MJ/FU	1.31E+01	1.11E+00	4.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-01	6.49E-02	2.76E-01	7.37E-04	6.25E+00
Use of secondary material- kg/FU	9.58E-02	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary Fuels - MJ/FU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary Fuels - MJ/FU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water - m^3/FU	1.02E-02	1.63E-04	1.64E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-05	8.70E-06	4.35E-05	7.36E-07	-7.99E-03

WASTE CATEGORY														
Waste Category	Production Stage	Construction Stage		Use Stage							End-of-life stage				D Benefits and loads beyond the system boundary
	A4 Transport	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Use of energy	B7 Use of water	C1 Deconstruction / Demolition	C2 Transport	C3 Waste processing	C4 Landfill disposal	
Hazardous waste disposed – kg/FU	1.29E-04	6.46E-06	1.89E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.56E-07	3.89E-07	1.51E-06	3.67E-09	-7.03E-05
Non-hazardous waste disposed – kg/FU	4.57E-01	9.12E-02	8.49E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E-04	2.98E-03	2.11E-02	4.57E-03	-2.18E-01
Radioactive waste disposed – kg/FU	1.53E-05	3.17E-07	5.48E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E-08	1.98E-08	3.35E-07	1.02E-10	-6.60E-08

OUTPUT FLOWS															
Output Flows	Production Stage	Construction Stage		Use Stage							End-of-life stage				D Benefits and loads beyond the system boundary
	A4 Transport	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Use of energy	B7 Use of water	C1 Deconstruction / Demolition	C2 Transport	C3 Waste processing	C4 Landfill disposal	
Components for reuse kg/FU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling kg/FU	1.60E-02	0.00E+00	4.40E-03	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	4.53E-01	0.00E+00	0.00E+00
Materials for energy recovery kg/FU	0.00E+00	0.00E+00	4.18E-03	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	0.00E+00	0.00E+00
Exported Energy - Electricity - MJ/FU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported Energy - Steam- MJ/FU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported Energy - Process gases - MJ/FU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS						
Aggregation of the different modules to achieve a "Total Stage" or "Total Life Cycle"						
Environmental impacts	**Production Stage**	**Construction Stage**	**Use Stage**	**End-of-life stage**	**Total life cycle**	**Benefits and loads beyond the system boundary stage**
Climate change - total - kg CO_2 eq./FU	1.14E+00	3.43E-01	0.00E+00	3.26E-02	1.51E+00	-6.73E-01
Climate change – fossil - kg CO_2 eq./FU	1.13E+00	3.43E-01	0.00E+00	3.26E-02	1.51E+00	-6.73E-01
Climate change - biogenic - kg CO_2 eq./FU	1.13E-03	3.73E-04	0.00E+00	1.00E-05	1.52E-03	2.42E-04
Climate change - land use and land use change - kg CO^2 eq./FU	6.12E-04	1.77E-04	0.00E+00	1.12E-05	8.01E-04	-9.23E-05
Ozone depletion - kg CFC 11 eq./FU	2.69E-08	6.15E-09	0.00E+00	6.32E-10	3.37E-08	-1.52E-08
Acidification - mol H+ eq./FU	1.39E-02	1.33E-03	0.00E+00	1.71E-04	1.54E-02	-2.37E-03
Eutrophication aquatic freshwater - kg P eq./FU	4.87E-05	1.14E-05	0.00E+00	2.12E-07	6.03E-05	1.96E-06
Eutrophication aquatic marine - kg N eq./FU	1.23E-03	2.96E-04	0.00E+00	7.06E-05	1.60E-03	-4.42E-04
Eutrophication terrestrial - mol N eq./FU	5.26E-02	3.33E-03	0.00E+00	7.64E-04	5.67E-02	-6.07E-03
Photochemical ozone formation - kg NMVOC eq./FU	5.23E-03	1.51E-03	0.00E+00	2.58E-04	7.01E-03	-3.28E-03
Depletion of abiotic resources (minerals & metals) - kg Sb eq./ FU	1.44E-05	2.06E-06	0.00E+00	6.91E-08	1.65E-05	-5.57E-06
Depletion of abiotic resources (fossil fuels) - MJ/FU	1.23E+01	5.25E+00	0.00E+00	4.64E-01	1.80E+01	-5.93E+00
Water use - m^3world eq. deprived/FU	3.84E-01	6.32E-02	0.00E+00	1.82E-03	4.49E-01	-3.23E-01
Additional Environmental Impact Indicators						
Particulate Matter emissions - disease inc./FU	1.71E-07	2.37E-08	0.00E+00	4.82E-09	2.00E-07	-3.67E-08
Ionizing radiation, human health- kBq U-235 eq./FU	2.08E-02	7.06E-03	0.00E+00	3.76E-04	2.83E-02	-1.62E-05
Ecotoxicity (freshwater) - CTUe/ FU	5.56E+00	1.24E+00	0.00E+00	2.32E-01	7.03E+00	1.34E+01
Human toxicity, cancer effects - CTUh/FU	6.29E-09	1.21E-09	0.00E+00	1.28E-11	7.51E-09	2.03E-09
Human toxicity, non-cancer effects - CTUh/FU	2.87E-08	6.24E-09	0.00E+00	3.67E-10	3.53E-08	3.12E-08
Land use related impacts / Soil quality - Pt/FU	4.90E+00	1.90E+00	0.00E+00	2.98E-01	7.11E+00	-2.04E+00
Resource consumption						
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - MJ/FU	1.25E+00	3.17E-01	0.00E+00	7.00E-03	1.57E+00	-5.04E-01

ENVIRONMENTAL IMPACTS						
Aggregation of the different modules to achieve a "Total Stage" or "Total Life Cycle"						
Environmental impacts	**Production Stage**	**Construction Stage**	**Use Stage**	**End-of-life stage**	**Total life cycle**	**Benefits and loads beyond the system boundary stage**
Use of renewable primary energy resources used as raw materials - MJ/FU	1.46E-01	0.00E+00	0.00E+00	0.00E+00	1.46E-01	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)- MJ/FU	1.39E+00	3.17E-01	0.00E+00	7.00E-03	1.72E+00	-5.04E-01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - MJ/FU	1.20E+01	4.51E+00	0.00E+00	4.93E-01	1.70E+01	-6.25E+00
Use of non-renewable primary energy resources used as raw materials - MJ/FU	1.08E+00	1.07E+00	0.00E+00	0.00E+00	2.15E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)- MJ/FU	1.31E+01	5.58E+00	0.00E+00	4.93E-01	1.91E+01	-6.25E+00
Use of secondary material- kg/FU	9.58E-02	0.00E+00	0.00E+00	0.00E+00	9.58E-02	0.00E+00
Use of renewable secondary fuels - MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels - MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water - m^3/FU	1.02E-02	1.80E-03	0.00E+00	6.41E-05	1.20E-02	-7.99E-03
Waste categories						
Hazardous waste disposed - kg/FU	1.29E-04	2.54E-05	0.00E+00	2.86E-06	1.57E-04	-7.03E-05
Non-hazardous waste disposed - kg/FU	4.57E-01	1.76E-01	0.00E+00	2.88E-02	6.62E-01	-2.18E-01
Radioactive waste disposed - kg/FU	1.53E-05	5.80E-06	0.00E+00	3.70E-07	2.14E-05	-6.60E-08
Output flows						
Components for re-use - kg/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling - kg/FU	1.60E-02	4.12E-03	0.00E+00	4.53E-01	4.73E-01	0.00E+00
Materials for energy recovery - kg/FU	0.00E+00	4.00E-03	0.00E+00	0.00E+00	4.00E-03	0.00E+00
Exported Energy - Electricity - MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported Energy - Steam- MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported Energy - Process gases - MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Stockage de carbone biogénique	
Biogenic carbon content of the product (stockC)	0 kgC
Biogenic carbon content of packaging	0,0124 kgC

6

ADITIONAL INFORMATION ON RELEASE OF DANGEROUS SUBSTANCES TO INDOOR AIR, SOIL AND WATER DURING THE USE STAGE

INDOOR AIR

VOCs and Formaldehyde

The products do not enter within the scope of 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.

Radioactivity

Due to the composition of metal frames, they are not affected by natural radioactive emissions.

Growth of microorganisms

No tests have been made for the studied products.

SOIL AND WATER

The product is not in contact with water during its useful life cycle, and nor emissions in soil can be made during its use stage due to the kind of use that is given to the product.

7

CONTRIBUTION OF PRODUCT TO QUALITY OF LIFE INSIDE BUILDINGS

Characteristics of product involved in creating hygrothermal comfort conditions in the building

Not applicable.

Characteristics of product involved in creating acoustic comfort conditions in the building

Not applicable.

Characteristics of product involved in creating visual comfort conditions in the building

Not applicable.

Characteristics of product involved in creating olfactory comfort conditions in the building

The product is odorless, but it has not been measured according to any standard.

8 ADDITIONAL INFORMATION

LCA INTERPRETATION

The following tables present the environmental impacts of the Tracks and Ceiling profiles family of Pladur® of products for some selected impact categories. The results are shown in absolute values and in percentage respect to the total of the impact category.

Environmental impact results per functional unit (1 lm) for the family of Tracks and Ceiling profiles												
Indicator	Unit	A1	A2	A3	TOTAL A1-A3	A4	A5	C1	C2	C3	C4	Module D
Climate change - total	kg CO_2 eq.	1.09E+00	3.83E-02	3.60E-03	1.14E+00	7.31E-02	2.70E-01	1.11E-02	4.43E-03	1.71E-02	2.90E-05	-6.73E-01
Non-hazardous waste disposed	kg	4.31E-01	2.58E-02	9.39E-04	4.57E-01	9.12E-02	8.49E-02	2.04E-04	2.98E-03	2.11E-02	4.57E-03	-2.18E-01
Depletion of abiotic resources (minerals & metals)	kg Sb eq.	1.42E-05	1.20E-07	1.16E-08	1.44E-05	1.92E-07	1.87E-06	3.79E-09	1.38E-08	5.15E-08	3.86E-11	-5.57E-06
Depletion of abiotic resources (fossil fuels)	MJ	1.17E+01	5.29E-01	5.88E-02	1.23E+01	1.04E+00	4.21E+00	1.42E-01	6.11E-02	2.61E-01	6.93E-04	-5.93E +00
Water demand	m^3	3.81E-01	2.19E-03	1.08E-03	3.84E-01	5.04E-03	5.81E-02	3.13E-04	2.52E-04	1.22E-03	3.06E-05	-3.23E-01

Environmental impact results per functional unit (1 lm) for the family of Tracks and Ceiling profiles									
Indicator	A1	A2	A3	TOTAL A1-A3	A4	A5	C1	C2	C3	C4
Climate change - total	72.38%	2.54%	0.24%	75.15%	4.83%	17.86%	0.73%	0.29%	1.13%	0.00%
Non-hazardous waste disposed	65.02%	3.90%	0.14%	69.06%	13.77%	12.81%	0.03%	0.45%	3.18%	0.69%
Depletion of abiotic resources (minerals & metals)	86.32%	0.73%	0.07%	87.12%	1.16%	11.30%	0.02%	0.08%	0.31%	0.00%
Depletion of abiotic resources (fossil fuels)	65.08%	2.93%	0.33%	68.34%	5.77%	23.32%	0.79%	0.34%	1.44%	0.00%
Water demand	84.80%	0.49%	0.24%	85.53%	1.12%	12.95%	0.07%	0.06%	0.27%	0.01%

Module A1 of raw materials is the one with the highest impact over the whole life cycle of the final product. Concretely, it could be noted that the Module A1 has the highest contribution in all the environmental indicators (among 65.02% to 86.32% for all impact categories), with its maximum impact in the category of depletion of abiotic resources (minerals & metals) (1.42E-05 kg Sb eq.) and its minimum in the category of depletion of abiotic resources (fossil fuels) (11.7 MJ).

Since the product is composed principally by steel (almost 100% of the total weigh of the final product), the environmental performance of the average product of the Tracks and Ceiling profiles family is affected by this raw material. The steel is the principal raw material that affects the environmental impact of the module A1. This is because of the acquisition and processing of the steel that is then used in the Pladur® facilities for manufacturing the final products. The amount of recycled steel incorporated into each of the different steel from which the product is manufactured becomes a key factor in the environmental performance of the final product.

Module A2 presents a low or negligible contribution depending on the impact category evaluated, with a maximum value of around 3.90% for the non-hazardous waste disposed. The main contributor to this impact category is the diesel used as fuel for the lorries that transport the raw materials.

Module A3 has a low environmental contribution in the impact categories assessed, below 0.33% for the different categories.

Regarding Module A4, it presents its higher contribution to the non-hazardous waste disposed category, where it represents 13.77% of the impact of the product life cycle. On the other hand, it shows its minimum contribution to the water demand indicator, where it contributes with just 1.12%.

Following the raw materials module (A1), Module A5 has been identified as the most significant contributor to the overall life cycle impact of the product. Its contribution ranges from 23.32% in the depletion of abiotic resources (fossil fuels) category to 11.30% in the depletion of abiotic resources (minerals and metals) category. The primary source of impact for this module is attributed to the screws used for product installation, while the plugs installed alongside the screws represent a secondary source of impact.

The use (Modules B1-B7) of the metal framing for plasterboard and tracks of Pladur® does not require any maintenance, repair, replacement or refurbishment. Moreover, no operational energy or water use is necessary. Therefore, the use stage has not impact.

Focusing on the end-of-life stage, Module C1 of deconstruction of the final product after its useful life is the one with the highest impact overall impact indicators. It presents the highest contribution in the category of depletion of abiotic resources (fossil fuels) (0.79%) as a result of the diesel burned in building machines, and the lowest impact over the category of potential depletion of mineral and metal resources (0.02%). The impact of this module comes from the diesel burned in the building machines used for the deconstruction of the products.

Module C2 has a very low contribution in the impact categories evaluated. Specifically, it presents its maximum value (0.45%) in the non-hazardous waste disposed category due to the diesel consumed by the lorries for the transport.

Module C3 has an insignificant impact on all evaluated categories, with a contribution of less than 3.18% for all impact categories. This result indicates that the activities and processes associated with Module C3 have a very low environmental impact compared to the total impact of the evaluated product.

The evaluation of these impact categories indicates that Module C4 has a negligible contribution to the environmental impacts. This is due to the fact that only a small amount of the product is destined to landfill. As a result, the impact of Module C4 on the evaluated categories is almost negligible, with a contribution that is unlikely to significantly affect the overall sustainability performance of the product.

Module D presents a maximum reduction value in the category of depletion of fossil resources (-5.93 MJ/FU of product), indicating that the activities and processes associated with Module D have a net positive impact on this category. Similarly, the climate change category also sees a substantial reduction of -0.67 kg CO_2eq. as a result of Module D, indicating that the activities and processes associated with this module contribute positively to the overall sustainability of the product.

CATÉGORIE ET INDICATEUR ENVIRONNEMENTAL	A1-A3	A4	A5	B1-B7	C1-C4	D	TOTAL LIFE CYCLE (Without module D)
Climate change – total (GWP-total)	1.14E+00	7.31E-02	2.70E-01	0.00E+00	3.26E-02	-6.63E-01	1.51 kg CO_2 eq. / UF
Depletion of abiotic resources -minerals and metals (ADP-minerals&metals)	1.44E-05	1.92E-07	1.87E-06	0.00E+00	6.91E-08	-5.57E-06	1.65E-05 kg Sb eq. / UF
Depletion of abiotic resources - fossil fuels (ADP-fossil)	1.23E+01	1.04E+00	4.21E+00	0.00E+00	4.64E-01	-5.93E+00	1.80E+01 MJ / UF
Water use (WDP)	3.84E-01	5.04E-03	5.81E-02	0.00E+00	1.82E-03	-3.23E-01	4.49E-01 m³ privé. / UF
Non-hazardous waste disposed (NHW)	4.57E-01	9.12E-02	8.49E-02	0.00E+00	2.88E-02	-2.18E-01	6.62E-01 kg / UF

ENVIRONMENTAL COMMITMENT

Products of the Studs, Furring and Ceiling profiles family of Pladur® are manufactured in the company facilities in Valdemoro (Madrid, Spain) and Langreo (Asturias, Spain), in compliance with the Directive laying down the obligations on integrated prevention and pollution control.

The facilities have the Integrated Environmental Authorisation, ACIC-MO-AAI-1007/14 10-AM-00076.4/06 record. This authorization was granted by the Ministry of Environment on September the 23th 2009 and modified automatically by the same Ministry on February the 2nd 2015.

Data related to pollutant emissions to air, soil and water and waste transferred from the facility are annually reported, according to 166/2006 Regulation and 508/2007 Decree and Pladur® installation has the greenhouse gases emission authorization, also granted by the Ministry of Environment (10-AGEI-M-002/2014).

The company has also made the necessary arrangements to comply with the REACH Regulation, on the registration, evaluation, authorization and restriction of substances and chemical preparations, obtaining the following registration number: 01-21194449 18-26-0236.

Moreover, Pladur® Gypsum S.A.U. (Pladur®) has implemented an Environmental Management System in accordance with UNE-EN-ISO 14001:2015, certified by AENOR, that covers the following activities: design and manufacture of plasterboards in different sizes and characteristics (standard, waterproof, vapor barrier, fire resistance, thermal and acoustic insulating, honeycomb sandwich and decorative panels), adhesive compounds and associated metal profiles. Certification number is GA-2011/0624.

Materials used for manufacturing Pladur® products are characterized by having a low impact over their life cycle. Pladur® Gypsum S.A.U. facilities are located near the main raw material quarries, reducing impacts related to transportation.

Water efficiency is also a priority for Pladur® Gypsum S.A.U. Specifically, in Valdemoro plant there is a pond where rainwater and industrial wastewater are collected, to be entered again in the industrial processes after being treated.

The main objectives or the organization related to the environment are:

- Minimizing air emissions
- Reducing hazardous waste
- Valuing non-hazardous waste
- Optimizing water consumption
- Increasing energy efficiency
- Improving spills prevention system

Specifically, there is an organizational commitment to climate change, energy efficiency, natural resources preservation and atmospheric emissions reduction that is translated into:

- Regular monitoring on CO_2 emissions
- Periodic measurements on emission points to control emitted pollutant levels
- Natural gas is used as fuel for the manufacturing process
- Natural gas is also used as preferred fuel for the vehicle fleet (trucks)
- Good energy management practices are applied in a continuous improvement management system

Criteria on energy efficiency are implemented in all manufacturing activities in order to respect the environment, preserve natural resources, reduce atmospheric emissions and contribute to minimize climate change effects.

9 REFERENCES

- NF EN 15804+A2 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

- NF EN 15804+A2/CN - Contributions of construction works to sustainable development - Environmental product declarations - Rules governing categories of construction products - National supplement to NF EN 15804+A2.

- CEN, 2021. DRAFT prEN 17662 Execution of steel structures and aluminium structures - Environmental Product Declarations - Product category rules complementary to EN 15804 for Steel, Iron and Aluminium structural products for use in construction works.

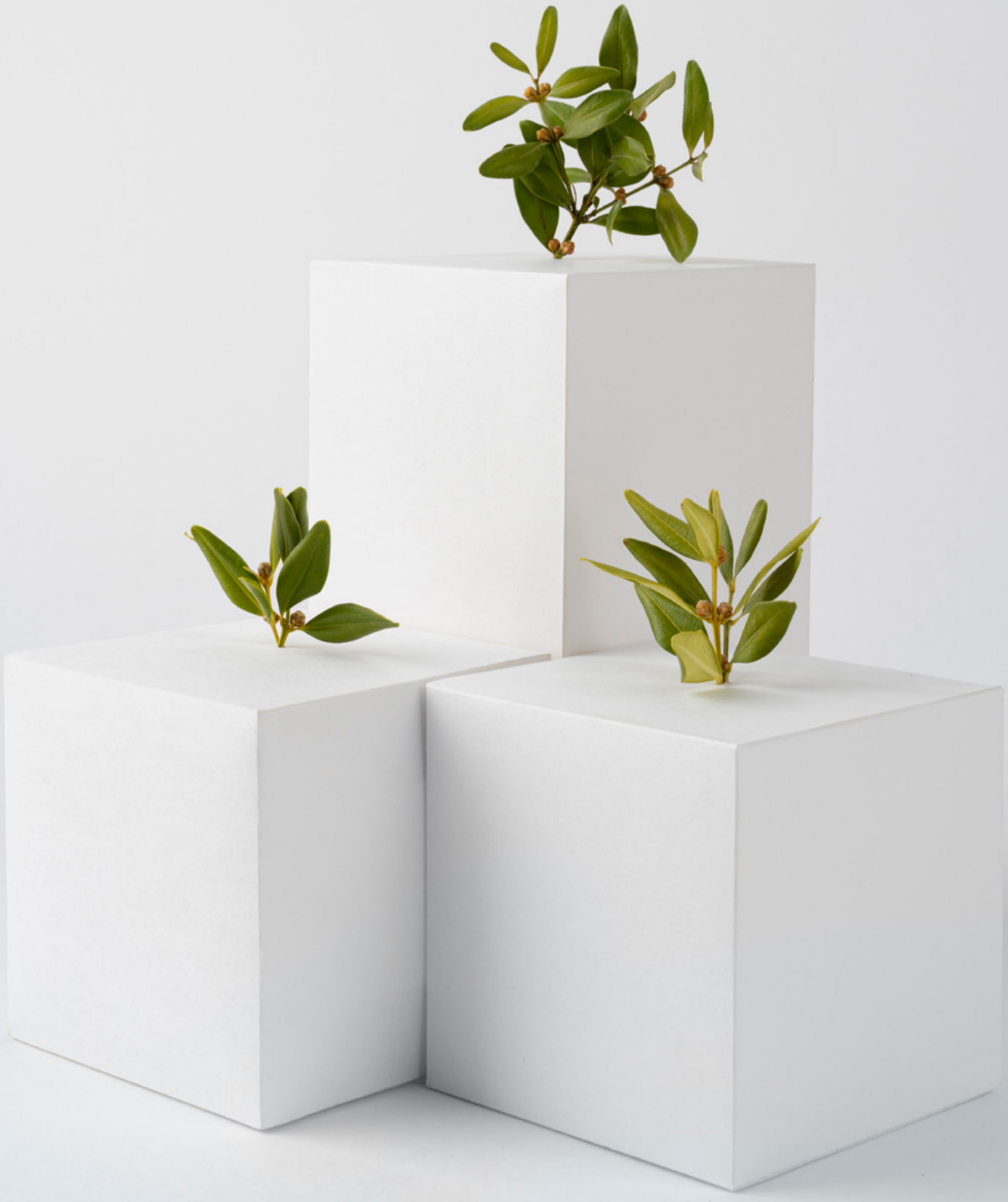
- Gervasio, H. and Dimova, S., Model for Life Cycle Assessment (LCA) of buildings, EUR 29123 EN, Publications Office of the European Union, 2018, ISBN 978-92-79-79974-7 (print), 978-92-79-79973-0 (pdf), doi:10.2760/10016 (online),10.2760/789069 (print), JRC110082.

ANNEX A.

Deviation of the GWP-total, PENRT, NHW and ADP-Minerals&Metals results of the referenced analysed respect to the average virtual product

Below, the deviation of the results between of the references that composes the family of Tracks and Ceiling profiles family of Pladur® with respect to the average product of the family is shown. As specified in the NF EN 15804+A2, the environmental impact indicators GWP-total, PENRT, NHW and ADP-Minerals&Metals have been used, showing the results in absolute value, and making a percentage comparison of each reference.

		Produit moyen	PLADUR® C 48/30 Z1	PLADUR® C 70/30 Z1	PERFIL U30	PERFIL U31	PH-45	PLADUR® C 36/30 Z2	PLADUR® T-45 / PLADUR® NEO S-1200	PLADUR® C 48/30 Z2
Climate change	**kg CO_2 eq**	1.51E+00	1.47E+00	1.75E+00	1.21E+00	1.24E+00	1.81E+00	1.22E+00	1.47E+00	1.49E+00
			-3%	15%	-20%	-18%	20%	-19%	-3%	-1%
Resource use, minerals and metals	**kg Sb eq**	1.65E-05	1.62E-05	1.94E-05	1.48E-05	1.51E-05	2.00E-05	1.99E-05	1.59E-05	2.19E-05
			-2%	18%	-10%	-8%	21%	20%	-4%	33%
PERNT	**MJ**	1.91E+01	1.86E+01	2.18E+01	1.58E+01	1.61E+01	2.25E+01	1.60E+01	1.85E+01	1.89E+01
			-3%	14%	-17%	-16%	18%	-17%	-3%	-1%
NHW	**kg**	6.62E-01	6.41E-01	7.56E-01	5.83E-01	5.96E-01	7.78E-01	5.84E-01	6.29E-01	6.32E-01
			-3%	14%	-12%	-10%	17%	-12%	-5%	-5%



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Plasterboard, profiles, and coatings.
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