Technical Project Report



ASPETTI GENERALI		
CLIENT: **LCA STUDIO**	Gees Recycling Srl	
TECHNICAL SUPPORT	Document produced by QualityNet Srl	
	In collaboration with Mérieux NutriSciences | EcamRicert Srl	
REFERENCES	UNI EN ISO 14044:2021 UNI EN 15804:2021 CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES, PCR 2019:14, v 1.11	
Version	01	
Data	10/09/2026	

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INTRODUCTION

This study was commissioned by Gees Recycling Srl and carried out by QualityNet Srl (in collaboration with Mèrieux Nutriscience | EcamRicert Srl).

This report presents the Life Cycle Assessment (LCA) study carried out on construction products (e.g. building stone, thermal insulation products, glass products, cement products, etc.). The analysis was carried out in accordance with the main guidelines of standards UNI EN ISO 14040:2021, UNI EN ISO 14044:2021 and UNI EN 15804:2021. The SimaPro v9 software was used to perform the calculation procedures required by the main standards.

It should be noted that, to ensure the reliability and traceability of the information and to certify compliance with technical standards, it is established practice to have any environmental claims relating to LCA studies verified by an independent third-party body. For these reasons, this report should not be used by sponsors or readers to make specific claims about product systems and schemes unless such claims are clearly supported by the results of the life cycle inventory (LCI) and are accompanied by a reference to the full, publicly available report. The use of the study's results for advertising purposes must comply with and be consistent with the principles set out in the ISO 14040 series of guidelines.

QualityNet Srl, Mérieux NutriSciences | EcamRicert Srl and its members shall not be held liable for any use of the study results by third parties in a manner that does not fully comply with the guidelines set out herein.

BACKGROUND

Market globalisation, digital connectivity and the scarcity of natural resources are all contributing to the increasing complexity of the environment in which businesses operate (Sebastiani, 2013). The uncertainties arising from this complexity make it increasingly difficult to anticipate rapid market changes; as a result, companies are increasingly recognising the need to develop both their resilience and their flexibility in order to cope with this unpredictable future (Sebastiani, 2013). To succeed, or even simply to continue operating as normal, companies must adopt an increasingly strategic approach capable of supporting, from a long-term perspective, the sudden changes that may occur (Sebastiani, 2013). It is in this context that the concept of corporate sustainability is emerging: a business approach that integrates sustainability strategies and practices into traditional business processes in order to create value, not only in economic terms, but also in social and environmental terms (Figure 1). This is a "corporate philosophy that cuts deep and cuts across the entire organisation, and which in many cases requires a radical transformation of business models – starting with a reshaping of the company's DNA and extending to a thorough green overhaul (energy and water consumption, emissions, waste, resource use, efficiency improvements, etc.) of processes and products" (M. Fasan, 2017) enabling organisations to explore new ways of competing in an increasingly complex environment. A sustainable business is therefore one that is well-structured and organised so that, from a long-term perspective, a balance is struck between economic, social and environmental considerations (Sebastiani, 2013). According to the 'Three Ps' model: Planet, People, Profit (Elkington 1997) Sustainable development at company level is achieved when profits are compatible with environmental integrity and social equity: the 'Planet' dimension refers to the efficient management of natural resources and the optimisation of the environmental impacts associated with products from a life-cycle perspective (M. Fasan, 2017); The People dimension aims to ensure opportunities and resources for all members of society, with a particular focus on the health and safety of workers and consumers; finally, the Profit dimension focuses on ensuring economic prosperity whilst maintaining a strong competitive position (Siano, 2012). In this sense, companies that adopt a sustainable business approach gain a competitive edge: integrating the three dimensions of sustainability into business processes leads companies to maintain a constant focus on the social and environmental context in which they operate, to build relationships with a growing number of stakeholders, and thus to be more responsive (and flexible) to ongoing changes.



Figure 1: Sostenibilità come equilibrio tra costi economici, impatti ambientali e benefici al collettivo

1 LIFE CYCLE APPROACH

The Life Cycle Approach (LCA) enables the mapping, understanding and reduction of potential environmental risks arising from the manufacture of products and the activities of organisations and services. The significance of this method lies in analysing the stages of a production process, an organisation or a service as interrelated and interconnected, thereby providing essential planning support for development and improvement tailored to the relevant markets. According to international standards, the following methodological procedures are required:



A. **Improve:** select the parameters to be measured based on quality criteria**.**



B. **Cataloguing**: a quantitative assessment of parameters relating to individual processes within the system's boundaries in relation to the reference unit. The result is a design matrix structured around environmental performance indicators..



C. **Analysis**: assessment of the environmental impacts associated with environmental performance indicators to identify potential environmental risks within the system under review. The results obtained will then be analysed in order to adjust the study design and define possible courses of action to improve monitoring.

The methodological approach described is required in the field of environmental management by standards that form the basis for specific guidelines and key sustainability protocols. At an international level, LCA methodology is gaining strategic importance as a scientifically sound and recognised tool for addressing significant environmental aspects through voluntary environmental policy instruments.

2 LIFE CYCLE IMPACT ASSESSMENT – LCA ANALYSIS

2.1. GOAL OF THE STUDY

(UNI EN ISO 14044:2021 clause 4.2.2)

The study presented, of the "cradle-to-gate" type with modules C1–C4 and module D, took into account the information and data specified in the mandatory information modules (see clause 5 of UNI EN 15804:2021). The aim of the analysis is to update the EPD certification by calculating the environmental profile attributable to the product manufacturing stage. To achieve this objective, Gees Recycling Srl intends to start with the LCA analysis attributable to the processing of 1 kg of finished product.

The company aims to optimise the design of its products with a view to environmental sustainability, enabling it to guide its market decisions by investing in systems that consume fewer resources, whilst monitoring and mitigating direct and indirect environmental impacts as part of an integrated policy.
The analytical approach chosen is top-down, starting with the definition of the general boundaries of the systems under study and working down to the details of each individual process within those boundaries.
The study is aimed at stakeholders, in particular other companies operating in the same sector, and customers as end users. The study is therefore both B2B (Business to Business) and B2C (Business to Consumer). This Life Cycle Assessment study therefore aims to contribute to the acquisition of knowledge that can, on the one hand, assist the company in its corporate strategies and policies and, on the other, be useful to stakeholders in gaining a better understanding of issues related to the life cycle of the products under study and their environmental impacts.
The objective of the study is to assess the environmental performance of the two product lines: RECOMPLAX D'ECÒ and RECOMPLAX BASIC.

Given the unique nature of the product codes under study, it was not possible to unambiguously map them to a CPC code. However, a similar association was identified in UN CPC code 36950 (plastic construction products not classified elsewhere).

The product formulation is subject to a degree of variability, which is also related to the type of incoming waste. To account for this variability, quantities are indicated as a percentage range of the formula.

Table 1:Declaration of contents for 1 kg of Recomplax D'Ecò and its packaging

RECOMPLAX D'ECÒ		kg	% (kg/kg)	Post-consumer materiale, peso-% *
PRODUCT	Secondary Raw Material (SRM)	0,95-0,97	95-97%	6%
	Aliphatic resin and pre-polymer	0,03-0,05	3-5%	
	Iron oxide	0,005-0,05	0,5-5%	
RECOMPLAX D'ECÒ			**% (kg/kg)**	
PACKAGING	Pallets	7,44E-02	7,44%	
	Cardboard corner protectors	4,91E-04	0,05%	

* to which is added 94% pre-consumer waste

Table 2:Declaration of contents for 1 kg of Recomplax Basic and its packaging

RECOMPLAX BASIC		kg	% (kg/kg)	Post-consumer materiale, peso-%*
PRODOTTO	Secondary Raw Material (SRM)	0,90-0,94	90-94%	6%
	Aliphatic resin and pre-polymer	0,06-0,10	6-10%	
RECOMPLAX BASIC			**% (kg/kg)**	
PACKAGING	Pallets	7,44E-02	7%	
	Cardboard corner protectors	4,91E-04	0%	

* to which is added 94% pre-consumer waste

It should be noted that the products are manufactured at the company's own factory.

Gees Recycling Srl does not use subcontractors for the manufacturing processes involved in the production of the products listed above.

3. PRODUCT CATEGORY RULES FOR LCA

3.1. LIFE CYCLE ASSESSMENT AND INFORMATION FORMS

(see UNI EN 15804:2021, clause 6.2)

In accordance with the requirements of the relevant documents and the PCR followed, the approach adopted and the environmental information contained therein have been organised into information modules (Figure 2).

3.2. DECLARED UNIT

(see UNI EN 15804:2021, clause 6.3.3)

For the purposes of calculating the eco-profile covered by this study, the products manufactured by Gees Recycling Srl were examined. The declared unit serves as the reference for the normalisation (in the mathematical sense) of the material and energy flows included in the information modules examined, in order to produce data and information expressed on a common basis. The declared unit therefore serves as the reference for combining the flows attributed to the subject of the analysis and the environmental impacts associated with the relevant forms. In accordance with the guidelines of the reference standard and the product rule, the declared unit is considered to be: 1 kg of product (including packaging) for the two product lines (RECOMPLAX D'ECÒ and RECOMPLAX BASIC).

3.3. REFERENCE SERVICE LIFE (RSL)

(see UNI EN 15804:2021, clause 6.3.4)

With reference to the provisions of PCR 2019:14 v 1.11, the reference service life (RSL) will not be addressed or specified.

3.4. SYSTEM BOUNDARIES

(see UNI EN 15804:2021, clause 6.3.5)

The purpose of defining the system boundaries is to delineate a spatial, temporal and operational area within which to collect reliable data that reflect the system's actual environmental performance and provide a comprehensive description of it. The scope and extent of the study are defined by these boundaries, which enable the unit processes to be included in the model to be determined. Along these unit processes, the macro-consumption involved in the manufacture of the products has been identified, and it is on this that the calculation model has been based and analysed (2019:14, v 1.1, § 4.3, Figure 2).

Figure 2: System boundaries considered in the study (ND: Not Declared)

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Decostrunction, demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	RER	RER	IT	-	-	-	-	-	-	-	-	-	-	IT	IT	IT	IT
Specific data used	Basic >90% Deco: >90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - product	>10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - site	not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The GWP-GHG value of electricity in A3 is 0.049463 kgCO_2eq/kWh

3.4.1. TEMPORAL, GEOGRAPHICAL AND TECHNOLOGICAL BOUNDARIES

The temporal boundaries cover the period from January 2025 to December 2025, a timeframe considered representative of the company's activities, and the results of the study should be viewed within these boundaries. These boundaries were chosen due to the availability of the most comprehensive information relevant to the study. The geographical boundaries of the study are defined as the international and Italian national territories (in particular for the manufacturing phase).

The technological boundaries refer to the average technological level relevant to the specific temporal and geographical context of the boundaries mentioned above.

3.4.2. ORGANISATIONAL BOUNDARIES

In defining the organisational boundaries, the first step was to identify the organisational units of Gees Recycling Srl and the facilities comprising the company, with regard to the individual processes relating to the products under consideration. In other words, this involves defining the organisational boundaries, namely the responsibilities attributable to Gees Recycling Srl with regard to the life-cycle analysis according to the boundaries already described. The approach adopted is that of control, as the aim of the study is to monitor and improve the environmental performance of the products under investigation. The boundaries of each system relating to the products under investigation can therefore be summarised as follows (Figure 3):

Figure 3: Macro production processes



The analytical approach has made it possible to study the products by assessing them as systems influenced by input and output factors, and consequently subject to life cycles that give rise to environmental impacts in accordance with the relevant PCR. It should be noted that Gees Recycling Srl carries out its activities at the following site:

- Via Monte Colombera 22, 33081 Aviano (PN)

Gees Recycling Srl does not rely on subcontractors for the processing carried out at the above-mentioned site in relation to the products in question.

3.4.3. OPERATIONAL BOUNDARIES

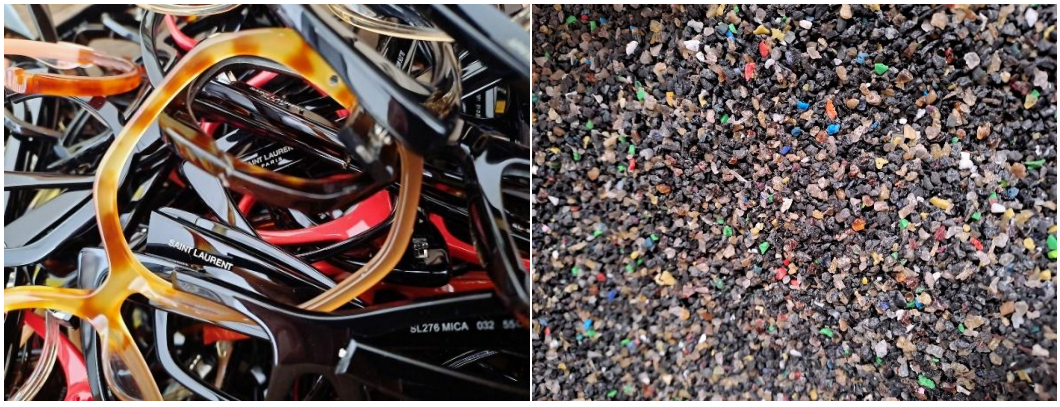
The unit processes relating to the production facility were analysed in detail.

Within these system boundaries, the material and energy flows characteristic of the unit processes, classifiable according to the environmental performance indicators, were taken into account. The environmental impacts were subsequently calculated based on these flows. Therefore, specific data potentially associated with environmental impacts were collected.. These data, for the [A3] – Manufacturing information module, are largely site-specific, an important feature that enhances the reliability of the study and makes the calculation model a more realistic representation of the production process under consideration.

The production process can be summarised as follows:

1. The waste goes through a mechanical grinding process to produce MPS;

Figure 4: MPS Shredded waste



2. The MPS are re-agglomerated using a high-temperature, high-pressure moulding process with a percentage of virgin binders;

Figure 5: MPS granules pressed into slabs



3. The slabs are cut to size and, in some cases, pantographed and surface-finished.

3.5. EXCLUSION AND ASSUMPTION CRITERIA

(see UNI EN 15804:2021, clause 6.3.6)

The reference data, automatically generated by the internal traceability system managed through the I-SMART software, total:

- **D'Ecò Line:** 58,611 kg
- **Basic Line:** 38,559 kg

In order to relate the total kilograms to the study's functional unit, the provided data are divided by the production volume of the respective lines. The quantities thus obtained are then used to calculate the MFR indicator.

The materials entering the Gees Recycling process were extracted from FIR and Mood and subsequently classified as pre-consumer and post-consumer according to the definition in UNI EN ISO 10421—to be validated as a reliable and relevant source in this specific context—and the description of EER codes as required by Decree-Law 77/2021.

This classification will be further examined with suppliers in subsequent years of the study.

Table 3:Classification of EER codes into pre-consumer and post-consumer categories

PRE-CONSUMER			
EER 120105	34312	Kg	94%
EER 070203	28830	Kg	
POST-CONSUMER			
EER 191204	520	Kg	6%
EER 170203	3250	Kg	
TOTAL EER - PRE AND POST CONSUMER			
TOTALE EER	66912	Kg	100%

According to Note 15, Section 5.3.4 of the reference PCR (1.11), for the purposes of the mathematical model, the upstream environmental impact resulting from prior processes will be considered zero for waste classified as post-consumer.

EERs classified as pre-consumer will be subject to by-product allocation (see EN 15804, Section 6.3.5.2).

In accordance with Section 6.3.5.2, streams that are no longer classified as waste at the boundary of the production phase must be allocated as by-products. However, for Gees Recycling EER codes, since this classification has not ceased, co-product allocation does not apply. If co-product allocation (§6.3.5.2) is not possible, other methods may be identified and must be justified as required by the EN 15804 standard referenced in the relevant PCR.

The method identified—and applied in previous years—involves treating the portion in question by assigning it a zero environmental impact, since the four criteria for ceasing to be classified as waste are not simultaneously met (in fact, the data are collected through FIR and MOOD registries, and GEES does not purchase waste materials because they are not associated with a relevant market demand).

The impacts related to the production and transport of plastic waste entering the system as secondary materials are allocated to the waste generator and do not fall within the system boundaries (Appendix D.2.3, UNI EN ISO 15804:2021).

Two different scenarios relating to modules C and D will be presented: one with 100% end-of-life recovery (scenario 1) and the second with 100% end-of-life disposal (scenario 2).

Scenario 1:

- The impacts associated with demolition (C1) are assumed to be negligible;
- The product can be recovered at the end of its life. A transport distance to the recovery facility (C2) of 50 km is assumed;
- The product is recovered following demolition work through pre-treatment (C3);
- The product is fully recovered following demolition work (C4).
- The corresponding benefits are calculated in Form D

Scenario 2:

- The impacts associated with demolition (C1) are assumed to be negligible;
- The product cannot be recovered at the end of its life. A transport distance to the recovery facility (C2) of 50 km is assumed;
- The product is not recovered following demolition (C3);
- After demolition activities, the product in entirely disposed of (C4).
- There are no corresponding benefits to report on Form D

It should also be noted that the percentages of resin used in the blends were determined during the plant's operations to ensure standardized mechanical performance of the sheets, which differ in composition and performance between the Recomplax D'ecò and Recomplax Basic lines.

In this study, the dataset "Polyurethane adhesive {GLO}| polyurethane adhesive production | Cut-off, U" from the Ecoinvent database was used to model the prepolymer used in the product. The dataset was selected based on currently available technical information and in accordance with criteria of technological and product representativeness, prioritizing a process that adequately reflects the type and function of the material in question.

To calculate and allocate the emissions recorded at emission points E4 (molding operations, pantographing of plastic sheets) and E6 (calibration plant and silo vents), the test reports provided by the company were used, taking as a reference the conservative results obtained from data sampled on 10/27/25 and issued on 11/10/2025.

The calculations performed using the data in yield the data Table 4 are shown in Table 5.

Table 4:Data and assumptions used to calculate emissions from stacks

EMISSIONS					
STACK	**POLLUTANS**	**Concentration (mg/nm3)**	**Volumetric flow rate (Nm3/h)**	**Worked hours in the reference year**	**Total qauntity (kg) produced in the reference year**
E4	Particulate matter	0,2	10.900	1760	67.217,50
E4	Isocyanates	0,1	10.900	1760	67.217,50
E6	Particulate matter	0,2	19.800	1760	67.217,50

Table 5:Cumulative results expressed in mg/kg allocated to total production

	Stacks E4 e E6	
Particulate matter	160,77	*mg/kg*
Isocyanates	28,54	*mg/kg*

Following the sensitivity analysis performed using the data calculated in this manner, the impacts resulting from these cash flows will be excluded from the results because they fall below the 1% cutoff threshold.

3.6. DATA SELECTION

(see UNI EN ISO 15809:2014, clause 6.3.7)

When selecting the data to be used for the study, priority was given to primary data that could be collated by the company. This data constitutes the primary source of information for the inventory analysis. It can be grouped according to environmental performance indicators, against which the environmental performance results will subsequently be assessed. The identifiable environmental performance indicators are set out in Table 6.

Table 6:Environmental performance indicators examined, broken down by information module

MODULE	INDICATOR	
A1 – Raw material supply	Raw materials	*UPSTREAM*
	Electricity consumption from the grid and photovoltaic systems	
A2 – Transport	Transport of raw materials and packaging Internal transport	
A3 - Manufacturing	Packaging	*CORE*
	Transport of waste generated	
	Treatment of waste generated	
	Consumption associated with demolition	
C1 - De-construction demolition	Transport of waste	*END OF LIFE*
C2 - Transport	Waste treatment	
C3 - Waste processing	Disposal	
C4 - Disposal	Potential for reuse, recovery and recycling	
D – Benefits and loads beyond the system boundary	Energy recovered at end-of-life	*OUTPUT BEYOND SYSTEM BOUNDARY*
	Secondary materials reintroduced into the system	
	Packaging	

3.7. DATA QUALITY REQUIREMENTS

(see UNI EN ISO 15804:2021, clause 6.3.8)

The selection of the indicators listed above was based on the fact that they are characteristic of the system under examination within the boundaries described. Furthermore, with particular regard to the production processes at **Gees Recycling Srl**, these indicators are:

- Physically measurable and traceable by the company through appropriate documentation;
- Measurable and potentially controllable by the company;
- Represent a financial cost to the company.

The characteristics of the data on the volume and energy flows of the environmental performance indicators listed above reflect, where technically possible, compliance with specific quality requirements, such as:

- Coverage relating to a specific time period (*time-related coverage*);
- Coverage relating to a specific geographical area (*geographical coverage*);
- Coverage of a certain technological level (*technology coverage*);
- Possessing a defined degree of precision and completeness;
- Representativeness;
- Consistency and reproducibility;
- Attributable to a specific source (*sources of the data*);
- Characterised by a defined degree of uncertainty (uncertainty of the information).

The quality requirements for the collected data are set out in Table 7:

Table 7:Data quality requirements in accordance with the UNI EN 15804:2021 standard

QUALITY REQUIREMENTS	COMPLIANCE
Time coverage	The data were collected in the year to which they refer and cover the entire period (2025). At the time of the study, these data are generally the most recent and comprehensive available.
Geographical coverage	The data were collected in the geographical area to which they refer, in accordance with the defined geographical boundaries. With regard to the geographical coverage of the data, preference was given to the use of data in the following order of priority: local, national, European.
Technological coverage	Average technological level consistent with the defined temporal and geographical boundaries.
Completeness	All material and energy flows deemed significant have been analysed and accounted for. Data on raw materials are given in kg of material, and the same applies to the quantity of waste produced (kg of waste per year).
Representativeness	Average data representativeness in line with the established technological and geographical boundaries. The selected datasets were chosen to reflect the technological and geographical boundaries as closely as possible.
Data sources	Administrative data, tax bills, purchase invoices (company source), company software.

4. INVENTORY ANALISIS

(see UNI EN 15804:2021, *clause* 6.4)

4.1. DATA COLLECTION

(see UNI EN 15804:2021, clause 6.4.1)

The inventory analysis focuses on the identification, quantification, and compilation of the material and energy flows involved in the production of the products under study. This phase is carried out in accordance with the requirements of UNI EN ISO 14044:2021.

Specific editable files were created for data collection purposes. The questionnaires were subsequently sent to Gees Recycling Srl and completed under the responsibility of the designated technical manager. The life cycle inventory (LCI) data are provided together with this report. The inventory data can be consulted in l'***ANNEX D*** The inventory data can be consulted in **ANNEX D**. In addition, the quality assessment of the datasets used (see Appendix E, Table E1 of UNI EN 15804:2021) is available in **ANNEX A**.

4.2. CALCULATION PROCEDURES

(see UNI EN 15804:2021, clause 6.4.2)

An LCA caclulation requires two different types of information:

- Data related to the environmental aspects of the system under consideration (materials or energy flows entering the production system). These data are usually provided by the company carrying out the lca study;
- Data related to the life cycle impacts of the materials or energy flows entering the production system. These data are usually obtained from databases.

Life cycle data for materials or energy inputs are classified into two categories: specific data and generic (non-specific) data, defined as follows:

Specific data

- Data collected from the actual manufacturing plant where the product-specific processes are carried out;
- Actual data from other parts of the life cycle attributable to the product under study, such as site-specific data on material production or electricity generation supplied by contracted suppliers, as well as transport-related data including distances, modes of transport, load factors, fuel consumption, etc., associated with contracted transport providers;
- Lci data from transport and energy databases combined with the actual transport and energy parameters listed above.

Non-specific data

- All other data are considered proxy data (using any available data rather than assuming zero values) or data that can be demonstrated to be conservative.

4.3. RIFINEMENT OF SYSTEM BOUNDARIES

(see UNI EN ISO 14044:2021, clause 4.3.3.4)

The system boundaries and the related information modules assessed were not refined following the previous stages of the study. These may be reviewed and updated through future revisions and further development of the study, with the aim of enhancing environmental sustainability and supporting continuous improvement..

4.4. ALLOCATION OF INPUT FLOWS AND OUTPUT EMISSIONS

(see UNI EN 15804:2021, clause 6.4.3)

With regard to the modelling of certain primary and secondary data, namely data derived from the reprocessing of activity data through appropriate mathematical assumptions and calculations, the following allocation criterion was applied:

- Physical allocation, based on mass balances or mass-related ratios (e.g., the proportion of raw materials constituting a product for a given quantity of output).

5. LIFE CYCLE IMPACT ASSESSMENT

(see UNI EN 15804:2021, *clause* 6.5 and UNI EN ISO 14044:2021, *clause* 4.4)

The objective of this phase is to convert the results of the inventory analysis, namely all input and output flows associated with the unit processes under investigation, into environmental impact data (i.e., the environmental profile of the product). This enables the generation of reliable and easily understandable results and the evaluation of their magnitude across the information modules assessed. Based on the resulting environmental performance indicators, it is possible to define the environmental profile of the product under study.

5.1. ELECTION OF IMPACT CATEGORIES, CATEGORY INDICATORS, AND CHARACTERISATION MODELS

*(*see *UNI EN ISO 14044:2021, clause 4.4.2.2)*

For the Life Cycle Impact Assessment (LCIA – *Life Cycle Impact Assessment*), the impact categories were selected in accordance with UNI EN 15804:2021 (see clause 6.5 of the standard) and the applicable Product Category Rules (PCR) (see Clause 9.2.3), and the corresponding characterisation factors defined by UNI EN 15804:2021. The impact categories considered are reported in Table 8:

Table 8:List of impact categories used in accordance with the reference standard and the corresponding characterisation factors

CATEGORY	CHARACTERISATION FACTOR	
Climate change	GWP - Total	kg CO_2 eq
Climate change - Fossil	GWP-fossil	kg CO_2 eq
Climate change - Biogenic	GWP-biogenic	kg CO_2 eq
Climate change - Land use and LU change	GWP-luluc	kg CO_2 eq
Ozone depletion	ODP	kg CFC11 eq
Acidification	AP	mol H+ eq
Eutrophication, freshwater	EP-freshwater	kg P eq
Eutrophication, marine	EP-marine	kg N eq
Eutrophication, terrestrial	EP-terrestrial	mol N eq
Photochemical ozone formation	POCP	kg NMVOC eq
Resource use, minerals and metals	ADP-minerals&metals	kg Sb eq
Resource use, fossils	ADP-fossil	MJ
Water use	WDP	m^3 depriv.
Particulate matter	PM	disease inc.
Ionising radiation	IRP	kBq U-235 eq
Ecotoxicity, freshwater	ETP-fw	CTUe
Human toxicity, non-cancer	http-c	CTUh
Human toxicity, cancer	http-nc	CTUh

CATEGORY	CHARACTERISATION FACTOR	
Land use	SQP	Pt

The inventory modelling and environmental profile calculations were performed using SimaPro 9 software (Developer 9.2.0.2). The selected databases were Ecoinvent (v3.7.1) and "ELCD". For the characterisation of inventory data with respect to the various impact categories affected by the system under study, the "EN 15804 +A2 Method" was applied as the impact assessment method.

5.2. CLASSIFICATION

(see UNI EN ISO 14044:2021, clause 4.4.2.3)

Following the selection of the impact categories and calculation models, the various material and energy flows identified in the inventory are assigned to the relevant impact categories according to the ability of substances or activities to contribute to specific environmental issues.

The following damage categories are used to establish the impact categories:

- Ecology: effects on living species and ecosystems;
- Human health and safety: impacts on human health and well-being;
- Resources: depletion of energy and material resources;
- Social impacts and habitat degradation.

5.3. CHARACTERISATION

(cfr. UNI EN ISO 14044:2021 par. 4.4.2.4)

Impact categories represent the environmental issues associated with the product system. Therefore, in addition to meeting the goal and scope of the study, their selection must be representative of the physical characteristics of the product system being analysed.

Characterisation models are calculation models developed by specialised research centres or recognised institutions (such as the IPCC) that provide numerical conversion factors specific to each impact category. During the characterisation phase, each input or output flow identified in the inventory is assigned a characterisation factor that enables the calculation of its contribution to a particular environmental impact. For example, these factors are used to assess the relative impacts of substances emitted to air and their effects on ecosystems and human health. At this stage, the results for the different impact categories are expressed in the units specific to each category.

The inventory data are then processed and converted into environmental impacts for each preselected impact category using the appropriate unit of measurement defined for that category, thereby enabling comparison between results. The aggregation of all impacts generated by the inventory inputs and outputs within the same impact category results in the total impact for that category.

The impacts for each impact category, with reference to the declared unit, are determined according to the following equation:

$$Impacto_i \left[\frac{kg\ X\ eq}{kg\ product}\right] = \sum_{j=1}^{n} \left(FC_i \left[\frac{kg\ X\ eq}{kg\ Y}\right] * \ inventory\ data\ _j \left[\frac{kg\ Y}{kg\ product}\right]\right)$$

Where:

- $Impact_i \left[\frac{kg\ X\ eq}{kg\ product}\right]$ = impact of the *i-th* impact category, expressed with reference to the declared unit, where **X** depends on the impact category as indicated in Errore. L'origine riferimento non è stata trovata., third column;
- $FC_i \left[\frac{kg\ X\ eq}{kg\ Y}\right]$ = characterisation factor of the i-th impact category, where Y is the unit of measurement used for the inventory flow classified within the i-th impact category;
- $Inventory\ data_j \left[\frac{kg\ Y}{kg\ product}\right]$ = the j-th inventory datum classified within the i-th impact category with reference to the declared unit.

6. LIFE CYCLE INTERPRETATION

(see UNI EN 15804:2021)

6.1. PRESENTATION OF RESULTS

(see UNI EN 15804:2021)

The following are the results of the eco-profile obtained from the life cycle analysis of the products covered by the environmental declaration, broken down by impact categories in accordance with UNI EN 15804.

There are differences compared to the previous version due to an update of the data inventory. There appears to be a percentage change in some impact categories attributable to changes in the composition of the materials that make up the declared unit.

6.1.1. Results for Scenario 1 (100% End-of-Life Recovery):

Table 9: Breakdown of the impact assessment results by environmental performance indicators, based on the unit declared in the information forms examined

RECOMPLAX D'ECÒ								
IMPACT CATEGORY	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
Climate change	kg CO_2 eq	9,67E-01	0,00E+00	6,84E-03	9,86E-02	0,00E+00	1,07E+00	-5,43E-01
Climate change - Fossil	kg CO_2 eq	9,60E-01	0,00E+00	6,84E-03	9,74E-02	0,00E+00	1,06E+00	-5,39E-01
Climate change - Biogenic	kg CO_2 eq	4,84E-03	0,00E+00	4,72E-07	1,09E-03	0,00E+00	5,93E-03	-3,46E-03
Climate change - Land use and LU change	kg CO_2 eq	2,55E-03	0,00E+00	5,58E-08	6,23E-05	0,00E+00	2,61E-03	-3,39E-04
Ozone depletion	kg CFC11 eq	1,38E-07	0,00E+00	1,64E-09	9,56E-09	0,00E+00	1,49E-07	-6,77E-08
Acidification	mol H+ eq	5,09E-03	0,00E+00	3,20E-05	2,89E-04	0,00E+00	5,41E-03	-2,79E-03
Eutrophication, freshwater	kg P eq	2,43E-04	0,00E+00	2,82E-08	9,96E-06	0,00E+00	2,53E-04	-1,21E-04
Eutrophication, marine	kg N eq	1,47E-03	0,00E+00	1,19E-05	1,08E-04	0,00E+00	1,59E-03	-8,06E-04
Eutrophication, terrestrial	mol N eq	1,34E-02	0,00E+00	1,31E-04	1,12E-03	0,00E+00	1,47E-02	-5,42E-03
Photochemical ozone formation	kg NMVOC eq	3,64E-03	0,00E+00	3,17E-05	2,76E-04	0,00E+00	3,95E-03	-1,55E-03
Resource use, minerals and metals**	kg Sb eq	3,39E-06	0,00E+00	3,00E-10	1,36E-07	0,00E+00	3,52E-06	-3,71E-06
Resource use, fossils**	MJ	1,61E+01	0,00E+00	9,76E-02	6,71E-01	0,00E+00	1,69E+01	-9,25E+00
Water use**	m^3 depriv.	7,10E-01	0,00E+00	-1,64E-05	8,64E-03	0,00E+00	7,18E-01	-4,64E-01
Particulate matter	disease inc.	7,01E-08	0,00E+00	4,67E-10	6,13E-09	0,00E+00	7,67E-08	-3,87E-08
Ionising radiation*	kBq U-235 eq	8,07E-02	0,00E+00	4,33E-04	1,27E-02	0,00E+00	9,39E-02	-2,49E-02
Ecotoxicity, freshwater**	CTUe	4,20E+01	0,00E+00	3,96E-02	1,01E+00	0,00E+00	4,30E+01	-3,98E+01
Human toxicity, non-cancer**	CTUh	5,33E-08	0,00E+00	6,47E-11	1,15E-09	0,00E+00	5,45E-08	-5,57E-08
Human toxicity, cancer**	CTUh	7,42E-09	0,00E+00	5,56E-13	1,18E-10	0,00E+00	7,54E-09	-5,39E-09
Land use**	Pt	2,12E+02	0,00E+00	2,63E-04	6,95E-02	0,00E+00	2,12E+02	-2,98E-01

* Results in kg PO_4 eq. are obtained by multiplying the results in kg P eq. by a factor of 3.07

**Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties associated with these results are high or because experience with the indicator is limited

Table 10: This indicator includes all greenhouse gases covered by the total GWP, but excludes the uptake and emissions of biogenic carbon dioxide and the biogenic carbon stored in the product. This indicator is therefore equivalent to the GWP indicator originally defined in EN 15804:2012 + A1:2013

RECOMPLAX D'ECÒ		Results per 1 kg						
Potential environmental impacts – additional indicator	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
GWP - GHG	kg CO_2 eq	9,57E-01	0,00E+00	6,82E-03	9,80E-02	0,00E+00	1,06E+00	-5,35E-01

Table 11: Breakdown of results regarding resource use by the unit reported in the surveyed information forms

RECOMPLAX D'ECÒ								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
PERE	MJ	0,00E+00	0,00E+00	-4,11E-08	-8,51E-05	4,43E+01	4,43E+01	-3,79E-01
PERM	MJ	4,41E+01	0,00E+00	1,50E-04	1,82E-01	-4,43E+01	0,00E+00	-4,90E-02
PERT	MJ	4,41E+01	0,00E+00	1,50E-04	1,82E-01	0,00E+00	4,43E+01	-4,28E-01
PENRE	MJ	3,07E-03	0,00E+00	4,11E-08	8,51E-05	1,86E+01	1,86E+01	-9,24E+00
PENRM	MJ	1,77E+01	0,00E+00	9,78E-02	8,25E-01	-1,86E+01	0,00E+00	-8,85E-01
PENRT	MJ	1,77E+01	0,00E+00	9,78E-02	8,25E-01	0,00E+00	1,86E+01	-1,01E+01
SM	kg	9,50E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,50E-01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,84E-02	0,00E+00	2,51E-07	7,99E-04	0,00E+00	1,92E-02	-1,14E-02
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy resources excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of fresh water								

Table 12: Breakdown of waste by the unit declared in the information forms examined

RECOMPLAX D'ECÒ								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
HWD	kg	1,93E-05	0,00E+00	2,57E-07	2,51E-06	0,00E+00	2,20E-05	-1,14E-02
NHWD	kg	3,15E-02	0,00E+00	4,03E-06	8,59E-03	0,00E+00	4,01E-02	-5,19E-06
RWD	kg	4,21E-05	0,00E+00	6,99E-07	6,19E-06	0,00E+00	4,90E-05	-1,51E-02
HWD = Hazardous waste disposed of; NHWD = Non-hazardous waste disposed of; RWD = Radioactive waste disposed of								

Table 13: Breakdown of output flows by declared unit across the surveyed information forms

RECOMPLAX D'ECÒ								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	1,56E+00	0,00E+00	0,00E+00	1,00E+00	0,00E+00	2,56E+00	1,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,89E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,89E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 14: Breakdown of output flows by declared unit across the surveyed information forms

	BIOGENIC CARBON		
	Product	**Packaging: Pallet**	**Packaging: Paper/Cardboard**
RECOMPLAX D'ECÒ	Not significant	1,36E-01	7,20E-04

Table 15: Breakdown of the impact assessment results by environmental performance indicators, broken down by the unit reported in the information forms examined

RECOMPLAX BASIC								
IMPACT CATEGORY	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
Climate change	kg CO_2 eq	6,73E-01	0,00E+00	6,84E-03	9,86E-02	0,00E+00	7,78E-01	-5,43E-01
Climate change - Fossil	kg CO_2 eq	6,67E-01	0,00E+00	6,84E-03	9,74E-02	0,00E+00	7,72E-01	-5,39E-01
Climate change - Biogenic	kg CO_2 eq	3,30E-03	0,00E+00	4,72E-07	1,09E-03	0,00E+00	4,39E-03	-3,46E-03
Climate change - Land use and LU change	kg CO_2 eq	2,36E-03	0,00E+00	5,58E-08	6,23E-05	0,00E+00	2,42E-03	-3,39E-04
Ozone depletion	kg CFC11 eq	1,02E-07	0,00E+00	1,64E-09	9,56E-09	0,00E+00	1,13E-07	-6,77E-08
Acidification	mol H+ eq	3,67E-03	0,00E+00	3,20E-05	2,89E-04	0,00E+00	3,99E-03	-2,79E-03
Eutrophication, freshwater	kg P eq	1,79E-04	0,00E+00	2,82E-08	9,96E-06	0,00E+00	1,89E-04	-1,21E-04
Eutrophication, marine	kg N eq	1,09E-03	0,00E+00	1,19E-05	1,08E-04	0,00E+00	1,21E-03	-8,06E-04
Eutrophication, terrestrial	mol N eq	1,06E-02	0,00E+00	1,31E-04	1,12E-03	0,00E+00	1,18E-02	-5,42E-03
Photochemical ozone formation	kg NMVOC eq	2,81E-03	0,00E+00	3,17E-05	2,76E-04	0,00E+00	3,12E-03	-1,55E-03
Resource use, minerals and metals**	kg Sb eq	1,87E-06	0,00E+00	3,00E-10	1,36E-07	0,00E+00	2,01E-06	-3,71E-06
Resource use, fossils**	MJ	1,10E+01	0,00E+00	9,76E-02	6,71E-01	0,00E+00	1,18E+01	-9,25E+00
Water use**	m^3 depriv.	4,82E-01	0,00E+00	-1,64E-05	8,64E-03	0,00E+00	4,91E-01	-4,64E-01
Particulate matter	disease inc.	5,19E-08	0,00E+00	4,67E-10	6,13E-09	0,00E+00	5,85E-08	-3,87E-08
Ionising radiation*	kBq U-235 eq	6,62E-02	0,00E+00	4,33E-04	1,27E-02	0,00E+00	7,94E-02	-2,49E-02
Ecotoxicity, freshwater**	CTUe	2,30E+01	0,00E+00	3,96E-02	1,01E+00	0,00E+00	2,40E+01	-3,98E+01
Human toxicity, non-cancer**	CTUh	3,04E-08	0,00E+00	6,47E-11	1,15E-09	0,00E+00	3,16E-08	-5,57E-08
Human toxicity, cancer**	CTUh	5,14E-09	0,00E+00	5,56E-13	1,18E-10	0,00E+00	5,26E-09	-5,39E-09
Land use**	Pt	2,12E+02	0,00E+00	2,63E-04	6,95E-02	0,00E+00	2,12E+02	-2,98E-01

* Results in kg PO_4 eq. are obtained by multiplying the results in kg P eq. by a factor of 3.07

**Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties associated with these results are high or because experience with the indicator is limited

Table 16: This indicator includes all greenhouse gases covered by the total GWP, but excludes the uptake and emissions of biogenic carbon dioxide and the biogenic carbon stored in the product. This indicator is therefore equivalent to the GWP indicator originally defined in EN 15804:2012 + A1:2013

RECOMPLAX BASIC		*Results per 1 kg*						
Potential environmental impacts – additional indicator	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
GWP - GHG	kg CO_2 eq	6,66E-01	0,00E+00	6,82E-03	9,80E-02	0,00E+00	7,71E-01	-5,35E-01

Table 17: Breakdown of results regarding resource utilisation by the unit declared in the surveyed information forms

RECOMPLAX BASIC								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
PERE	MJ	0,00E+00	0,00E+00	-4,11E-08	0,00E+00	0,00E+00	-4,11E-08	-3,79E-01
PERM	MJ	4,39E+01	0,00E+00	1,50E-04	1,82E-01	-4,41E+01	0,00E+00	-4,90E-02
PERT	MJ	4,39E+01	0,00E+00	1,50E-04	1,82E-01	0,00E+00	4,41E+01	-4,28E-01
PENRE	MJ	2,73E-03	0,00E+00	4,11E-08	8,51E-05	1,31E+01	1,31E+01	-9,24E+00
PENRM	MJ	1,21E+01	0,00E+00	9,78E-02	8,25E-01	-1,31E+01	0,00E+00	-8,85E-01
PENRT	MJ	1,21E+01	0,00E+00	9,78E-02	8,25E-01	0,00E+00	1,31E+01	-1,01E+01
SM	kg	9,00E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,00E-01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,22E-02	0,00E+00	2,51E-07	7,99E-04	0,00E+00	1,30E-02	-1,14E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable energy resources as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy resources excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of fresh water

Table 18: Breakdown of waste by the unit declared in the information forms examined

RECOMPLAX BASIC								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
HWD	kg	1,66E-05	0,00E+00	2,57E-07	2,51E-06	0,00E+00	1,93E-05	-5,19E-06
NHWD	kg	2,37E-02	0,00E+00	4,03E-06	8,59E-03	0,00E+00	3,23E-02	-1,51E-02
RWD	kg	3,50E-05	0,00E+00	6,99E-07	6,19E-06	0,00E+00	4,19E-05	-1,20E-05

HWD = Hazardous waste disposed of; NHWD = Non-hazardous waste disposed of; RWD = Radioactive waste disposed of

Table 19: Breakdown of output flows by declared unit across the surveyed information forms

RECOMPLAX BASIC								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	1,30E+00	0,00E+00	0,00E+00	1,00E+00	0,00E+00	2,30E+00	1,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,89E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,89E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 20: Biogenic carbon content in the product and its packaging

	BIOGENIC CARBON		
	Product	**Packaging: Pallet**	**Packaging: Paper/Cardboard**
RECOMPLAX BASIC	Not significant	1,36E-01	7,20E-04

6.1.2. Results of Scenario 2 (100% End-of-Life Disposal):

Table 21: Breakdown of the impact assessment results by environmental performance indicators, broken down by the unit reported in the information forms examined

RECOMPLAX D'ECÒ								
IMPACT CATEGORY	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
Climate change	kg CO_2 eq	9,67E-01	0,00E+00	6,84E-03	0,00E+00	6,96E-01	1,67E+00	0,00E+00
Climate change - Fossil	kg CO_2 eq	9,60E-01	0,00E+00	6,84E-03	0,00E+00	2,76E-01	1,24E+00	0,00E+00
Climate change - Biogenic	kg CO_2 eq	4,84E-03	0,00E+00	4,72E-07	0,00E+00	4,19E-01	4,24E-01	0,00E+00
Climate change - Land use and LU change	kg CO_2 eq	2,55E-03	0,00E+00	5,58E-08	0,00E+00	2,20E-05	2,57E-03	0,00E+00
Ozone depletion	kg CFC11 eq	1,38E-07	0,00E+00	1,64E-09	0,00E+00	5,98E-09	1,45E-07	0,00E+00
Acidification	mol H+ eq	5,09E-03	0,00E+00	3,20E-05	0,00E+00	3,13E-04	5,43E-03	0,00E+00
Eutrophication, freshwater	kg P eq	2,43E-04	0,00E+00	2,82E-08	0,00E+00	2,66E-05	2,70E-04	0,00E+00
Eutrophication, marine	kg N eq	1,47E-03	0,00E+00	1,19E-05	0,00E+00	1,09E-03	2,57E-03	0,00E+00
Eutrophication, terrestrial	mol N eq	1,34E-02	0,00E+00	1,31E-04	0,00E+00	1,22E-03	1,48E-02	0,00E+00
Photochemical ozone formation	kg NMVOC eq	3,64E-03	0,00E+00	3,17E-05	0,00E+00	4,31E-04	4,11E-03	0,00E+00
Resource use, minerals and metals**	kg Sb eq	3,39E-06	0,00E+00	3,00E-10	0,00E+00	1,12E-07	3,50E-06	0,00E+00
Resource use, fossils**	MJ	1,61E+01	0,00E+00	9,76E-02	0,00E+00	4,61E-01	1,67E+01	0,00E+00
Water use**	m^3 depriv.	7,10E-01	0,00E+00	-1,64E-05	0,00E+00	2,80E-02	7,38E-01	0,00E+00
Particulate matter	disease inc.	7,01E-08	0,00E+00	4,67E-10	0,00E+00	8,41E-09	7,90E-08	0,00E+00
Ionising radiation*	kBq U-235 eq	8,07E-02	0,00E+00	4,33E-04	0,00E+00	2,50E-03	8,36E-02	0,00E+00
Ecotoxicity, freshwater**	CTUe	4,20E+01	0,00E+00	3,96E-02	0,00E+00	2,75E+01	6,95E+01	0,00E+00
Human toxicity, non-cancer**	CTUh	5,33E-08	0,00E+00	6,47E-11	0,00E+00	4,37E-09	5,77E-08	0,00E+00
Human toxicity, cancer**	CTUh	7,42E-09	0,00E+00	5,56E-13	0,00E+00	3,23E-10	7,74E-09	0,00E+00
Land use**	Pt	2,12E+02	0,00E+00	2,63E-04	0,00E+00	5,47E-01	2,12E+02	0,00E+00

* Results in kg PO_4 eq. are obtained by multiplying the results in kg P eq. by a factor of 3.07

**Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties associated with these results are high or because experience with the indicator is limited

Table 22: This indicator includes all greenhouse gases covered by the total GWP, but excludes the uptake and emissions of biogenic carbon dioxide and the biogenic carbon stored in the product. This indicator is therefore equivalent to the GWP indicator originally defined in EN 15804:2012 + A1:2013

RECOMPLAX D'ECÒ		*Results per 1 kg*						
Potential environmental impacts – additional indicator	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
GWP - GHG	kg CO_2 eq	9,57E-01	0,00E+00	6,82E-03	0,00E+00	6,95E-01	1,66E+00	0,00E+00

Table 23: Breakdown of the results of resource utilisation by the unit declared in the information forms examined

RECOMPLAX D'ECÒ								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
PERE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,41E+01	4,41E+01	0,00E+00
PERM	MJ	4,41E+01	0,00E+00	1,50E-04	0,00E+00	-4,41E+01	0,00E+00	0,00E+00
PERT	MJ	4,41E+01	0,00E+00	1,50E-04	0,00E+00	1,53E-02	4,41E+01	0,00E+00
PENRE	MJ	3,07E-03	0,00E+00	4,11E-08	0,00E+00	1,83E+01	1,83E+01	0,00E+00
PENRM	MJ	1,77E+01	0,00E+00	9,78E-02	0,00E+00	-1,78E+01	0,00E+00	0,00E+00
PENRT	MJ	1,77E+01	0,00E+00	9,78E-02	0,00E+00	4,81E-01	1,83E+01	0,00E+00
SM	kg	9,50E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,50E-01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,84E-02	0,00E+00	2,51E-07	0,00E+00	6,83E-04	1,91E-02	0,00E+00
PERE = Use of renewable primary energy, excluding renewable primary energy resources used as raw materials; PERM = Use of renewable energy resources as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy resources, excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of fresh water								

Table 24: Breakdown of waste by the unit declared in the information forms examined

RECOMPLAX D'ECÒ								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
HWD	kg	1,93E-05	0,00E+00	2,57E-07	0,00E+00	1,47E-06	2,10E-05	0,00E+00
NHWD	kg	3,15E-02	0,00E+00	4,03E-06	0,00E+00	5,88E-01	6,19E-01	0,00E+00
RWD	kg	4,21E-05	0,00E+00	6,99E-07	0,00E+00	2,43E-06	4,52E-05	0,00E+00
HWD = Hazardous waste disposed of; NHWD = Non-hazardous waste disposed of; RWD = Radioactive waste disposed of								

Table 25: Breakdown of output flows by declared unit across the surveyed information forms

RECOMPLAX D'ECÒ								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	1,56E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E+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
EEE	MJ	2,89E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,89E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 26: Biogenic carbon content in the product and its packaging

	BIOGENIC CARBON		
	Product	**Packaging: Pallet**	**Packaging: Paper/Cardboard**
RECOMPLAX D'ECÒ	Not significant	1,36E-01	7,20E-04

Table 27: Breakdown of the impact assessment results by environmental performance indicators, broken down by the unit reported in the information forms examined

RECOMPLAX BASIC								
IMPACT CATEGORY	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
Climate change	kg CO_2 eq	6,73E-01	0,00E+00	6,84E-03	0,00E+00	6,96E-01	1,38E+00	0,00E+00
Climate change - Fossil	kg CO_2 eq	6,67E-01	0,00E+00	6,84E-03	0,00E+00	2,76E-01	9,50E-01	0,00E+00
Climate change - Biogenic	kg CO_2 eq	3,30E-03	0,00E+00	4,72E-07	0,00E+00	4,19E-01	4,23E-01	0,00E+00
Climate change - Land use and LU change	kg CO_2 eq	2,36E-03	0,00E+00	5,58E-08	0,00E+00	2,20E-05	2,38E-03	0,00E+00
Ozone depletion	kg CFC11 eq	1,02E-07	0,00E+00	1,64E-09	0,00E+00	5,98E-09	1,10E-07	0,00E+00
Acidification	mol H+ eq	3,67E-03	0,00E+00	3,20E-05	0,00E+00	3,13E-04	4,01E-03	0,00E+00
Eutrophication, freshwater	kg P eq	1,79E-04	0,00E+00	2,82E-08	0,00E+00	2,66E-05	2,06E-04	0,00E+00
Eutrophication, marine	kg N eq	1,09E-03	0,00E+00	1,19E-05	0,00E+00	1,09E-03	2,19E-03	0,00E+00
Eutrophication, terrestrial	mol N eq	1,06E-02	0,00E+00	1,31E-04	0,00E+00	1,22E-03	1,19E-02	0,00E+00
Photochemical ozone formation	kg NMVOC eq	2,81E-03	0,00E+00	3,17E-05	0,00E+00	4,31E-04	3,27E-03	0,00E+00
Resource use, minerals and metals**	kg Sb eq	1,87E-06	0,00E+00	3,00E-10	0,00E+00	1,12E-07	1,99E-06	0,00E+00
Resource use, fossils**	MJ	1,10E+01	0,00E+00	9,76E-02	0,00E+00	4,61E-01	1,16E+01	0,00E+00
Water use**	m^3 depriv.	4,82E-01	0,00E+00	-1,64E-05	0,00E+00	2,80E-02	5,10E-01	0,00E+00
Particulate matter	disease inc.	5,19E-08	0,00E+00	4,67E-10	0,00E+00	8,41E-09	6,07E-08	0,00E+00
Ionising radiation*	kBq U-235 eq	6,62E-02	0,00E+00	4,33E-04	0,00E+00	2,50E-03	6,92E-02	0,00E+00
Ecotoxicity, freshwater**	CTUe	2,30E+01	0,00E+00	3,96E-02	0,00E+00	2,75E+01	5,05E+01	0,00E+00
Human toxicity, non-cancer**	CTUh	3,04E-08	0,00E+00	6,47E-11	0,00E+00	4,37E-09	3,48E-08	0,00E+00
Human toxicity, cancer**	CTUh	5,14E-09	0,00E+00	5,56E-13	0,00E+00	3,23E-10	5,47E-09	0,00E+00
Land use**	Pt	2,12E+02	0,00E+00	2,63E-04	0,00E+00	5,47E-01	2,12E+02	0,00E+00

* Results in kg PO_4 eq. are obtained by multiplying the results in kg P eq. by a factor of 3.07

**Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties associated with these results are high or because experience with the indicator is limited

Table 28: This indicator includes all greenhouse gases covered by the total GWP, but excludes the uptake and emissions of biogenic carbon dioxide and the biogenic carbon stored in the product. This indicator is therefore equivalent to the GWP indicator originally defined in EN 15804:2012 + A1:2013

RECOMPLAX BASIC		*Results per 1 kg*						
Potential environmental impacts – additional indicator	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
GWP - GHG	Kg CO_2 eq	6,66E-01	0,00E+00	6,82E-03	0,00E+00	6,95E-01	1,37E+00	0,00E+00

Table 29: Breakdown of results regarding resource utilisation by the unit declared in the surveyed information forms

RECOMPLAX BASIC								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
PERE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,39E+01	4,39E+01	0,00E+00
PERM	MJ	4,39E+01	0,00E+00	1,50E-04	0,00E+00	-4,39E+01	0,00E+00	0,00E+00
PERT	MJ	4,39E+01	0,00E+00	1,50E-04	0,00E+00	1,53E-02	4,39E+01	0,00E+00
PENRE	MJ	2,73E-03	0,00E+00	4,11E-08	0,00E+00	1,27E+01	1,27E+01	0,00E+00
PENRM	MJ	1,21E+01	0,00E+00	9,78E-02	0,00E+00	-1,22E+01	0,00E+00	0,00E+00
PENRT	MJ	1,21E+01	0,00E+00	9,78E-02	0,00E+00	4,81E-01	1,27E+01	0,00E+00
SM	kg	9,00E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,00E-01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,22E-02	0,00E+00	2,51E-07	0,00E+00	6,83E-04	1,29E-02	0,00E+00
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy resources excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of fresh water								

Table 30: Breakdown of waste by the unit declared in the information forms examined

RECOMPLAX BASIC								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
HWD	kg	1,66E-05	0,00E+00	2,57E-07	0,00E+00	1,47E-06	1,83E-05	0,00E+00
NHWD	kg	2,37E-02	0,00E+00	4,03E-06	0,00E+00	5,88E-01	6,12E-01	0,00E+00
RWD	kg	3,50E-05	0,00E+00	6,99E-07	0,00E+00	2,43E-06	3,82E-05	0,00E+00
HWD = Hazardous waste disposed of; NHWD = Non-hazardous waste disposed of; RWD = Radioactive waste disposed of								

Table 31: Breakdown of output flows by declared unit across the surveyed information forms

RECOMPLAX BASIC								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	1,30E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E+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
EEE	MJ	2,89E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,89E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 32: Biogenic carbon content in the product and its packaging

	C BIOGENICO		
	Product	**Packaging: Pallet**	**Packaging: Paper/Cardboard**
RECOMPLAX BASIC	Not significant	1,36E-01	7,20E-04

6.2. SENSITIVITY ANALYSIS

Water consumption recorded at the site was excluded from the inventory scope because it was attributable exclusively to non-industrial uses (restrooms, general cleaning, and activities not directly related to the production process). In addition, the performance of extraordinary work falls under the categories of infrastructure, construction works, production equipment, and tools that are not directly consumed in the production process and may be excluded from the LCI if it is not known that they could cause a significant impact, as per paragraph 4.3.1 of the relevant PCR. These uses do not contribute significantly to the operational phases that generate the impact being quantified and fall under general support activities; therefore, they can be classified as negligible under the applicable cut-off rules. Based on these considerations, the exclusion of the related consumption from the LCI inventory is deemed justified.

Another exclusion, justified by the sensitivity analysis, concerns emissions for which data have been collected and monitored, and whose impact is found to be below the 1% cutoff thresholds.

Table 33: Water consumprion impact

IMPACT CATEGORY	UNIT	WATER
Climate change	kg CO_2 eq	5,07E-03
Climate change - Fossil	kg CO_2 eq	5,03E-03
Climate change - Biogenic	kg CO_2 eq	2,94E-05
Climate change - Land use and LU change	kg CO_2 eq	1,09E-05
Ozone depletion	kg CFC11 eq	3,37E-10
Acidification	mol H+ eq	2,96E-05
Eutrophication, freshwater	kg P eq	4,63E-06
Eutrophication, marine	kg N eq	4,81E-06
Eutrophication, terrestrial	mol N eq	4,26E-05
Photochemical ozone formation	kg NMVOC eq	1,11E-05
Resource use, minerals and metals	kg Sb eq	2,33E-09
Resource use, fossils	MJ	5,70E-02
Water use	m^3 depriv.	1,02E+00
Particulate matter	disease inc.	1,17E-10
Ionising radiation	kBq U-235 eq	2,66E-03
Ecotoxicity, freshwater	CTUe	4,83E-02
Human toxicity, non-cancer	CTUh	5,39E-11
Human toxicity, cancer	CTUh	1,45E-12
Land use	Pt	1,19E-02

Table 34: Sensitivity analysis – water consumption cut-off

	RECOVERY			DISPOSAL			RECOVERY			DISPOSAL		
IMPACT CATEGORY	D'ecò	D'ecò + water	Percentage difference	D'ecò	D'ecò + water	Percentage difference	Basic	Basic + water	Percentage difference	Basic	Basic + water	Percentage difference
Climate change	1,07E+00	1,08E+00	0,472%	1,67E+00	1,67E+00	0,303%	6,89E-01	6,89E-01	0,035%	1,15E+00	1,15E+00	0,021%
Climate change - Fossil	1,06E+00	1,07E+00	0,472%	1,24E+00	1,25E+00	0,404%	6,84E-01	6,84E-01	0,035%	7,26E-01	7,26E-01	0,033%
Climate change - Biogenic	5,93E-03	5,96E-03	0,495%	4,24E-01	4,24E-01	0,007%	3,67E-03	3,68E-03	0,028%	4,22E-01	4,22E-01	0,000%
Climate change - Land use and LU change	2,61E-03	2,62E-03	0,417%	2,57E-03	2,58E-03	0,424%	8,58E-04	8,58E-04	0,048%	7,10E-04	7,10E-04	0,058%
Ozone depletion	1,49E-07	1,49E-07	0,226%	1,45E-07	1,46E-07	0,232%	7,30E-08	7,30E-08	0,022%	6,57E-08	6,57E-08	0,024%
Acidification	5,41E-03	5,44E-03	0,547%	5,43E-03	5,46E-03	0,545%	3,22E-03	3,22E-03	0,041%	2,83E-03	2,83E-03	0,047%
Eutrophication, freshwater	2,53E-04	2,58E-04	1,828%	2,70E-04	2,75E-04	1,716%	1,62E-04	1,62E-04	0,106%	1,51E-04	1,51E-04	0,114%
Eutrophication, marine	1,59E-03	1,60E-03	0,302%	2,57E-03	2,58E-03	0,187%	8,56E-04	8,56E-04	0,030%	1,75E-03	1,75E-03	0,015%
Eutrophication, terrestrial	1,47E-02	1,47E-02	0,291%	1,48E-02	1,48E-02	0,289%	7,55E-03	7,55E-03	0,032%	6,77E-03	6,77E-03	0,036%
Photochemical ozone formation	3,95E-03	3,96E-03	0,281%	4,11E-03	4,12E-03	0,271%	2,02E-03	2,02E-03	0,032%	1,93E-03	1,93E-03	0,034%
Resource use, minerals and metals	3,52E-06	3,52E-06	0,066%	3,50E-06	3,50E-06	0,067%	7,99E-06	8,00E-06	0,015%	6,33E-06	6,33E-06	0,019%
Resource use, fossils	1,69E+01	1,69E+01	0,338%	1,67E+01	1,67E+01	0,342%	9,63E+00	9,63E+00	0,027%	7,65E+00	7,66E+00	0,034%
Water use	7,18E-01	1,74E+00	142,121%	7,38E-01	1,76E+00	138,388%	3,78E-01	4,09E-01	8,215%	3,44E-01	3,75E-01	9,016%
Particulate matter	7,67E-08	7,69E-08	0,152%	7,90E-08	7,91E-08	0,148%	4,11E-08	4,11E-08	0,028%	3,96E-08	3,96E-08	0,029%
Ionising radiation	9,39E-02	9,65E-02	2,836%	8,36E-02	8,63E-02	3,184%	5,26E-02	5,27E-02	0,161%	3,42E-02	3,43E-02	0,249%
Ecotoxicity, freshwater	4,30E+01	4,31E+01	0,112%	6,95E+01	6,96E+01	0,070%	2,73E+01	2,73E+01	0,016%	5,21E+01	5,21E+01	0,008%
Human toxicity, non-cancer	5,45E-08	5,45E-08	0,099%	5,77E-08	5,78E-08	0,093%	3,58E-08	3,58E-08	0,039%	3,74E-08	3,74E-08	0,038%
Human toxicity, cancer	7,54E-09	7,54E-09	0,019%	7,74E-09	7,74E-09	0,019%	3,83E-09	3,83E-09	0,026%	3,83E-09	3,83E-09	0,026%
Land use	2,12E+02	2,12E+02	0,006%	2,12E+02	2,12E+02	0,006%	4,59E+01	4,59E+01	0,002%	4,49E+01	4,49E+01	0,002%

6.3. ANALYSIS OF RESULTS AND CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

(see UNI EN ISO 14044:2021, clause 4.5.4)

The present study demonstrates the possibility of analysing the products under investigation across the considered information modules (A1–A3 + C1-C2-C3-C4 + D).

The approach adopted by the company, together with the dynamic calculation model implemented, will enable Gees Recycling Srl to use a system capable of monitoring how variations in input/output parameters within a unit process may affect its contribution to environmental impacts. This will allow the company to identify significant and controllable parameters capable of reducing the associated environmental risks.

In this specific case, it emerged that the most significant information modules, with respect to the product system under investigation, are modules A1–A3, for which it was verified that the environmental performance indicators contributing to the majority of the impact are, in order of importance, the procurement of packaging and the procurement of raw materials (resins, adhesives, and iron oxide).

Within the interactive framework established by Gees Recycling Srl with its stakeholders, including both collective and individual interest groups, communicating its environmental management policy regarding product manufacturing becomes essential and represents a key element in being perceived as a reliable and transparent company.

It should also be noted that the calculation model can be further implemented and updated, including the integration of additional relevant unit processes.

Following an editorial change made to the content declaration, which more clearly highlights the recycled content of the panels, the company may decide to republish the study.

Finally, the company intends to continue integrating this study into future design and development phases in order to support the production of specific products through the implementation of dedicated monitoring systems, with the objective of enhancing the environmental sustainability of its activities and promoting continuous improvement.

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ANNEX A

The quality assessment of the datasets used is reported below (see Appendix E, Table E1 of UNI EN 15804:2021). An LCI dataset/data is considered specific when the data quality ranges from very good to sufficient.

Table 35: Data quality analysis

		SOURCE	GEOGRAPHICAL REPRESENTATIVENESS	TECHNICAL REPRESENTATIVENESS	TEMPORAL REPRESENTATIVENESS	TYPE
Iron oxide	Iron oxide, red pigment {GLO} | Technology mix | Production mix, at plant | LCI result	Ecoinvent	Good	Good	Good	Primary
Epoxy resin	Epoxy resin {GLO}| market for epoxy resin | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Polyurethane resin	Polyurethane adhesive {GLO}| polyurethane adhesive production | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Prepolymer	Polyurethane adhesive {GLO}| polyurethane adhesive production | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Pallets	EUR-flat pallet {RER}| market for EUR-flat pallet | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Corner protectors	Containerboard, fluting medium {RER}| market for containerboard, fluting medium | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Big Bags	Textile, nonwoven polypropylene {GLO}| market for textile, nonwoven polypropylene | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Tape	Sealing tape, aluminium/PE, 50 mm wide {RER}| production | Cut-off, U (GEES)	Ecoinvent	Good	Good	Good	Primary
Film	Packaging film, low density polyethylene {GLO}| market for | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Strapping	Polyvinylidenchloride, granulate {RER}| market for polyvinylidenchloride, granulate | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Material Transport	Transport, freight, lorry 16-32 metric ton, euro4 {RER}| market for transport, freight, lorry 16-32 metric ton, EURO4 | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Refuse Transport	Transport, freight, lorry 7.5-16 metric ton, euro4 {RER}| market for transport, freight, lorry 7.5-16 metric ton, EURO4 | APOS, U	Ecoinvent	Good	Good	Good	Primary
C3 Pretreatment	Waste polyethylene terephthalate, for recycling, sorted {CH}| treatment of waste polyethylene terephthalate, for recycling, unsorted, sorting | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
C4 Treatment	Municipal solid waste {IT}| market for municipal solid waste | Cut-off, S	Ecoinvent	Good	Good	Good	Primary

Water	Tap water {Europe without Switzerland}| market for | Cut-off, U	Ecoinvent	Good	Good	Good	Primary
Grid power	Electricity, low voltage {IT}| market for | Cut-off, U_RESIDUAL MIX 25 (dati 2025)	Ecoinvent	Good	Good	Good	Primary
Solar power	Electricity, low voltage {IT}| electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted | Cut-off, U	Ecoinvent	Good	Good	Good	Primary

ANNEX B

The table shows the differences in environmental impacts obtained for the various impact categories by comparing finished products with unfinished products.

Table 36: Differences in environmental impacts between unfinished and finished products

IMPACT CATEGORY	Unit	RECOMPLAX D'ECÒ (Scenario 1)	RECOMPLAX D'ECÒ + surface finishing (Scenario 1)	RECOMPLAX D'ECÒ (Scenario 2)	RECOMPLAX D'ECÒ + surface finishing (Scenario 2)	Δ (Scenario 1)	Δ (Scenario 2)
Climate change	kg CO_2 eq	1,07E+00	1,09E+00	1,67E+00	1,69E+00	-1,68%	-1,09%
Climate change - Fossil	kg CO_2 eq	1,06E+00	1,08E+00	1,24E+00	1,26E+00	-1,69%	-1,45%
Climate change - Biogenic	kg CO_2 eq	5,93E-03	5,97E-03	4,24E-01	4,24E-01	-0,58%	-0,01%
Climate change - Land use and LU change	kg CO_2 eq	2,61E-03	2,62E-03	2,57E-03	2,58E-03	-0,53%	-0,54%
Ozone depletion	kg CFC11 eq	1,49E-07	1,51E-07	1,45E-07	1,47E-07	-1,33%	-1,36%
Acidification	mol H+ eq	5,41E-03	5,49E-03	5,43E-03	5,52E-03	-1,52%	-1,51%
Eutrophication, freshwater	kg P eq	2,53E-04	2,58E-04	2,70E-04	2,75E-04	-1,88%	-1,77%
Eutrophication, marine	kg N eq	1,59E-03	1,61E-03	2,57E-03	2,59E-03	-0,91%	-0,57%
Eutrophication, terrestrial	mol N eq	1,47E-02	1,48E-02	1,48E-02	1,49E-02	-1,03%	-1,02%
Photochemical ozone formation	kg NMVOC eq	3,95E-03	4,00E-03	4,11E-03	4,16E-03	-1,29%	-1,24%
Resource use, minerals and metals	kg Sb eq	3,52E-06	3,56E-06	3,50E-06	3,53E-06	-0,99%	-1,00%
Resource use, fossils	MJ	1,69E+01	1,73E+01	1,67E+01	1,71E+01	-2,43%	-2,46%
Water use	m^3 depriv.	7,18E-01	7,35E-01	7,38E-01	7,55E-01	-2,35%	-2,29%
Particulate matter	disease inc.	7,67E-08	7,74E-08	7,90E-08	7,97E-08	-0,84%	-0,81%
Ionising radiation	kBq U-235 eq	9,39E-02	9,60E-02	8,36E-02	8,58E-02	-2,21%	-2,47%
Ecotoxicity, freshwater	CTUe	4,30E+01	4,32E+01	6,95E+01	6,97E+01	-0,45%	-0,28%
Human toxicity, non-cancer	CTUh	5,45E-08	5,46E-08	5,77E-08	5,79E-08	-0,29%	-0,27%
Human toxicity, cancer	CTUh	7,54E-09	7,54E-09	7,74E-09	7,75E-09	-0,05%	-0,05%
Land use	Pt	2,12E+02	2,12E+02	2,12E+02	2,12E+02	-0,01%	-0,01%

ANNEX C

The results variations for the different impact categories of both products across all scenarios analysed within the study are summarised below.

Table 37: Results variations compared to the 2023 and 2024 results

DIFFERENCES FROM PREVIOUS VERSIONS	RECYCLING			DISPOSAL			RECYCLING			DISPOSAL		
Impact category	**DECO - 23**	**DECO - 24**	**DECO - 25**	**DECO - 23**	**DECO - 24**	**DECO - 25**	**BASIC - 23**	**BASIC - 24**	**BASIC - 25**	**BASIC - 23**	**BASIC - 24**	**BASIC - 25**
Climate change	1,91E+00	9,75E-01	1,07E+00	2,37E+00	1,43E+00	1,67E+00	1,38E+00	6,89E-01	7,78E-01	1,84E+00	1,15E+00	1,38E+00
Ozone depletion	1,90E+00	9,68E-01	1,06E+00	1,94E+00	1,01E+00	1,24E+00	1,38E+00	6,84E-01	7,72E-01	1,42E+00	7,26E-01	9,50E-01
Acidification	6,47E-03	5,51E-03	5,93E-03	4,25E-01	4,24E-01	4,24E-01	3,17E-03	3,67E-03	4,39E-03	4,21E-01	4,22E-01	4,23E-01
Eutrophication, freshwater	1,83E-03	1,06E-03	2,61E-03	1,68E-03	9,10E-04	2,57E-03	1,46E-03	8,58E-04	2,42E-03	1,31E-03	7,10E-04	2,38E-03
Eutrophication, marine	2,53E-07	1,08E-07	1,49E-07	2,46E-07	1,01E-07	1,45E-07	1,89E-07	7,30E-08	1,13E-07	1,81E-07	6,57E-08	1,10E-07
Eutrophication, terrestrial	8,70E-03	4,80E-03	5,41E-03	8,31E-03	4,41E-03	5,43E-03	5,79E-03	3,22E-03	3,99E-03	5,40E-03	2,83E-03	4,01E-03
Photochemical ozone formation	4,20E-04	2,37E-04	2,53E-04	4,09E-04	2,26E-04	2,70E-04	2,81E-04	1,62E-04	1,89E-04	2,70E-04	1,51E-04	2,06E-04
Resource use, minerals and metals	2,01E-03	1,29E-03	1,59E-03	2,91E-03	2,19E-03	2,57E-03	1,22E-03	8,56E-04	1,21E-03	2,12E-03	1,75E-03	2,19E-03
Resource use, fossils	1,86E-02	1,06E-02	1,47E-02	1,78E-02	9,79E-03	1,48E-02	1,30E-02	7,55E-03	1,18E-02	1,23E-02	6,77E-03	1,19E-02
Water use	4,96E-03	2,86E-03	3,95E-03	4,86E-03	2,77E-03	4,11E-03	3,39E-03	2,02E-03	3,12E-03	3,30E-03	1,93E-03	3,27E-03
Particulate matter	1,79E-05	1,28E-05	3,52E-06	1,62E-05	1,11E-05	3,50E-06	9,11E-06	7,99E-06	2,01E-06	7,44E-06	6,33E-06	1,99E-06
Ionising radiation	2,73E+01	1,44E+01	1,69E+01	2,53E+01	1,24E+01	1,67E+01	1,85E+01	9,63E+00	1,18E+01	1,65E+01	7,65E+00	1,16E+01
Ecotoxicity, freshwater	8,53E-01	6,16E-01	7,18E-01	8,19E-01	5,83E-01	7,38E-01	4,20E-01	3,78E-01	4,91E-01	3,86E-01	3,44E-01	5,10E-01
Human toxicity, non-cancer	8,42E-08	6,21E-08	7,67E-08	8,27E-08	6,06E-08	7,90E-08	4,61E-08	4,11E-08	5,85E-08	4,46E-08	3,96E-08	6,07E-08
Human toxicity, cancer	1,26E-01	6,69E-02	9,39E-02	1,08E-01	4,85E-02	8,36E-02	9,93E-02	5,26E-02	7,94E-02	8,09E-02	3,42E-02	6,92E-02
Land use	5,68E+01	4,89E+01	4,30E+01	8,15E+01	7,36E+01	6,95E+01	1,75E+01	2,73E+01	2,40E+01	4,23E+01	5,21E+01	5,05E+01

ANNEX D

Table 38 lists the activity data used for the development of the mathematical model in SimaPro.

Table 38: Inventory data

Indicator	Material	Product		Unit of measurement
		Recomplax Basic	Recomplax D'Ecò	
Raw material	Pre-polymer	0,04	0,08	kg
	Iron oxide	-	0,01	kg
	Aliphatic resin	-	0,02	kg
Packaging	Pallets	0,07		kg
	Cardboard corner protectors	0,00049		kg
	Packing tape	-		kg
	Strapping	-		kg
Consumption	Water consumption	23,70		kg
	Grid electricity consumption	0,09		kWh
	Photovoltaic electricity consumption	1,15		MWh
Waste	Waste	0,43		kg
Raw material transport	Pre-polymer	5,81	11,63	kgkm
	Iron oxide	-	4,84	kgkm
	Aliphatic resin	-	28,56	kgkm
Packaging transport	Pallets	4,46		kgkm
	Cardboard corner protectors	0,01		kgkm
	Packing tape	-		kgkm
	Strapping	-		kgkm
Waste transport	Iron and steel	2,08		kgkm
	Mixed packaging	0,09		kgkm
	Plastic packaging	0,30		kgkm
	Wooden packaging	4,86		kgkm