



## Environmental Product Declaration

Program Operator: Smart EPD®

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IN ACCORDANCE WITH ISO 14025 AND EN  
15804+A2:2019/AC:2021



**STONHARD**

SmartEPD-2026-123-0792-01.1

## Stonclad UT

Date of Issue

Mar 23, 2026

Expiration Date

Mar 23, 2031

Last Updated

Mar 25, 2026



Refer to the EPD Library at [www.smartepd.com](http://www.smartepd.com) for the latest EPD listing information

## General Information

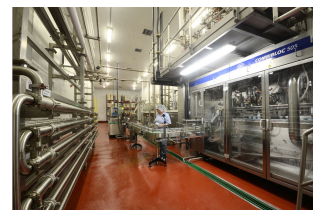
### Stonhard

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|                             |                                                                  |
|-----------------------------|------------------------------------------------------------------|
| Product Name:               | Stonclad UT                                                      |
| Declared Unit:              | 1 kg of resinous floor coating                                   |
| Declaration Number:         | SmartEPD-2026-123-0792-01.1                                      |
| Date of Issue:              | March 23, 2026                                                   |
| Expiration:                 | March 23, 2031                                                   |
| Last updated:               | March 25, 2026                                                   |
| EPD Scope:                  | Cradle to gate with other options<br>A1 - A3, A4, A5, C1 - C4, D |
| Market(s) of Applicability: | Europe                                                           |

## General Organization Information

Stonhard is the unprecedented leader in manufacturing and installing high performance floors. Our seamless, long lasting, easy to clean systems are engineered for both industrial and commercial markets. We also bring the same performance to our wall and lining systems. Joining form and function, our floors are the dependable go-to choice for tough manufacturing environments, while still honoring innovative design for commercial environments. Epoxy, urethane and fast-track methyl methacrylate resin-based systems deliver a broad range of options for every market and application. Stonhard manufactures and installs products throughout the world with headquarters in Maple Shade, New Jersey. Stonhard is an ISO-9001 registered company.

Further information can be found at: <https://www.stonhard.co.uk/>

## Limitations, Liability and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has sole ownership, liability, and responsibility for the EPD.

## Reference Standards

|              |                                                                                                                                                             |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard(s): | ISO 14025 and EN 15804+A2:2019/AC:2021                                                                                                                      |
| Core PCR:    | EPD International PCR for Construction Products 2019:14 (EN 15804:A2:2019/AC:2021)<br>v2.0.1<br>Date of issue: June 05, 2025<br>Valid until: April 07, 2030 |

Sub-category PCR review panel:

 Contact Smart EPD for more information.

General Program Instructions:

 Smart EPD General Program Instructions v.2.0, March 2025

## Verification Information

LCA Author/Creator:

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Verification:

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:

External

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Independent external verification of EPD, according to ISO 14025 and reference PCR(s):

External

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## Product Information

Declared Unit:

1 kg of resinous floor coating

Mass:

1 kg

Reference Service Life:

20 Years

Product Specificity:

 Product Average  
 Product Specific

## Product Description

Stonclad UT is a dense, liquid-rich, self-priming, textured, four-component, notch- trowel- applied, polyurethane mortar system. Stonclad UT consists of a urethane-urea binder, pigments and graded quartz aggregates. Stonclad UT is a high-impact resistant mortar which exhibits excellent abrasion, thermal shock, thermal cycling and chemical-resistant characteristics, making it ideal for the food and beverage industry as well as any other applications requiring these properties.

Further information can be found at: <https://www.stonhard.com/products/stonclad/>

## Product Specifications

Product Classification Codes:

EC3 - Finishes -> Flooring -> OtherFlooring

**Table 1. Material Composition**

| Material/Component Category | Origin | % Mass  |
|-----------------------------|--------|---------|
| Curing agent                |        | < 10    |
| Diluent                     |        | < 10    |
| Filler / Extender           |        | 64 - 96 |
| Filler-Extender             |        | < 10    |
| Isocyanate                  |        | < 10    |
| Pigment                     |        | < 10    |
| Plasticizer                 |        | < 10    |

| Packaging Material | Origin | kg Mass |
|--------------------|--------|---------|
| Aluminium foil     |        | 0None   |
| Cardboard          |        | 0.02    |
| Plastic ldpe       |        | 0.01    |

| Biogenic Carbon Content                           | kg C per kg |
|---------------------------------------------------|-------------|
| Biogenic carbon content in product                | 0None       |
| Biogenic carbon content in accompanying packaging | 0.01        |

| Hazardous Materials                                              |
|------------------------------------------------------------------|
| quartz (silicon dioxide) (14808-60-7)                            |
| portland cement (65997-15-1)                                     |
| calcium hydroxide (1305-62-0)                                    |
| Diphenylmethane-diisocyanate, isomers and homologues (9016-87-9) |
| oxydipropyl dibenzoate (27138-31-4)                              |
| barium sulfate (7727-43-7)                                       |
| titanium dioxide (13463-67-7)                                    |
| hydrated, amorphous silica (112926-00-8)                         |
| carbon black (1333-86-4)                                         |

EPD Data Specificity

Primary Data Year:2023-2024

Manufacturing Specificity:

✗ Industry Average

✗ Manufacturer Average

✓ Facility Specific

Averaging:  
Averaging was not conducted for this EPD

Table 2. System Boundary

|                                         |    |                                     |    |
|-----------------------------------------|----|-------------------------------------|----|
| Production                              | A1 | Raw material supply                 | ✓  |
|                                         | A2 | Transport                           | ✓  |
|                                         | A3 | Manufacturing                       | ✓  |
| Construction                            | A4 | Transport to site                   | ✓  |
|                                         | A5 | Assembly / Install                  | ✓  |
| Use                                     | B1 | Use                                 | ND |
|                                         | B2 | Maintenance                         | ND |
|                                         | B3 | Repair                              | ND |
|                                         | B4 | Replacement                         | ND |
|                                         | B5 | Refurbishment                       | ND |
|                                         | B6 | Operational Energy Use              | ND |
|                                         | B7 | Operational Water Use               | ND |
| End of Life                             | C1 | Deconstruction                      | ✓  |
|                                         | C2 | Transport                           | ✓  |
|                                         | C3 | Waste Processing                    | ✓  |
|                                         | C4 | Disposal                            | ✓  |
| Benefits & Loads Beyond System Boundary | D  | Recycling, Reuse Recovery Potential | ✓  |

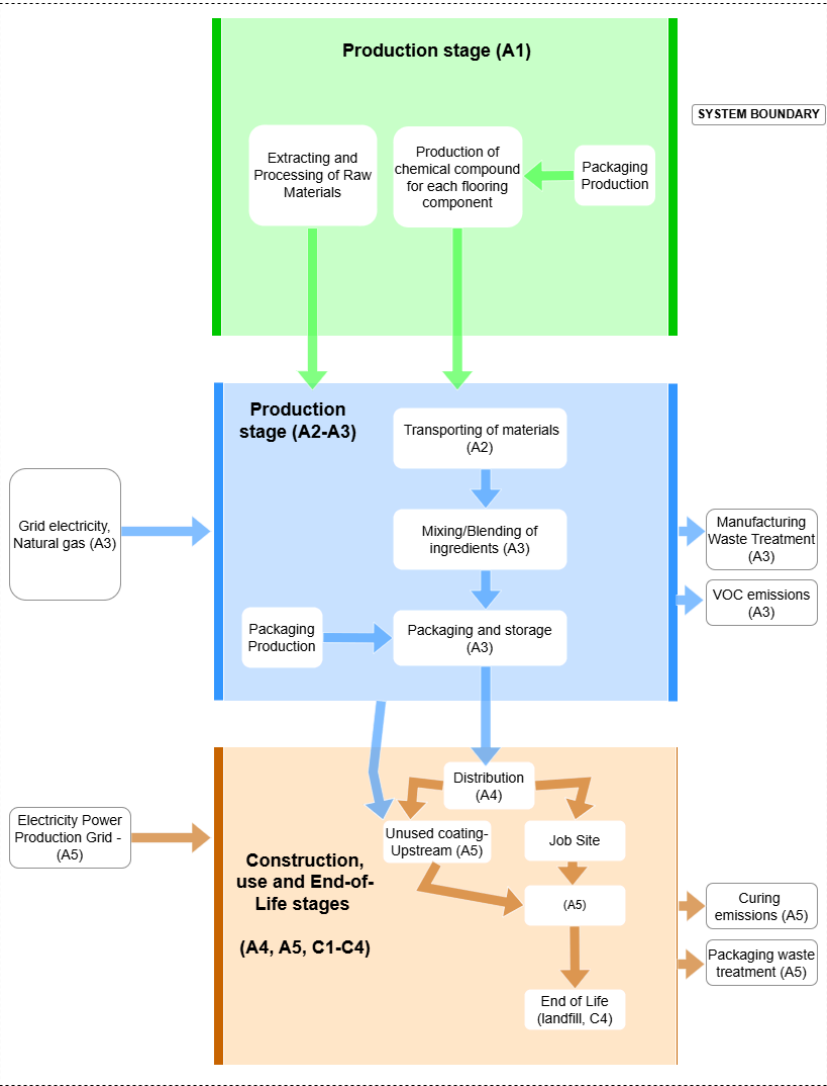
Note:

ND = Module not declared

Plants

Alghero, Italy Alghero, Italy

Product Flow Diagram



Software And Database

|                             |                                               |
|-----------------------------|-----------------------------------------------|
| LCA Software:               | Simapro v. 10.2                               |
| LCI Foreground Database(s): | Ecoinvent v. 3.11   Cut-off by Classification |
| LCI Background Database(s): | Ecoinvent v. 3.11   Cut-off by Classification |

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

## Data Quality

The quality of inventory data is evaluated based on several criteria, including precision, completeness, consistency, and representativeness.

Precision and completeness:

- Precision: The inventory data used in this study were either directly measured, calculated, or estimated based on primary data sources, ensuring high precision. Background data from ecoinvent v3 database also has documented precision to the extent available.
- Completeness: The product system's mass balance and inventory completeness were thoroughly checked. Some exclusions were made in line with the PCR requirements, such as personnel impacts, R&D activities, business travel, secondary packaging, point of sale infrastructure, and the coating applicator. However, no data was intentionally omitted.

Consistency and reproducibility:

- Consistency: Primary data were collected with a similar level of detail, while background data primarily came from the ecoinvent database, with other databases used only if necessary or more representative. The modeling approach and other methodological choices were applied consistently throughout the model.
- Reproducibility: This study ensures reproducibility by providing comprehensive disclosure of input-output data, dataset choices, and modeling approaches. A knowledgeable third party should be able to approximate the results using the same data and modeling methods.

Representativeness:

- Temporal: Primary data were collected for a 12 month period starting on June 2023 and ending on May 2024 to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database is typically representative of recent years.
- Geographical: Primary data represent Stonhard's production facility in Alghero, Italy. The use of country-specific data ensures high geographical representativeness, and proxy data were only used when country-specific data were unavailable..
- Technological: Both primary and secondary data were tailored to the specific technologies studied, ensuring high technological representativeness.

## Table 3. Data Sources

| Process       | Source type       | Source   | Reference year | Data category | Share of primary data, of GWP-GHG results for A1-A3 |
|---------------|-------------------|----------|----------------|---------------|-----------------------------------------------------|
| Raw materials | Bill of Materials | Stonhard | 2024           | Primary       | 100%                                                |

## Life Cycle Module Description

Primary data were collected for a 12-month period from June 2023 and ending on May 2024 to ensure technical, geographical, and temporal representativeness. The manufacturing process starts with the reception of raw materials, typically in the form of chemical packages (cans, supersacks, bags, pails, among others). Next, the raw materials are mixed to forms resins and additives. After this step, the products are packaged and distributed to various distribution centers. Non-hazardous waste, consisting mainly of packaging waste materials, is sent for disposal, incineration, and/or recycling. Hazardous waste consisting of manufacturing & product losses and their disposal are modeled according to the PCR descriptions (solvent-based coatings are incinerated for energy recovery and water-based coatings are sent to landfill)

# LCA Discussion

## Allocation Procedure

Allocation of co-products was avoided, to the extent it was possible, based on the guidance given in ISO 14044:2006, and EN 15804 +A2. Energy use and VOC emissions at the factory were allocated by mass. Overhead burdens (building heating and corporate use consumption) were excluded using a square footage factor, that benchmarked and validated with process engineering models of resinous floor coatings production. The process does not consume process water or generate wastewater. Solid waste was estimated using packaging masses and material losses and allocated following the polluter pays principle.

## Cut-off Procedure

The system boundary was defined based on relevance to the goal of the study. For the raw material (A1) and process related inputs (A3), all available energy and material flow data have been included in the model. Exclusions allowed by the PCR such as secondary and tertiary packaging, were implemented, as well as overhead burdens such as building heating and corporate office consumption.

# Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:

✗ No

# Scenarios

## Transport to the building/construction site (A4)

A4 Module

|                                       |                                                                                                               |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Fuel Type:                            | Diesel                                                                                                        |
| Vehicle Type:                         | Truck and Trailer                                                                                             |
| Transport Distance:                   | 1442 km                                                                                                       |
| Capacity Utilization:                 | 33 %                                                                                                          |
| Packaging Mass:                       | 0.03 kg                                                                                                       |
| Weight of products transported:       | 1.03 kg                                                                                                       |
| Capacity utilization volume factor:   | 1                                                                                                             |
| Assumptions for scenario development: | Transport distance includes finished product to distribution center and distribution center to point of sale. |

## Installation in to the building/construction site (A5)

A5 Module

|                                            |         |
|--------------------------------------------|---------|
| Installation Scrap Rate Assumed:           | 2 %     |
| Product Lost per Declared/Functional Unit: | 0.02 kg |

Mass of Packaging Waste Specified by Type: 0.03 kg  
Biogenic Carbon Contained in Packaging (kg C): 0.01 kg  
Assumptions for scenario development:

## End of Life (C1 - C4)

C1 - C4 Modules

### Collection Process

Collected with Mixed Construction Waste: 1 kg

### Recovery

Landfill: 1 kg

Assumptions for scenario development:

Product is conservatively assumed as sent to an inert landfill at end of life.

## Reuse, Recovery and / or Recycling Potentials & Relevant Scenario Information (D)

D Module

Process and Conversion Efficiencies: Product is conservatively assumed as sent to an inert landfill at end of life.

## Results

### Table 4. Environmental Impact Assessment Results

#### EF 3.1

per 1 kg of product of resinous floor coating.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

| Impact Category     | Method | Indicator | A1 - A3  | A4      | A5       | C1 | C2       | C3 | C4       | D         |
|---------------------|--------|-----------|----------|---------|----------|----|----------|----|----------|-----------|
| GWP-total           | EF 3.1 | ND        | 9.50e-1  | 1.70e-1 | 2.80e-2  | 0  | 6.70e-4  | 0  | 2.90e-3  | -8.80e-4  |
| GWP-biogenic        | EF 3.1 | ND        | -1.10e-1 | 3.80e-5 | 3.00e-3  | 0  | 2.20e-7  | 0  | 4.80e-7  | 3.00e-2   |
| GWP-fossil          | EF 3.1 | ND        | 1.10e+0  | 1.70e-1 | 2.50e-2  | 0  | 6.70e-4  | 0  | 2.90e-3  | -3.10e-2  |
| GWP-luluc           | EF 3.1 | ND        | 4.80e-3  | 7.70e-5 | 9.70e-5  | 0  | 3.00e-7  | 0  | 3.20e-7  | -3.70e-5  |
| ODP                 | EF 3.1 | ND        | 3.50e-8  | 2.30e-9 | 7.40e-10 | 0  | 9.00e-12 | 0  | 4.10e-11 | -2.10e-10 |
| AP                  | EF 3.1 | ND        | 6.80e-3  | 1.60e-3 | 1.70e-4  | 0  | 2.30e-6  | 0  | 2.50e-5  | -3.30e-4  |
| EP-freshwater       | EF 3.1 | ND        | 2.40e-4  | 1.50e-5 | 5.10e-6  | 0  | 7.20e-8  | 0  | 1.40e-7  | -1.10e-5  |
| EP-marine           | EF 3.1 | ND        | 3.20e-3  | 4.30e-4 | 7.30e-5  | 0  | 7.50e-7  | 0  | 1.10e-5  | -4.40e-5  |
| EP-terrestrial      | EF 3.1 | ND        | 2.10e-2  | 4.70e-3 | 5.20e-4  | 0  | 8.10e-6  | 0  | 1.20e-4  | -4.60e-4  |
| POCP                | EF 3.1 | ND        | 5.10e-3  | 1.50e-3 | 1.30e-4  | 0  | 3.30e-6  | 0  | 3.80e-5  | -1.40e-4  |
| ADP-minerals&metals | EF 3.1 | ND        | 1.30e-5  | 3.90e-7 | 2.60e-7  | 0  | 1.80e-9  | 0  | 1.10e-9  | -1.20e-7  |
| ADP-fossil          | EF 3.1 | ND        | 1.80e+1  | 2.30e+0 | 4.20e-1  | 0  | 9.50e-3  | 0  | 3.70e-2  | -3.00e-1  |
| WDP                 | EF 3.1 | ND        | 3.40e-1  | 1.10e-2 | 7.20e-3  | 0  | 5.00e-5  | 0  | 8.20e-5  | -2.00e-2  |

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

The Environmental Footprint (EF) 3.1 LCIA method uses IPCC Sixth Assessment Report (AR6) characterization factors for the climate change category.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

## Table 5. Resource Use Indicator

per 1 kg of product of resinous floor coating.

| Indicator | Unit | A1 - A3 | A4      | A5      | C1 | C2      | C3 | C4      | D        |
|-----------|------|---------|---------|---------|----|---------|----|---------|----------|
| PERE      | MJ   | 2.60e+0 | 2.80e-2 | 5.30e-2 | 0  | 1.30e-4 | 0  | 3.10e-4 | -3.30e-1 |
| PERM      | MJ   | 2.80e-1 | 0       | 5.70e-3 | 0  | 0       | 0  | 0       | 0        |
| PERT      | MJ   | 2.50e+0 | 1.30e-2 | 5.00e-2 | 0  | 6.00e-5 | 0  | 1.70e-4 | -3.20e-1 |
| PENRE     | MJ   | 1.80e+1 | 2.30e+0 | 4.20e-1 | 0  | 9.50e-3 | 0  | 3.70e-2 | -3.00e-1 |
| PENRM     | MJ   | 0       | 0       | 0       | 0  | 0       | 0  | 0       | 0        |
| PENRT     | MJ   | 1.70e+1 | 2.30e+0 | 3.90e-1 | 0  | 9.40e-3 | 0  | 3.70e-2 | -2.90e-1 |
| SM        | kg   | 0       | 0       | 0       | 0  | 0       | 0  | 0       | 7.50e-4  |

### Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

### Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

**Table 6. Waste and Output Flow Indicators**

per 1 kg of product of resinous floor coating.

| Indicator | Unit | A1 - A3 | A4      | A5      | C1 | C2      | C3 | C4      | D        |
|-----------|------|---------|---------|---------|----|---------|----|---------|----------|
| HWD       | kg   | 0       | 0       | 0       | 0  | 0       | 0  | 0       | 0        |
| NHWD      | kg   | 3.20e-2 | 0       | 3.30e-2 | 0  | 0       | 0  | 1.00e+0 | 0        |
| RWD       | kg   | 1.70e-5 | 4.40e-7 | 3.50e-7 | 0  | 2.00e-9 | 0  | 4.20e-9 | -1.80e-7 |
| CRU       | kg   | 0       | 0       | 0       | 0  | 0       | 0  | 0       | 0        |
| MFR       | kg   | 5.40e-3 | 0       | 2.00e-2 | 0  | 0       | 0  | 0       | 0        |
| MER       | kg   | 0       | 0       | 0       | 0  | 0       | 0  | 0       | 0        |
| EE        | MJ   | 0       | 0       | 0       | 0  | 0       | 0  | 0       | 0        |

**Note:**

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

**Abbreviations:**

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Significant data limitations currently exist within the LCI data used to generate waste metrics for Life Cycle Assessments and Environmental Product Declarations. The waste metrics were calculated in a way conformant with the requirements of EN15804, but these values represent rough estimates and are for informational purposes only. As such, no decisions regarding actual cradle-grave waste performance between products should be derived from these reported values

**Table 7. Carbon Emissions and Removals**

per 1 kg of product of resinous floor coating.

| Indicator                                                              | Unit   | A1 - A3  | A4 | A5      | C1 | C2 | C3 | C4 | D |
|------------------------------------------------------------------------|--------|----------|----|---------|----|----|----|----|---|
| Bio Carbon Removal from Product                                        | kg CO2 | 0        | 0  | 0       | 0  | 0  | 0  | 0  | 0 |
| Bio Carbon Emission from Product                                       | kg CO2 | 0        | 0  | 0       | 0  | 0  | 0  | 0  | 0 |
| Bio Carbon Removal from Packaging                                      | kg CO2 | -3.76e-2 | 0  | 0       | 0  | 0  | 0  | 0  | 0 |
| Bio Carbon Emission from Packaging                                     | kg CO2 | 0        | 0  | 3.76e-2 | 0  | 0  | 0  | 0  | 0 |
| Bio Carbon Emission from Waste during Manufacturing (renewable source) | kg CO2 | 0        | 0  | 0       | 0  | 0  | 0  | 0  | 0 |
| Calcination Carbon Removal                                             | kg CO2 | 0        | 0  | 0       | 0  | 0  | 0  | 0  | 0 |
| Carbonation Carbon Emission                                            | kg CO2 | 0        | 0  | 0       | 0  | 0  | 0  | 0  | 0 |
| Carbon Emission from Waste during Manufacturing (non-renewable source) | kg CO2 | 0        | 0  | 0       | 0  | 0  | 0  | 0  | 0 |

**Note:**

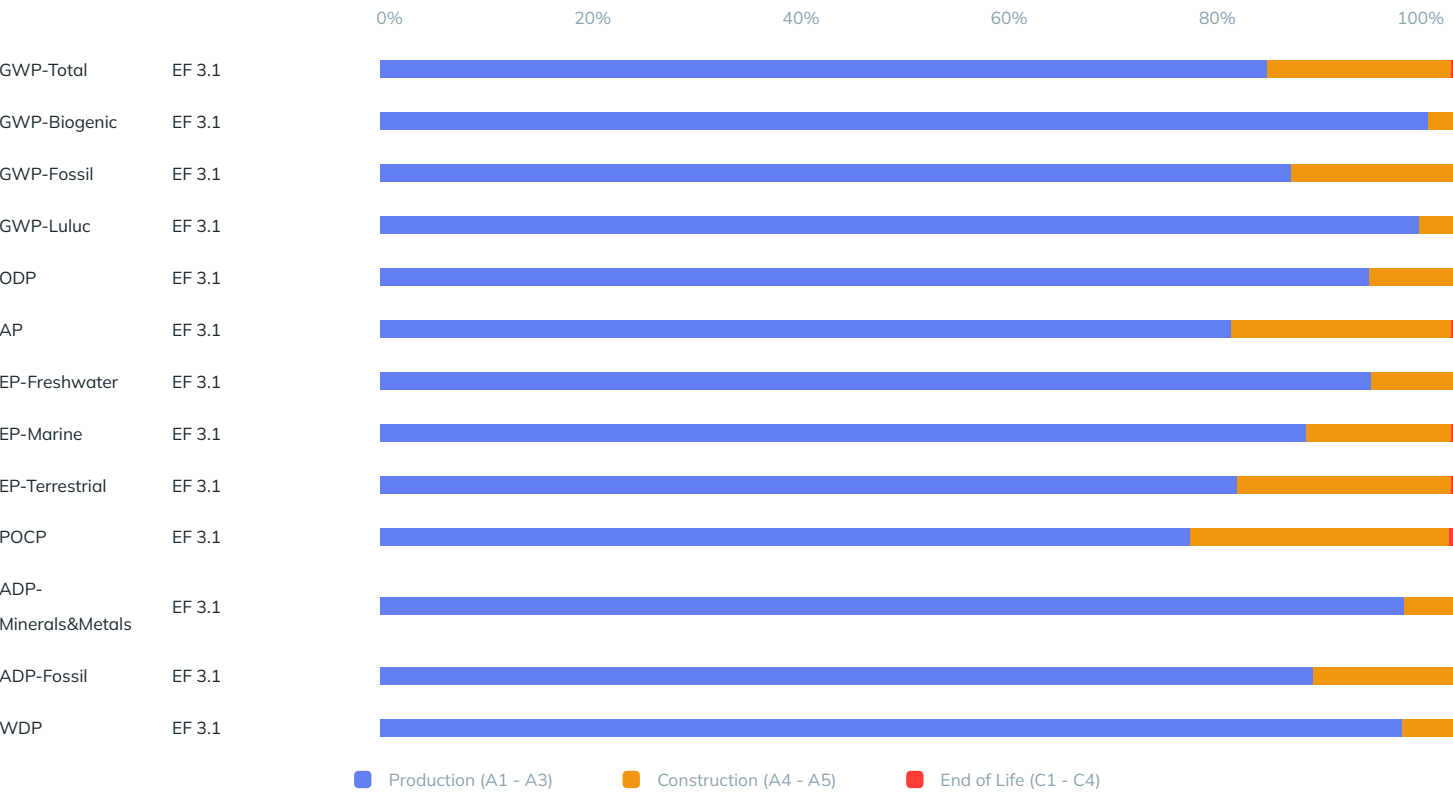
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

**Abbreviations:**

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

Raw materials are sourced from suppliers, transported to manufacturing facilities, and mixed to produce products. The product stage (A1-A3) has the highest environmental impact, especially due to raw material production and energy use.. End-of-life impacts are relatively low, as products are assumed to be landfilled with building demolition waste. However, this stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The manufacturer should explore lower-impact raw materials and work with suppliers using sustainable methods to enhance product sustainability.



Additional Environmental Information

None

References

\*\*International Organization for Standardization (ISO). (2006).\*\* \*ISO 14040:2006 – Environmental management – Life cycle assessment – Principles and framework.\* Geneva: ISO. \*(Amendment 1:2020; confirmed current 2022)\*  
\*\*EN 15804:2012+A2:2019\*\*\*. Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. Brussels: European Committee for Standardization (CEN).  
\*\*EPD International PCR for Construction Products 2019:14 (EN 15804:A2:2019/AC:2021) v2.0.1\*\*

\*\*European Committee for Standardization (CEN). (2019).\*\* \*EN 15804:2012+A2:2019 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.\* Brussels: CEN. \*(Including AC:2021)\*

\*\*International Organization for Standardization (ISO). (2006).\*\* \*ISO 14025:2006 – Environmental labels and declarations – Type III environmental declarations – Principles and procedures.\* Geneva: ISO

\*\*PRé Sustainability. (2022).\*\* \*SimaPro 9 LCA Software\* [Computer software]. Amersfoort, The Netherlands: PRé Sustainability B.V. \*(Version 9.5 used for LCA modeling)\*

\*\*ecoinvent Association. (2022).\*\* \*ecoinvent data v3.11\* [Life Cycle Inventory database]. Zurich, Switzerland: ecoinvent. \*(Database version for background LCI data; latest update as of 2022)\*

\*\*Intergovernmental Panel on Climate Change (IPCC). (2021).\*\* \*Climate Change 2021: The Physical Science Basis.\* Contribution of Working Group I to the Sixth Assessment Report of the IPCC [V. Masson-Delmotte et al. (Eds.)]. Cambridge, UK: Cambridge University Press. \*(Source of 100-year GWP factors; AR6 latest values)\*

\*\*US EPA (2024).\*\* \*TRACI Version 2.2 Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts (TRACI)\*.  
[<https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci>]([https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci?utm\\_source=chatgpt.com](https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci?utm_source=chatgpt.com))

\*\*Andreasi Bassi, S., Biganzoli, F., Ferrara, N., Amadei, A., Valente, A., Sala, S., & Ardente, F. (2023).\*\* \*Updated characterisation and normalisation factors for the Environmental Footprint 3.1 method.\* Luxembourg: Publications Office of the European Union. \*(JRC Technical Report EUR 31414; details of EF 3.1 method and factors)\*