

Environmental Product Declaration

according to ISO 14025 and EN 15804



This declaration is for:
Kerdyn Green structural PET foam

Provided by:
Gurit Italy

Gurit



program operator
Stichting MRPI®
publisher
Stichting MRPI®
www.mrpi.nl

MRPI® registration
1.1.00098.2019
EPD registration
0001131
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expiry date
17-02-2025



PROGRAM OPERATOR

Stichting MRPI®
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COMPANY INFORMATION



Gurit Italy
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SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Niels Jonkers, Ecochain Technologies** .
 The LCA study has been done by **Martijn van Hövell, SGS Search Consultancy**.
 The certificate is based on an LCA-dossier according to ISO14025 and NEN-EN15804+A1. It is verified according to the 'EPD-MRPI® verification protocol May 2017.v3.1'. EPDs of construction products may not be comparable if they do not comply with NEN-EN15804+A1. Declaration of SVHC that are listed on the 'Candidate List of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

VISUAL PRODUCT



PRODUCT

Kerdyn Green structural PET foam

MRPI® REGISTRATION

1.1.00098.2019

EPD REGISTRATION

0001131

DATE OF ISSUE

17-02-2020

EXPIRY DATE

17-02-2025

DECLARED UNIT/FUNCTIONAL UNIT

One (1) cubic meter of structural PET foam panels

DESCRIPTION OF PRODUCT

Gurit® Kerdyn™ Green is a structural core material with stable properties and improved resin uptake performance. Based on PET technology and allowing high-recycled product content.

MORE INFORMATION

www.gurit.com

DEMONSTRATION OF VERIFICATION

CEN standard EN15804 serves as the core PCR[a]

Independent verification of the declaration and data,
 according to EN ISO 14025:2010:
 internal: external: X

(where appropriate[b]) Third party verifier:

Niels Jonkers, Ecochain

[a] Product Category Rules [b] Optional for B-to-B communication, mandatory for B-to-C communication (see EN ISO 14025:2010, 9.4).

DETAILED PRODUCT DESCRIPTION

Gurit® Kerdyn™ Green foam is extruded using up to 100% processed recycled PET bottles as a raw material. The foam is further treated to obtain blocks of dimensions 1005 x 1250 x 2440 mm which are then sliced to thicknesses varying from 5 to 100mm.

Sliced panels are stacked on pallets, wrapped with cardboard and PE-film as well as tied together with a PET strap, in preparation to shipping to customers.

Thus, Kerdyn Green is available in panels with various thicknesses and densities. All the range of densities is covered in this EPD: 80, 100, 115, 135, 150, 200, and 250 kg/m³.

| COMPONENT (> 1%) | [kg / %] |
|------------------------|----------|
| Composition classified | ---- |

(*) > 1% of total mass

SCOPE AND TYPE

The geographical location is Italy and the product is manufactured in Volpiano, Italy. The product has various potential applications as a construction material or as a component in construction materials. Background database used for the calculations is Ecoinvent version 3.5 in combination with the SimaPro 9.0 LCA software. The EPD is a "Cradle to gate with options" EPD. The EPD is a specific EPD for a specific product.

| PRODUCT STAGE | | | CONSTRUCTION PROCESS STAGE | | | | | USE STAGE | | | | | | | END OF LIFE STAGE | | | | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES |
|---------------------|-----------|---------------|----------------------------|----------|-----|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|-------------------|------------------------------------|---|--|---|
| Raw material supply | Transport | Manufacturing | Transport gate to site | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential | D | | |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | | | |
| x | x | x | MNA | MNA | MNA | MNA | MNA | MNA | MNA | MNA | MNA | MNA | MNA | x | x | MNA | | | |

X = Module assessed

MNA = Module not assessed

REPRESENTATIVENESS

Not applicable

ENVIRONMENTAL IMPACT per functional unit or declared unit

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|----------------|--------------|--------------|--------------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ADPE | kg Sb-eq. | 1.06 E -4 | 1.08 E -5 | 4.91 E -5 | 1.66 E -4 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| ADPF | MJ | 1.05 E +3 | 5.82 E +1 | 1.13 E +3 | 2.24 E +3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| GWP | kg CO2-eq. | 6.51 E +1 | 3.77 E +0 | 8.99 E +1 | 1.59 E +2 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| ODP | kg CFC11-eq. | 4.95 E -4 | 7.07 E -7 | 1.01 E -5 | 5.06 E -4 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| POCP | kg ethene-eq. | 1.97 E -2 | 6.53 E -4 | 1.91 E -2 | 3.94 E -2 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| AP | kg SO2-eq. | 2.79 E -1 | 1.63 E -2 | 6.52 E -1 | 9.47 E -1 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| EP | kg (PO4)3--eq. | 4.04 E -2 | 3.05 E -3 | 9.46 E -2 | 1.38 E -1 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Toxicity indicators (Dutch market) | | | | | | | | | | | | | | | | | | | |
| HTP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| FAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| MAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| TETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Environmental Cost Indicator (Dutch market) | | | | | | | | | | | | | | | | | | | |
| ECI | Euro | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

INA = Indicator Not Assessed
 ADPE = Abiotic Depletion Potential for non-fossil resources
 ADPF = Abiotic Depletion Potential for fossil resources
 GWP = Global Warming Potential
 ODP = Depletion potential of the stratospheric ozone layer
 POCP = Formation potential of tropospheric ozone photochemical oxidants
 AP = Acidification Potential of land and water
 EP = Eutrophication Potential

HTP = Human Toxicity Potential
 FAETP = Fresh water aquatic ecotoxicity potential
 MAETP = Marine aquatic ecotoxicity potential
 TETP = Terrestrial ecotoxicity potential
 ECI = Environmental Cost Indicator

RESOURCE USE per functional unit or declared unit

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-------|------|--------------|--------------|--------------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PERE | MJ | 1.11 E +2 | 6.45 E -1 | 4.23 E +2 | 5.35 E +2 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| PERM | MJ | 0.00 | 0.00 | 1.42 E +2 | 1.42 E +2 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| PERT | MJ | 1.11 E +2 | 6.45 E -1 | 5.65 E +2 | 6.76 E +2 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| PENRE | MJ | 9.86 E +2 | 6.28 E +1 | 1.44 E +3 | 2.49 E +3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| PENRM | MJ | 2.53 E +2 | 0.00 | 5.03 E +1 | 3.03 E +2 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| PENRT | MJ | 1.24 E +3 | 6.28 E +1 | 1.49 E +3 | 2.80 E +3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| SM | kg | 9.88 E +1 | 0.00 | 0.00 | 9.88 E +1 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| RSF | MJ | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| NRSF | MJ | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| FW | m3 | 1.02 E +0 | 1.02 E -2 | 1.60 E +0 | 2.63 E +0 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

INA = Indicator Not Assessed

PERE = Use of renewable energy excluding renewable primary energy resources

PERM = Use of renewable energy resources used as raw materials

PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials

PENRM = Use of non-renewable primary energy resources used as raw materials

SM = Use of secondary materials

NRSF = Use of non renewable secondary fuels

PERT = Total use of renewable primary energy resources

PENRT = Total use of non-renewable primary energy resources

RSF = Use of renewable secondary fuels

FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|------|------|--------------|--------------|--------------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| HWD | kg | 2.48 E -3 | 3.75 E -5 | 3.79 E -3 | 6.31 E -3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| NHWD | kg | 4.18 E +0 | 3.60 E +0 | 4.71 E +0 | 1.25 E +1 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| RWD | kg | 3.25 E -3 | 3.99 E -4 | 4.84 E -3 | 8.49 E -3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| CRU | kg | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| MFR | kg | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| MER | kg | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| EEE | MJ | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| ETE | MJ | 0.00 | 0.00 | 0.00 | 0.00 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

INA = Indicator Not Assessed

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy



CALCULATION RULES

Declared unit is one m³ squared blocks. Results are presented for the KG080 and can be scaled to the various densities and thicknesses of panels. End-of-life scenarios are included separately and are calculated per kg product.

Cut off rules

All relevant and known processes and materials have been included. The following modules and processes have been excluded from the system boundary:

- Maintenance and operation of support equipment except those included in Ecoinvent background processes;
- Capital goods and infrastructure (except those included in Ecoinvent background processes).

There is no reason to believe that relevant in- or outputs are excluded from this study.

Data collection and quality

Data is retrieved from a Bill of Materials (BoM) supplied by Gurit. There are no inconsistencies found in the data and there is no reason to believe that data is incomplete or not reliable.

Since the process is new and the start-up phase is considered not representative due to process optimisation in this phase, data from the period January-August 2019 is used.

Data about the production of the PET granulate and the composition of the additives are supplied by the suppliers of the materials and substances. Communication with suppliers went via Gurit.

ENVIRONMENTAL IMPACT per kg of product: incineration

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|----------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|
| ADPE | kg Sb-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 3.03 E -8 | INA | INA |
| ADPF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.80 E -1 | INA | INA |
| GWP | kg CO2-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.06 E +0 | INA | INA |
| ODP | kg CFC11-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.31 E -9 | INA | INA |
| POCP | kg ethene-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 5.16 E -6 | INA | INA |
| AP | kg SO2-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.81 E -4 | INA | INA |
| EP | kg (PO4)3--eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.15 E -4 | INA | INA |
| Toxicity indicators (Dutch market) | | | | | | | | | | | | | | | | | | | |
| HTP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| FAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| MAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| TETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Environmental Cost Indicator (Dutch market) | | | | | | | | | | | | | | | | | | | |
| ECI | Euro | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

INA = Indicator Not Assessed
 ADPE = Abiotic Depletion Potential for non-fossil resources
 ADPF = Abiotic Depletion Potential for fossil resources
 GWP = Global Warming Potential
 ODP = Depletion potential of the stratospheric ozone layer
 POCP = Formation potential of tropospheric ozone photochemical oxidants
 AP = Acidification Potential of land and water
 EP = Eutrophication Potential

HTP = Human Toxicity Potential
 FAETP = Fresh water aquatic ecotoxicity potential
 MAETP = Marine aquatic ecotoxicity potential
 TETP = Terrestrial ecotoxicity potential
 ECI = Environmental Cost Indicator

RESOURCE USE per kg of product: incineration

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-------|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|
| PERE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PERM | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PERT | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 4.43 E -3 | INA | INA |
| PENRE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PENRM | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PENRT | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 3.11 E -1 | INA | INA |
| SM | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| RSF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| NRSF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| FW | m3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.52 E -5 | INA | INA |

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PERE = Use of renewable energy excluding renewable primary energy resources

PERM = Use of renewable energy resources used as raw materials

PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials

PENRM = Use of non-renewable primary energy resources used as raw materials

SM = Use of secondary materials

NRSF = Use of non renewable secondary fuels

PERT = Total use of renewable primary energy resources

PENRT = Total use of non-renewable primary energy resources

RSF = Use of renewable secondary fuels

FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per kg of product: incineration

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|------|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|
| HWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.98 E -6 | INA | INA |
| NHWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.95 E -2 | INA | INA |
| RWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 5.28 E -7 | INA | INA |
| CRU | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| MFR | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| MER | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.00 E +0 | INA | INA |
| EEE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| ETE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |

INA = Indicator Not Assessed

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy

ENVIRONMENTAL IMPACT per kg of product: landfill

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|----------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|
| ADPE | kg Sb-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.43 E -8 | INA |
| ADPF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.69 E -1 | INA |
| GWP | kg CO2-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 8.97 E -2 | INA |
| ODP | kg CFC11-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.89 E -9 | INA |
| POCP | kg ethene-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.63 E -5 | INA |
| AP | kg SO2-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 7.56 E -5 | INA |
| EP | kg (PO4)3--eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 6.96 E -5 | INA |
| Toxicity indicators (Dutch market) | | | | | | | | | | | | | | | | | | | |
| HTP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| FAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| MAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| TETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Environmental Cost Indicator (Dutch market) | | | | | | | | | | | | | | | | | | | |
| ECI | Euro | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

INA = Indicator Not Assessed
 ADPE = Abiotic Depletion Potential for non-fossil resources
 ADPF = Abiotic Depletion Potential for fossil resources
 GWP = Global Warming Potential
 ODP = Depletion potential of the stratospheric ozone layer
 POCP = Formation potential of tropospheric ozone photochemical oxidants
 AP = Acidification Potential of land and water
 EP = Eutrophication Potential

HTP = Human Toxicity Potential
 FAETP = Fresh water aquatic ecotoxicity potential
 MAETP = Marine aquatic ecotoxicity potential
 TETP = Terrestrial ecotoxicity potential
 ECI = Environmental Cost Indicator

RESOURCE USE per kg of product: landfill

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-------|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|
| PERE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| PERM | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| PERT | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 5.11 E -3 | INA |
| PENRE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| PENRM | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| PENRT | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.96 E -1 | INA |
| SM | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| RSF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| NRSF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| FW | m3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.75 E -4 | INA |

INA = Indicator Not Assessed

PERE = Use of renewable energy excluding renewable primary energy resources

PERM = Use of renewable energy resources used as raw materials

PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials

PENRM = Use of non-renewable primary energy resources used as raw materials

SM = Use of secondary materials

NRSF = Use of non renewable secondary fuels

PERT = Total use of renewable primary energy resources

PENRT = Total use of non-renewable primary energy resources

RSF = Use of renewable secondary fuels

FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per kg of product: landfill

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|------|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|
| HWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.20 E -7 | INA |
| NHWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.00 E +0 | INA |
| RWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.66 E -6 | INA |
| CRU | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| MFR | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| MER | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| EEE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |
| ETE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA |

INA = Indicator Not Assessed

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy

ENVIRONMENTAL IMPACT per kg of product: recycling

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|----------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|
| ADPE | kg Sb-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 8.71 E -7 | INA | INA |
| ADPF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 3.48 E +0 | INA | INA |
| GWP | kg CO2-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.92 E -1 | INA | INA |
| ODP | kg CFC11-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 2.45 E -8 | INA | INA |
| POCP | kg ethene-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 5.71 E -5 | INA | INA |
| AP | kg SO2-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 8.84 E -4 | INA | INA |
| EP | kg (PO4)3--eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.73 E -4 | INA | INA |
| Toxicity indicators (Dutch market) | | | | | | | | | | | | | | | | | | | |
| HTP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| FAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| MAETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| TETP | kg DCB-eq. | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Environmental Cost Indicator (Dutch market) | | | | | | | | | | | | | | | | | | | |
| ECI | Euro | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

INA = Indicator Not Assessed

ADPE = Abiotic Depletion Potential for non-fossil resources

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POCP = Formation potential of tropospheric ozone photochemical oxidants

AP = Acidification Potential of land and water

EP = Eutrophication Potential

HTP = Human Toxicity Potential

FAETP = Fresh water aquatic ecotoxicity potential

MAETP = Marine aquatic ecotoxicity potential

TETP = Terrestrial ecotoxicity potential

ECI = Environmental Cost Indicator

RESOURCE USE per kg of product: recycling

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-------|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|
| PERE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PERM | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PERT | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.72 E -1 | INA | INA |
| PENRE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PENRM | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| PENRT | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 4.08 E +0 | INA | INA |
| SM | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| RSF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| NRSF | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| FW | m3 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.64 E -3 | INA | INA |

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PENRM = Use of non-renewable primary energy resources used as raw materials

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NRSF = Use of non renewable secondary fuels

PERT = Total use of renewable primary energy resources

PENRT = Total use of non-renewable primary energy resources

RSF = Use of renewable secondary fuels

FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per kg of product: recycling

| | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|------|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|
| HWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 3.19 E -6 | INA | INA |
| NHWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.90 E -1 | INA | INA |
| RWD | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.50 E -5 | INA | INA |
| CRU | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| MFR | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 1.00 E +0 | INA | INA |
| MER | kg | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| EEE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |
| ETE | MJ | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | 0.00 | INA | INA |

INA = Indicator Not Assessed

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Results are presented are for the KG080 version and can be scaled for various densities. An overview of the options is displayed in the table below.

| Product | kg/m ³ | Scaling factor |
|---------|-------------------|----------------|
| KG080 | 80 | 1.00 |
| KG100 | 100 | 1.25 |
| KG115 | 115 | 1.44 |
| KG135 | 135 | 1.69 |
| KG150 | 150 | 1.88 |
| KG200 | 200 | 2.50 |
| KG250 | 250 | 3.13 |

Results are presented in m³ and can be scaled according to their thickness. The options for thickness of the panels are included below and calculated by volume. Production waste is to be included when calculating a certain thickness.

| Thickness (mm) | m ³ material | m ³ production waste | m ³ total |
|----------------|-------------------------|---------------------------------|----------------------|
| 200.0 | 0.2000 | 0.0017 | 0.2017 |
| 47.5 | 0.0475 | 0.0017 | 0.0492 |
| 35.0 | 0.0350 | 0.0017 | 0.0367 |
| 27.5 | 0.0275 | 0.0017 | 0.0292 |
| 22.5 | 0.0225 | 0.0017 | 0.0242 |
| 17.5 | 0.0175 | 0.0017 | 0.0192 |
| 14.5 | 0.0145 | 0.0017 | 0.0162 |
| 12.0 | 0.0120 | 0.0017 | 0.0137 |

A1. Raw materials supply

This module considers the extraction and processing of all raw materials and energy which occur upstream to the Kerdyn Green manufacturing process, as well as waste processing up to the end-of waste state.

A2. Transport of raw materials to manufacturer

This includes the transport distance of the raw materials to the manufacturing facility via road, boat and/or train.

A3. Manufacturing

This module covers the manufacturing of Kerdyn Green and includes all processes linked to production such as storing, mixing, packing and internal transportation. Use of electricity and fuels production are taken into account as well as direct emissions from production process. The manufacturing of production equipment and infrastructure is not included in the system boundary, unless it is included in Ecoinvent background processes. Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module.

The manufacturing process takes place at one production site. For upstream (raw material processes) and downstream processes (waste processing) generic data is used when no specific data is obtained.



DECLARATION OF SVHC

None of the substances contained in the product are listed in the “Candidate List of Substances of Very High Concern for authorisation”, or they do not exceed the threshold with the European Chemicals Agency.



REFERENCES

- EN 15804:2012+A1:2014 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
- ISO, 2006. “Environmental management. Life cycle assessment - Principles and framework”. ISO 14040:2006.
- ISO, 2006. “Environmental management. Life cycle assessment – Requirements and Guidelines”. ISO 14044:2006.
- ISO, 2000. “Environmental labels and declarations – Type III environmental declarations”, ISO/TR 14025:2000.



REMARKS

None