# Statement of Verification

BREG EN EPD No.: 000691 Issue 01

This is to verify that the

**Environmental Product Declaration**

provided by:

**Altro Limited**

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

1m² of Altro standard safety flooring products without PUR with a thickness of 2 to 2.5mm and a weight of 2.6 to 3.1 kg/m²

## Company Address

Altro Limited
Works Road
Letchworth Garden City
Hertfordshire
SG6 1NW
United Kingdom



altro

| | | |
|---|---|---|
| Signed for BRE Global Ltd | Hayley Thomson<br>Operator | 16 May 2025<br>Date of this Issue |
| 16 May 2025<br>Date of First Issue | | 15 May 2030<br>Expiry Date |

BRE Global Verified EPD

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ECO PLATFORM EPD VERIFIED


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# Environmental Product Declaration

EPD Number: **000691**

## General Information

| EPD Programme Operator | Applicable Product Category Rules |
|---|---|
| BRE Global<br>Watford, Herts<br>WD25 9XX<br>United Kingdom | BRE 2023 Product Category Rules (PN 514 Rev 3.1) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019. |
| **Commissioner of LCA study** | **LCA consultant/Tool** |
| Altro Limited<br>Works Road<br>Letchworth Garden City<br>Hertfordshire<br>SG6 1NW<br>United Kingdom | Bala Subramanian/ BRE LINA A2 |
| **Declared/Functional Unit** | **Applicability/Coverage** |
| 1m$^2$ of Altro standard safety flooring products without PUR with a thickness of 2 to 2.5mm and a weight of 2.6 to 3.1 kg/m$^2$ | Other (please specify). Product Specific |
| **EPD Type** | **Background database** |
| Cradle to Gate with Module C and D | Ecoinvent 3.8 |

| Demonstration of Verification |
|---|
| CEN standard EN 15804 serves as the core PCR [a] |
| Independent verification of the declaration and data according to EN ISO 14025:2010<br>☐Internal ☒ External |
| (Where appropriate [b])Third party verifier:<br>Roger Connick |
| a: Product category rules<br>b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4) |

| Comparability |
|---|
| Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A2:2019 for further guidance |


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## Information modules covered

| Product | | | Construction | | Use stage | | | | | | | End-of-life | | | | | Benefits and loads beyond the system boundary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Related to the building fabric | | | | | Related to the building | | | | | | | |
| **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | | **D** |
| Raw materials supply | Transport | Manufacturing | Transport to site | Construction – Installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction demolition | Transport | Waste processing | Disposal | | Reuse, Recovery and/or Recycling potential |
| ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | | ☑ |

Note: Ticks indicate the Information Modules declared.

## Manufacturing site(s)

Altro Limited
Works Road
Letchworth Garden City
Hertfordshire
SG6 1NW
United Kingdom

# Construction Product:

## Product Description

Altro standard safety flooring products2 to 2.5mm with the weight of 2.6 to 3.1 kg/m$^2$ - This product range EPD covers products without PUR lacquer, **Altro ContraX, Altro Classic 25, Altro Marine 20, Altro Impressionist II and Altro Walkway 20SD**.


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## Technical Information

The below table covers the basic technical properties of the five products within the 2.0 mm to 2.5 mm thick sheet PVC based standard safety flooring without PUR Lacquer product range. For these and further properties, please see the products' pages on Altro's website: www.altro.com

| Property | Altro Impressionist II | Altro Marine 20 | Altro Classic 25 | Altro ContraX | Altro Walkway 20 SD |
|---|---|---|---|---|---|
| Thickness (EN ISO 24346) | 2.0 mm | 2.0 mm | 2.5 mm | 2.0 mm | 2.0 mm |
| Mass per area (EN ISO 23997) | 2.6 kg/m$^2$ | 2.6 kg/m$^2$ | 3.1 kg/m$^2$ | 2.6 kg/m$^2$ | 2.6 kg/m$^2$ |
| **Slip Resistance** | | | | | |
| EN 16165 Annex C (PTV) | ≥40 | - | ≥45 | ≥36 | ≥36 |
| EN 13845 Annex C | ESf | ESb | ESf | ESf | ESf |
| EN 13893 | DS | DS | DS | DS | DS |
| EN 16165 Annex B | R10 | R10 | R11 | R10 | R10 |
| EN 16165 Annex A | - | C | - | - | - |
| **Fire Performance** | | | | | |
| EN 13501-1 | Class Bfl s1 | Class Bfl s1 | Class Bfl s1 | Class Bfl s1 | Class Bfl s1 |
| CAN/ULC S102.2 | Tested | Tested | Tested | Tested | Tested |
| ASTM E648 | Class 1 | Class 1 | Class 1 | Class 1 | Class 1 |
| ASTM E662 | ≤ 450 | ≤ 450 | ≤ 450 | ≤ 450 | ≤ 450 |




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## Main Product Contents

The raw material composition of the product range covered by this EPD is given below.

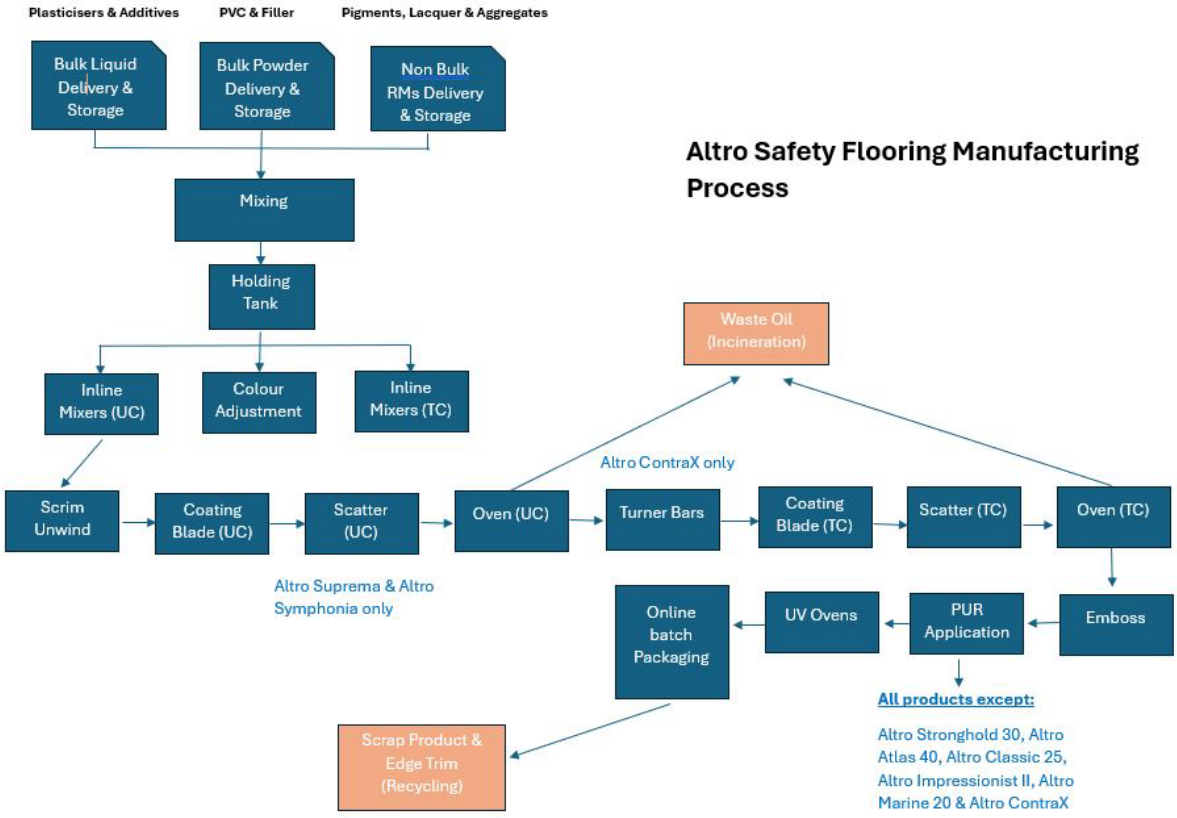
| Material/Chemical Input | % |
|---|---|
| Plastisol | 90-94 |
| Scatter | 4-8 |
| Scrim | 2 |

## Manufacturing Process

Bulk liquids, powders, performance additives and some aggregates are mixed together into a plastisol and placed in a holding tank. The plastisol is then pigmented and passed into inline mixers. The pigmented plastisol is then spread coated onto a scrim and aggregates are scattered onto the surface to aid slip resistance and durability. The product is then cured in an oven and embossed. The product is then cut into rolls and packaged for dispatch.

***Note:*** *For manufacturing, the UK national grid electricity and the UK natural gas has been used, and any processing waste generated during production will be sent for recycling.*

## Process flow diagram




## End of Life

Altro standard PVC-based safety flooring products, 2.0 mm to 2.5 mm thick without PUR, cannot be recovered at the end of life as they are bonded to the floor with adhesive. These products cannot be manually removed


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at the end of their life cycle. Instead, they are extracted using an industry stripping machine and, due to the difficulty of separating waste from other materials, they are directed for landfill disposal. Therefore, according to BRE PCR 3.1, 100% of these products will end up in landfill.


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# Life Cycle Assessment Calculation Rules

## Declared unit description

1m$^2$ of Altro standard safety flooring products without PUR with a thickness of 2 to 2.5mm and a weight of 2.6 to 3.1 kg/m$^2$ .

The declared unit represents the Altro ContraX, Altro Classic 25, Altro Marine 20, Altro Impressionist II, Altro Walkway 20SD products for 2.0 – 2.5mm thicknesses.

## System boundary

This is a cradle-to-gate with modules C and D LCA, reporting all production life cycle stages of modules A1 to A3 and end of life stages C1-C4, and D in accordance with EN 15804:2012+A2:2019 and BRE 2023 Product Category Rules (PN 514 Rev 3.1).

## Data sources, quality and allocation

The supporting LCA study was carried out using BRE LINA A2 using manufacturer specific data for Altro ContraX, Altro Classic 25, Altro Marine 20, Altro Impressionist II, Altro Walkway 20SD products, with thicknesses ranging from 2.0 to 2.5 mm. The data was provided by Altro for the production period spanning 12 months (01/08/2022 - 31/07/2023) at the Letchworth site. The Letchworth site produces other PVC products in addition to the 2.0 – 2.5mm standard safety flooring without PUR lacquer product range, so allocation was applied to site wide values for packaging, and energy on a m$^2$ of production basis. The manufacturer has confirmed that the water consumption data has been sourced from utility bills (Castle Water) and allocated to product manufacturing on a per m² production basis, with 90% of the water discharged to the sewer as per the waste discharge bills. Production and non-production waste have been allocated based on the percentage mass of production.

Upon data review, it was noted that the raw material input for Altro Walkway 20SD is slightly lower than the total production output, but it remains within the acceptable range. To ensure alignment between input entries and output, an adjustment was made to the raw material input. Products within this range were individually modelled for the declared unit of 1m².
Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e., raw material production) from the ecoinvent 3.8 database. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN15804 A2.

| ISO14044 guidance. **Quality Level** | **Geographical representativeness** | **Technical representativeness** | **Time representativeness** |
|---|---|---|---|
| Very Good | Data from area under study. | Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e., identical technology). | There is approximately 1-2 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken. |

Specific European datasets have been selected from the ecoinvent LCI for this LCA. Manufacturer uses the national grid electricity and natural gas for production, therefore the national grid electricity dataset “Electricity – GB (kWh)” has been used for the LCA modelling (Ecoinvent 3.8). The GWP carbon footprint for using 1 kWh of Electricity – GB is 0.239 in kgCO2e/kWh and the GWP of 1kWh of Natural gas, at industrial furnace is 0.232 kgCO2e/kWh. The quality level of time representativeness is also Very Good as the background LCI datasets are based on ecoinvent v3.8 which was compiled in 2021. Therefore, there is less than 5 years between the ecoinvent LCI reference year and the time period for which the LCA was undertaken.


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## Cut-off criteria

No inputs or outputs have been excluded. All raw materials and packaging inputs, plus their transport, process and general energy and water use, production, and non-production waste, have been included where appropriate, except for direct emissions to air, water, and soil, which are not measured.


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## LCA Results -1m² of Altro Walkway 20SD standard safety flooring without PUR lacquer with the thickness of 2mm and a weight of 2.6 kg/m²

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | GWP-total | GWP-fossil | GWP-biogenic | GWP-luluc | ODP | AP | EP-freshwater |
| | | | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg CFC11 eq | mol $H^+$ eq | kg $(PO_4)^{3-}$ eq |
| Product stage | Raw material supply | A1 | 4.12E+00 | 4.72E+00 | -6.10E-01 | 9.14E-03 | 1.59E-06 | 2.72E-02 | 1.79E-03 |
| | Transport | A2 | 4.09E-01 | 4.08E-01 | 3.48E-04 | 1.60E-04 | 9.45E-08 | 1.67E-03 | 2.63E-05 |
| | Manufacturing | A3 | 8.83E-01 | 8.14E-01 | 6.80E-02 | 5.91E-04 | 6.10E-08 | 1.19E-03 | 7.78E-05 |
| | Total (Consumption grid) | A1-3 | 5.42E+00 | 5.94E+00 | -5.41E-01 | 9.89E-03 | 1.74E-06 | 3.00E-02 | 1.90E-03 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.16E-02 | 2.16E-02 | 1.84E-05 | 8.48E-06 | 5.00E-09 | 8.77E-05 | 1.39E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 2.19E-01 | 2.19E-01 | 2.75E-04 | 2.87E-05 | 8.34E-09 | 2.39E-04 | 4.01E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | EP-marine | EP-terrestrial | POCP | ADP-mineral &metals | ADP-fossil | WDP | PM |
| | | | kg N eq | mol N eq | kg NMVOC eq | kg Sb eq | MJ, net calorific value | $m^3$ world eq deprived | disease incidence |
| Product stage | Raw material supply | A1 | 5.31E-03 | 5.65E-02 | 1.30E-02 | 5.85E-05 | 1.04E+02 | 4.52E+00 | 2.00E-07 |
| | Transport | A2 | 5.01E-04 | 5.48E-03 | 1.68E-03 | 1.42E-06 | 6.17E+00 | 2.78E-02 | 3.52E-08 |
| | Manufacturing | A3 | 4.73E-04 | 4.10E-03 | 1.04E-03 | 2.13E-06 | 1.44E+01 | 8.24E-02 | 1.19E-08 |
| | Total (Consumption grid) | A1-3 | 6.29E-03 | 6.61E-02 | 1.57E-02 | 6.20E-05 | 1.24E+02 | 4.63E+00 | 2.47E-07 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.64E-05 | 2.89E-04 | 8.84E-05 | 7.51E-08 | 3.27E-01 | 1.47E-03 | 1.86E-09 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.03E-03 | 8.75E-04 | 2.98E-04 | 9.12E-08 | 6.49E-01 | 2.91E-02 | 4.72E-09 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | IRP | ETP-fw | HTP-c | HTP-nc | SQP |
| | | | kBq $U^{235}$ eq | CTUe | CTUh | CTUh | dimensionless |
| Product stage | Raw material supply | A1 | 8.23E-01 | 9.14E+01 | 4.24E-09 | 8.69E-08 | 2.27E+01 |
| | Transport | A2 | 3.17E-02 | 4.82E+00 | 1.56E-10 | 5.05E-09 | 4.24E+00 |
| | Manufacturing | A3 | 2.45E-01 | 5.88E+00 | 2.27E-10 | 4.19E-09 | 5.30E+00 |
| | Total (Consumption grid) | A1-3 | 1.10E+00 | 1.02E+02 | 4.63E-09 | 9.62E-08 | 3.22E+01 |
| **100% - Landfill** | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 1.68E-03 | 2.55E-01 | 8.26E-12 | 2.67E-10 | 2.24E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 3.07E-03 | 1.00E+01 | 2.21E-11 | 1.95E-09 | 1.54E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, primary energy | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| | | | MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | 4.56E+00 | 0.00E+00 | 4.56E+00 | 6.04E+01 | 2.95E+01 | 9.00E+01 |
| | Transport | A2 | 8.70E-02 | 0.00E+00 | 8.70E-02 | 6.06E+00 | 0.00E+00 | 6.06E+00 |
| | Manufacturing | A3 | 6.04E-01 | 1.55E+00 | 2.15E+00 | 1.05E+01 | 6.04E+00 | 1.66E+01 |
| | Total (Consumption grid) | A1-3 | 5.26E+00 | 1.55E+00 | 6.80E+00 | 7.70E+01 | 3.56E+01 | 1.13E+02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 4.60E-03 | 0.00E+00 | 4.60E-03 | 3.21E-01 | 0.00E+00 | 3.21E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.16E-02 | 0.00E+00 | 1.16E-02 | -5.53E+01 | 5.59E+01 | 6.38E-01 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, secondary materials and fuels, use of water | | | | | | |
|---|---|---|---|---|---|---|
| | | | SM | RSF | NRSF | FW |
| | | | kg | MJ net calorific value | MJ net calorific value | $m^3$ |
| Product stage | Raw material supply | A1 | 3.29E-01 | 0.00E+00 | 0.00E+00 | 1.08E-01 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.88E-04 |
| | Manufacturing | A3 | 4.32E-02 | 6.06E-06 | 0.00E+00 | 3.10E-03 |
| | Total (Consumption grid) | A1-3 | 3.72E-01 | 6.06E-06 | 0.00E+00 | 1.11E-01 |
| **100% - Landfill** | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.64E-05 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.83E-04 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing waste categories | | | | | |
|---|---|---|---|---|---|
| | | | HWD | NHWD | RWD |
| | | | kg | kg | kg |
| Product stage | Raw material supply | A1 | 2.01E-01 | 6.05E+00 | 2.14E-04 |
| | Transport | A2 | 6.81E-03 | 1.21E-01 | 4.18E-05 |
| | Manufacturing | A3 | 1.89E-02 | 4.07E-01 | 7.93E-05 |
| | Total (Consumption grid) | A1-3 | 2.27E-01 | 6.57E+00 | 3.35E-04 |
| **100% - Landfill** | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 3.60E-04 | 6.40E-03 | 2.21E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.29E-03 | 2.63E+00 | 3.85E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing output flows – at end of life | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | CRU | MFR | MER | EE | Biogenic carbon (product) | Biogenic carbon (packaging) |
| | | | kg | kg | kg | MJ per energy carrier | kg C | kg C |
| Product stage | Raw material supply | A1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Manufacturing | A3 | 0.00E+00 | 1.30E-01 | 6.21E-08 | 5.17E-03 | 2.81E-02 | -1.20E-02 |
| | Total (Consumption grid) | A1-3 | 0.00E+00 | 1.30E-01 | 6.21E-08 | 5.17E-03 | 2.81E-02 | -1.20E-02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy


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## LCA Results -1m² of Altro ContraX standard safety flooring without PUR lacquer with the thickness of 2mm and a weight of 2.6 kg/m²

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | GWP-total | GWP-fossil | GWP-biogenic | GWP-luluc | ODP | AP | EP-freshwater |
| | | | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg CFC11 eq | mol $H^+$ eq | kg $(PO_4)^{3-}$ eq |
| Product stage | Raw material supply | A1 | 4.15E+00 | 4.79E+00 | -6.52E-01 | 9.69E-03 | 1.65E-06 | 3.18E-02 | 2.09E-03 |
| | Transport | A2 | 4.06E-01 | 4.05E-01 | 3.45E-04 | 1.59E-04 | 9.37E-08 | 1.65E-03 | 2.61E-05 |
| | Manufacturing | A3 | 8.83E-01 | 8.14E-01 | 6.80E-02 | 5.91E-04 | 6.10E-08 | 1.19E-03 | 7.78E-05 |
| | Total (Consumption grid) | A1-3 | 5.43E+00 | 6.01E+00 | -5.84E-01 | 1.04E-02 | 1.81E-06 | 3.47E-02 | 2.19E-03 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.16E-02 | 2.16E-02 | 1.84E-05 | 8.48E-06 | 5.00E-09 | 8.77E-05 | 1.39E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 2.19E-01 | 2.19E-01 | 2.75E-04 | 2.87E-05 | 8.34E-09 | 2.39E-04 | 4.01E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | EP-marine | EP-terrestrial | POCP | ADP-mineral &metals | ADP-fossil | WDP | PM |
| | | | kg N eq | mol N eq | kg NMVOC eq | kg Sb eq | MJ, net calorific value | $m^3$ world eq deprived | disease incidence |
| Product stage | Raw material supply | A1 | 5.81E-03 | 5.89E-02 | 1.36E-02 | 6.01E-05 | 1.03E+02 | 4.84E+00 | 2.14E-07 |
| | Transport | A2 | 4.97E-04 | 5.43E-03 | 1.66E-03 | 1.41E-06 | 6.12E+00 | 2.75E-02 | 3.49E-08 |
| | Manufacturing | A3 | 4.73E-04 | 4.10E-03 | 1.04E-03 | 2.13E-06 | 1.44E+01 | 8.24E-02 | 1.19E-08 |
| | Total (Consumption grid) | A1-3 | 6.78E-03 | 6.84E-02 | 1.63E-02 | 6.36E-05 | 1.23E+02 | 4.95E+00 | 2.61E-07 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.64E-05 | 2.89E-04 | 8.84E-05 | 7.51E-08 | 3.27E-01 | 1.47E-03 | 1.86E-09 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.03E-03 | 8.75E-04 | 2.98E-04 | 9.12E-08 | 6.49E-01 | 2.91E-02 | 4.72E-09 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | IRP | ETP-fw | HTP-c | HTP-nc | SQP |
| | | | kBq $U^{235}$ eq | CTUe | CTUh | CTUh | dimensionless |
| Product stage | Raw material supply | A1 | 8.07E-01 | 1.09E+02 | 4.88E-09 | 9.65E-08 | 2.30E+01 |
| | Transport | A2 | 3.15E-02 | 4.78E+00 | 1.55E-10 | 5.01E-09 | 4.20E+00 |
| | Manufacturing | A3 | 2.45E-01 | 5.88E+00 | 2.27E-10 | 4.19E-09 | 5.30E+00 |
| | Total (Consumption grid) | A1-3 | 1.08E+00 | 1.19E+02 | 5.26E-09 | 1.06E-07 | 3.25E+01 |
| **100% - Landfill** | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 1.68E-03 | 2.55E-01 | 8.26E-12 | 2.67E-10 | 2.24E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 3.07E-03 | 1.00E+01 | 2.21E-11 | 1.95E-09 | 1.54E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, primary energy | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| | | | MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | 4.40E+00 | 0.00E+00 | 4.40E+00 | 5.58E+01 | 2.88E+01 | 8.46E+01 |
| | Transport | A2 | 8.62E-02 | 0.00E+00 | 8.62E-02 | 6.01E+00 | 0.00E+00 | 6.01E+00 |
| | Manufacturing | A3 | 6.04E-01 | 1.55E+00 | 2.15E+00 | 1.05E+01 | 6.04E+00 | 1.66E+01 |
| | Total (Consumption grid) | A1-3 | 5.09E+00 | 1.55E+00 | 6.63E+00 | 7.23E+01 | 3.49E+01 | 1.07E+02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 4.60E-03 | 0.00E+00 | 4.60E-03 | 3.21E-01 | 0.00E+00 | 3.21E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.16E-02 | 0.00E+00 | 1.16E-02 | -5.53E+01 | 5.59E+01 | 6.38E-01 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, secondary materials and fuels, use of water | | | | | | |
|---|---|---|---|---|---|---|
| | | | SM | RSF | NRSF | FW |
| | | | kg | MJ net calorific value | MJ net calorific value | $m^3$ |
| Product stage | Raw material supply | A1 | 3.81E-01 | 0.00E+00 | 0.00E+00 | 1.15E-01 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.82E-04 |
| | Manufacturing | A3 | 4.32E-02 | 6.06E-06 | 0.00E+00 | 3.10E-03 |
| | Total (Consumption grid) | A1-3 | 4.24E-01 | 6.06E-06 | 0.00E+00 | 1.19E-01 |
| **100% - Landfill** | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.64E-05 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.83E-04 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing waste categories | | | | | |
|---|---|---|---|---|---|
| | | | HWD | NHWD | RWD |
| | | | kg | kg | kg |
| Product stage | Raw material supply | A1 | 2.03E-01 | 5.76E+00 | 1.88E-04 |
| | Transport | A2 | 6.75E-03 | 1.20E-01 | 4.14E-05 |
| | Manufacturing | A3 | 1.89E-02 | 4.07E-01 | 7.93E-05 |
| | Total (Consumption grid) | A1-3 | 2.29E-01 | 6.29E+00 | 3.09E-04 |
| **100% - Landfill** | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 3.60E-04 | 6.40E-03 | 2.21E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.29E-03 | 2.63E+00 | 3.85E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing output flows – at end of life | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | CRU | MFR | MER | EE | Biogenic carbon (product) | Biogenic carbon (packaging) |
| | | | kg | kg | kg | MJ per energy carrier | kg C | kg C |
| Product stage | Raw material supply | A1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Manufacturing | A3 | 0.00E+00 | 1.30E-01 | 6.21E-08 | 5.17E-03 | 2.81E-02 | -1.20E-02 |
| | Total (Consumption grid) | A1-3 | 0.00E+00 | 1.30E-01 | 6.21E-08 | 5.17E-03 | 2.81E-02 | -1.20E-02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy


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## LCA Results - 1m² of Altro Classic 25 standard safety flooring without PUR lacquer with the thickness of 2.5mm and a weight of 3.1 kg/m²

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | GWP-total | GWP-fossil | GWP-biogenic | GWP-luluc | ODP | AP | EP-freshwater |
| | | | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg CFC11 eq | mol $H^+$ eq | kg $(PO_4)^{3-}$ eq |
| Product stage | Raw material supply | A1 | 5.35E+00 | 6.16E+00 | -8.15E-01 | 1.24E-02 | 2.09E-06 | 4.05E-02 | 2.71E-03 |
| | Transport | A2 | 4.88E-01 | 4.87E-01 | 4.15E-04 | 1.91E-04 | 1.13E-07 | 1.99E-03 | 3.14E-05 |
| | Manufacturing | A3 | 9.26E-01 | 8.42E-01 | 8.35E-02 | 5.97E-04 | 6.18E-08 | 1.22E-03 | 8.03E-05 |
| | Total (Consumption grid) | A1-3 | 6.77E+00 | 7.48E+00 | -7.31E-01 | 1.32E-02 | 2.26E-06 | 4.37E-02 | 2.82E-03 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.58E-02 | 2.58E-02 | 2.20E-05 | 1.01E-05 | 5.96E-09 | 1.05E-04 | 1.66E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 2.62E-01 | 2.61E-01 | 3.28E-04 | 3.42E-05 | 9.94E-09 | 2.85E-04 | 4.78E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | EP-marine | EP-terrestrial | POCP | ADP-mineral &metals | ADP-fossil | WDP | PM |
| | | | kg N eq | mol N eq | kg NMVOC eq | kg Sb eq | MJ, net calorific value | $m^3$ world eq deprived | disease incidence |
| Product stage | Raw material supply | A1 | 7.37E-03 | 7.45E-02 | 1.72E-02 | 7.49E-05 | 1.32E+02 | 6.11E+00 | 2.70E-07 |
| | Transport | A2 | 5.98E-04 | 6.53E-03 | 2.00E-03 | 1.69E-06 | 7.36E+00 | 3.31E-02 | 4.20E-08 |
| | Manufacturing | A3 | 4.86E-04 | 4.21E-03 | 1.07E-03 | 2.18E-06 | 1.45E+01 | 8.56E-02 | 1.26E-08 |
| | Total (Consumption grid) | A1-3 | 8.45E-03 | 8.52E-02 | 2.03E-02 | 7.87E-05 | 1.54E+02 | 6.23E+00 | 3.25E-07 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 3.15E-05 | 3.44E-04 | 1.05E-04 | 8.96E-08 | 3.89E-01 | 1.75E-03 | 2.22E-09 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.23E-03 | 1.04E-03 | 3.55E-04 | 1.09E-07 | 7.73E-01 | 3.46E-02 | 5.63E-09 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | IRP | ETP-fw | HTP-c | HTP-nc | SQP |
| | | | kBq $U^{235}$ eq | CTUe | CTUh | CTUh | dimensionless |
| Product stage | Raw material supply | A1 | 1.09E+00 | 1.36E+02 | 5.96E-09 | 1.21E-07 | 2.95E+01 |
| | Transport | A2 | 3.79E-02 | 5.75E+00 | 1.86E-10 | 6.02E-09 | 5.06E+00 |
| | Manufacturing | A3 | 2.45E-01 | 6.03E+00 | 2.42E-10 | 4.41E-09 | 5.38E+00 |
| | Total (Consumption grid) | A1-3 | 1.37E+00 | 1.48E+02 | 6.39E-09 | 1.32E-07 | 3.99E+01 |
| **100% - Landfill** | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.00E-03 | 3.04E-01 | 9.84E-12 | 3.19E-10 | 2.68E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 3.65E-03 | 1.20E+01 | 2.64E-11 | 2.32E-09 | 1.84E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, primary energy | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| | | | MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | 5.80E+00 | 0.00E+00 | 5.80E+00 | 7.27E+01 | 3.63E+01 | 1.09E+02 |
| | Transport | A2 | 1.04E-01 | 0.00E+00 | 1.04E-01 | 7.23E+00 | 0.00E+00 | 7.23E+00 |
| | Manufacturing | A3 | 4.59E-01 | 1.69E+00 | 2.15E+00 | 9.38E+00 | 7.20E+00 | 1.66E+01 |
| | Total (Consumption grid) | A1-3 | 6.37E+00 | 1.69E+00 | 8.06E+00 | 8.93E+01 | 4.35E+01 | 1.33E+02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 5.49E-03 | 0.00E+00 | 5.49E-03 | 3.82E-01 | 0.00E+00 | 3.82E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.38E-02 | 0.00E+00 | 1.38E-02 | -6.59E+01 | 6.67E+01 | 7.61E-01 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, secondary materials and fuels, use of water | | | | | | |
|---|---|---|---|---|---|---|
| | | | SM | RSF | NRSF | FW |
| | | | kg | MJ net calorific value | MJ net calorific value | $m^3$ |
| Product stage | Raw material supply | A1 | 3.80E-01 | 0.00E+00 | 0.00E+00 | 1.46E-01 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.21E-04 |
| | Manufacturing | A3 | 4.32E-02 | 6.06E-06 | 0.00E+00 | 3.18E-03 |
| | Total (Consumption grid) | A1-3 | 4.23E-01 | 6.06E-06 | 0.00E+00 | 1.50E-01 |
| **100% - Landfill** | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.34E-05 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.14E-04 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing waste categories | | | | | |
|---|---|---|---|---|---|
| | | | HWD | NHWD | RWD |
| | | | kg | kg | kg |
| Product stage | Raw material supply | A1 | 2.50E-01 | 7.61E+00 | 2.54E-04 |
| | Transport | A2 | 8.12E-03 | 1.44E-01 | 4.98E-05 |
| | Manufacturing | A3 | 2.01E-02 | 4.37E-01 | 7.94E-05 |
| | Total (Consumption grid) | A1-3 | 2.79E-01 | 8.19E+00 | 3.83E-04 |
| **100% - Landfill** | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 4.29E-04 | 7.63E-03 | 2.64E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.54E-03 | 3.13E+00 | 4.59E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing output flows – at end of life | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | CRU | MFR | MER | EE | Biogenic carbon (product) | Biogenic carbon (packaging) |
| | | | kg | kg | kg | MJ per energy carrier | kg C | kg C |
| Product stage | Raw material supply | A1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Manufacturing | A3 | 0.00E+00 | 1.55E-01 | 6.25E-08 | 5.17E-03 | 3.36E-02 | -1.20E-02 |
| | Total (Consumption grid) | A1-3 | 0.00E+00 | 1.55E-01 | 6.25E-08 | 5.17E-03 | 3.36E-02 | -1.20E-02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy


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## LCA Results - 1m² of Altro Marine 20 standard safety flooring without PUR lacquer with the thickness of 2mm and a weight of 2.6 kg/m²

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | GWP-total | GWP-fossil | GWP-biogenic | GWP-luluc | ODP | AP | EP-freshwater |
| | | | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg CFC11 eq | mol $H^+$ eq | kg $(PO_4)^{3-}$ eq |
| Product stage | Raw material supply | A1 | 4.01E+00 | 4.75E+00 | -7.58E-01 | 9.98E-03 | 1.81E-06 | 2.86E-02 | 1.98E-03 |
| | Transport | A2 | 4.52E-01 | 4.51E-01 | 3.84E-04 | 1.77E-04 | 1.04E-07 | 1.84E-03 | 2.90E-05 |
| | Manufacturing | A3 | 9.01E-01 | 8.25E-01 | 7.42E-02 | 5.93E-04 | 6.13E-08 | 1.20E-03 | 7.88E-05 |
| | Total (Consumption grid) | A1-3 | 5.36E+00 | 6.03E+00 | -6.84E-01 | 1.08E-02 | 1.98E-06 | 3.16E-02 | 2.09E-03 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.33E-02 | 2.33E-02 | 1.98E-05 | 9.14E-06 | 5.38E-09 | 9.45E-05 | 1.50E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 2.36E-01 | 2.36E-01 | 2.96E-04 | 3.09E-05 | 8.98E-09 | 2.57E-04 | 4.32E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | EP-marine | EP-terrestrial | POCP | ADP-mineral &metals | ADP-fossil | WDP | PM |
| | | | kg N eq | mol N eq | kg NMVOC eq | kg Sb eq | MJ, net calorific value | $m^3$ world eq deprived | disease incidence |
| Product stage | Raw material supply | A1 | 5.98E-03 | 6.09E-02 | 1.35E-02 | 6.62E-05 | 1.05E+02 | 5.00E+00 | 2.19E-07 |
| | Transport | A2 | 5.53E-04 | 6.04E-03 | 1.85E-03 | 1.57E-06 | 6.82E+00 | 3.07E-02 | 3.89E-08 |
| | Manufacturing | A3 | 4.78E-04 | 4.14E-03 | 1.05E-03 | 2.15E-06 | 1.44E+01 | 8.36E-02 | 1.22E-08 |
| | Total (Consumption grid) | A1-3 | 7.01E-03 | 7.11E-02 | 1.64E-02 | 6.99E-05 | 1.27E+02 | 5.11E+00 | 2.70E-07 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.84E-05 | 3.11E-04 | 9.52E-05 | 8.09E-08 | 3.52E-01 | 1.58E-03 | 2.01E-09 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.11E-03 | 9.42E-04 | 3.21E-04 | 9.83E-08 | 6.99E-01 | 3.13E-02 | 5.08E-09 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | IRP | ETP-fw | HTP-c | HTP-nc | SQP |
| | | | kBq $U^{235}$ eq | CTUe | CTUh | CTUh | dimensionless |
| Product stage | Raw material supply | A1 | 7.03E-01 | 1.12E+02 | 4.72E-09 | 1.02E-07 | 2.32E+01 |
| | Transport | A2 | 3.50E-02 | 5.32E+00 | 1.72E-10 | 5.58E-09 | 4.68E+00 |
| | Manufacturing | A3 | 2.45E-01 | 5.94E+00 | 2.33E-10 | 4.28E-09 | 5.33E+00 |
| | Total (Consumption grid) | A1-3 | 9.83E-01 | 1.24E+02 | 5.12E-09 | 1.12E-07 | 3.32E+01 |
| **100% - Landfill** | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 1.81E-03 | 2.75E-01 | 8.89E-12 | 2.88E-10 | 2.42E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 3.30E-03 | 1.08E+01 | 2.38E-11 | 2.10E-09 | 1.66E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, primary energy | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| | | | MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | 4.10E+00 | 0.00E+00 | 4.10E+00 | 5.53E+01 | 3.25E+01 | 8.78E+01 |
| | Transport | A2 | 9.60E-02 | 0.00E+00 | 9.60E-02 | 6.69E+00 | 0.00E+00 | 6.69E+00 |
| | Manufacturing | A3 | 5.47E-01 | 1.60E+00 | 2.15E+00 | 1.01E+01 | 6.50E+00 | 1.66E+01 |
| | Total (Consumption grid) | A1-3 | 4.74E+00 | 1.60E+00 | 6.34E+00 | 7.21E+01 | 3.90E+01 | 1.11E+02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 4.96E-03 | 0.00E+00 | 4.96E-03 | 3.45E-01 | 0.00E+00 | 3.45E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.25E-02 | 0.00E+00 | 1.25E-02 | -5.95E+01 | 6.02E+01 | 6.87E-01 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, secondary materials and fuels, use of water | | | | | | |
|---|---|---|---|---|---|---|
| | | | SM | RSF | NRSF | FW |
| | | | kg | MJ net calorific value | MJ net calorific value | $m^3$ |
| Product stage | Raw material supply | A1 | 3.50E-01 | 0.00E+00 | 0.00E+00 | 1.19E-01 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 7.60E-04 |
| | Manufacturing | A3 | 4.32E-02 | 6.06E-06 | 0.00E+00 | 3.13E-03 |
| | Total (Consumption grid) | A1-3 | 3.94E-01 | 6.06E-06 | 0.00E+00 | 1.22E-01 |
| **100% - Landfill** | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.92E-05 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 7.35E-04 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing waste categories | | | | | |
|---|---|---|---|---|---|
| | | | HWD | NHWD | RWD |
| | | | kg | kg | kg |
| Product stage | Raw material supply | A1 | 2.24E-01 | 5.32E+00 | 1.80E-04 |
| | Transport | A2 | 7.52E-03 | 1.33E-01 | 4.61E-05 |
| | Manufacturing | A3 | 1.94E-02 | 4.19E-01 | 7.93E-05 |
| | Total (Consumption grid) | A1-3 | 2.51E-01 | 5.88E+00 | 3.05E-04 |
| **100% - Landfill** | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 3.88E-04 | 6.89E-03 | 2.38E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.39E-03 | 2.83E+00 | 4.14E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing output flows – at end of life | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | CRU | MFR | MER | EE | Biogenic carbon (product) | Biogenic carbon (packaging) |
| | | | kg | kg | kg | MJ per energy carrier | kg C | kg C |
| Product stage | Raw material supply | A1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Manufacturing | A3 | 0.00E+00 | 1.40E-01 | 6.22E-08 | 5.17E-03 | 3.03E-02 | -1.21E-02 |
| | Total (Consumption grid) | A1-3 | 0.00E+00 | 1.40E-01 | 6.22E-08 | 5.17E-03 | 3.03E-02 | -1.21E-02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy


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## LCA Results - 1m² of Altro Impressionist II standard safety flooring without PUR lacquer with the thickness of 2mm and a weight of 2.6 kg/m²

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | GWP-total | GWP-fossil | GWP-biogenic | GWP-luluc | ODP | AP | EP-freshwater |
| | | | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg $CO_2$ eq | kg CFC11 eq | mol $H^+$ eq | kg $(PO_4)^{3-}$ eq |
| Product stage | Raw material supply | A1 | 3.96E+00 | 4.60E+00 | -6.54E-01 | 9.36E-03 | 1.68E-06 | 2.76E-02 | 1.97E-03 |
| | Transport | A2 | 4.08E-01 | 4.07E-01 | 3.47E-04 | 1.60E-04 | 9.42E-08 | 1.66E-03 | 2.62E-05 |
| | Manufacturing | A3 | 8.83E-01 | 8.14E-01 | 6.80E-02 | 5.91E-04 | 6.10E-08 | 1.19E-03 | 7.78E-05 |
| | Total (Consumption grid) | A1-3 | 5.25E+00 | 5.82E+00 | -5.85E-01 | 1.01E-02 | 1.83E-06 | 3.05E-02 | 2.08E-03 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.16E-02 | 2.16E-02 | 1.84E-05 | 8.48E-06 | 5.00E-09 | 8.77E-05 | 1.39E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 2.19E-01 | 2.19E-01 | 2.75E-04 | 2.87E-05 | 8.34E-09 | 2.39E-04 | 4.01E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | EP-marine | EP-terrestrial | POCP | ADP-mineral &metals | ADP-fossil | WDP | PM |
| | | | kg N eq | mol N eq | kg NMVOC eq | kg Sb eq | MJ, net calorific value | $m^3$ world eq deprived | disease incidence |
| Product stage | Raw material supply | A1 | 5.60E-03 | 5.71E-02 | 1.29E-02 | 6.02E-05 | 1.01E+02 | 4.59E+00 | 2.06E-07 |
| | Transport | A2 | 4.99E-04 | 5.45E-03 | 1.67E-03 | 1.42E-06 | 6.15E+00 | 2.77E-02 | 3.51E-08 |
| | Manufacturing | A3 | 4.73E-04 | 4.10E-03 | 1.04E-03 | 2.13E-06 | 1.44E+01 | 8.24E-02 | 1.19E-08 |
| | Total (Consumption grid) | A1-3 | 6.57E-03 | 6.67E-02 | 1.56E-02 | 6.37E-05 | 1.22E+02 | 4.70E+00 | 2.54E-07 |
| **100% - Landfill** | | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 2.64E-05 | 2.89E-04 | 8.84E-05 | 7.51E-08 | 3.27E-01 | 1.47E-03 | 1.86E-09 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.03E-03 | 8.75E-04 | 2.98E-04 | 9.12E-08 | 6.49E-01 | 2.91E-02 | 4.72E-09 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing environmental impacts | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | IRP | ETP-fw | HTP-c | HTP-nc | SQP |
| | | | kBq $U^{235}$ eq | CTUe | CTUh | CTUh | dimensionless |
| Product stage | Raw material supply | A1 | 7.49E-01 | 1.05E+02 | 4.36E-09 | 9.48E-08 | 2.18E+01 |
| | Transport | A2 | 3.16E-02 | 4.80E+00 | 1.56E-10 | 5.04E-09 | 4.23E+00 |
| | Manufacturing | A3 | 2.45E-01 | 5.88E+00 | 2.27E-10 | 4.19E-09 | 5.30E+00 |
| | Total (Consumption grid) | A1-3 | 1.03E+00 | 1.15E+02 | 4.74E-09 | 1.04E-07 | 3.13E+01 |
| **100% - Landfill** | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 1.68E-03 | 2.55E-01 | 8.26E-12 | 2.67E-10 | 2.24E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 3.07E-03 | 1.00E+01 | 2.21E-11 | 1.95E-09 | 1.54E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, primary energy | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| | | | MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | 4.21E+00 | 0.00E+00 | 4.21E+00 | 5.53E+01 | 2.98E+01 | 8.51E+01 |
| | Transport | A2 | 8.67E-02 | 0.00E+00 | 8.67E-02 | 6.04E+00 | 0.00E+00 | 6.04E+00 |
| | Manufacturing | A3 | 6.04E-01 | 1.55E+00 | 2.15E+00 | 1.05E+01 | 6.04E+00 | 1.66E+01 |
| | Total (Consumption grid) | A1-3 | 4.90E+00 | 1.55E+00 | 6.45E+00 | 7.18E+01 | 3.59E+01 | 1.08E+02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 4.60E-03 | 0.00E+00 | 4.60E-03 | 3.21E-01 | 0.00E+00 | 3.21E-01 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.16E-02 | 0.00E+00 | 1.16E-02 | -5.53E+01 | 5.59E+01 | 6.38E-01 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Parameters describing resource use, secondary materials and fuels, use of water | | | | | | |
|---|---|---|---|---|---|---|
| | | | SM | RSF | NRSF | FW |
| | | | kg | MJ net calorific value | MJ net calorific value | $m^3$ |
| Product stage | Raw material supply | A1 | 3.34E-01 | 0.00E+00 | 0.00E+00 | 1.09E-01 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.86E-04 |
| | Manufacturing | A3 | 4.32E-02 | 6.06E-06 | 0.00E+00 | 3.10E-03 |
| | Total (Consumption grid) | A1-3 | 3.77E-01 | 6.06E-06 | 0.00E+00 | 1.13E-01 |
| **100% - Landfill** | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.64E-05 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.83E-04 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing waste categories | | | | | |
|---|---|---|---|---|---|
| | | | HWD | NHWD | RWD |
| | | | kg | kg | kg |
| Product stage | Raw material supply | A1 | 2.07E-01 | 5.50E+00 | 1.91E-04 |
| | Transport | A2 | 6.79E-03 | 1.20E-01 | 4.16E-05 |
| | Manufacturing | A3 | 1.89E-02 | 4.07E-01 | 7.93E-05 |
| | Total (Consumption grid) | A1-3 | 2.32E-01 | 6.03E+00 | 3.12E-04 |
| **100% - Landfill** | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 3.60E-04 | 6.40E-03 | 2.21E-06 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 1.29E-03 | 2.63E+00 | 3.85E-06 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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


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## LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

| Other environmental information describing output flows – at end of life | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | CRU | MFR | MER | EE | Biogenic carbon (product) | Biogenic carbon (packaging) |
| | | | kg | kg | kg | MJ per energy carrier | kg C | kg C |
| Product stage | Raw material supply | A1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | A2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Manufacturing | A3 | 0.00E+00 | 1.30E-01 | 6.21E-08 | 5.17E-03 | 2.82E-02 | -1.20E-02 |
| | Total (Consumption grid) | A1-3 | 0.00E+00 | 1.30E-01 | 6.21E-08 | 5.17E-03 | 2.82E-02 | -1.20E-02 |
| **100% - Landfill** | | | | | | | | |
| End of life | Deconstruction, demolition | C1 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Transport | C2 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Waste processing | C3 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Disposal | C4 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Potential benefits and loads beyond the system boundaries | Reuse, recovery, recycling potential | D | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy


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## Scenarios and additional technical information

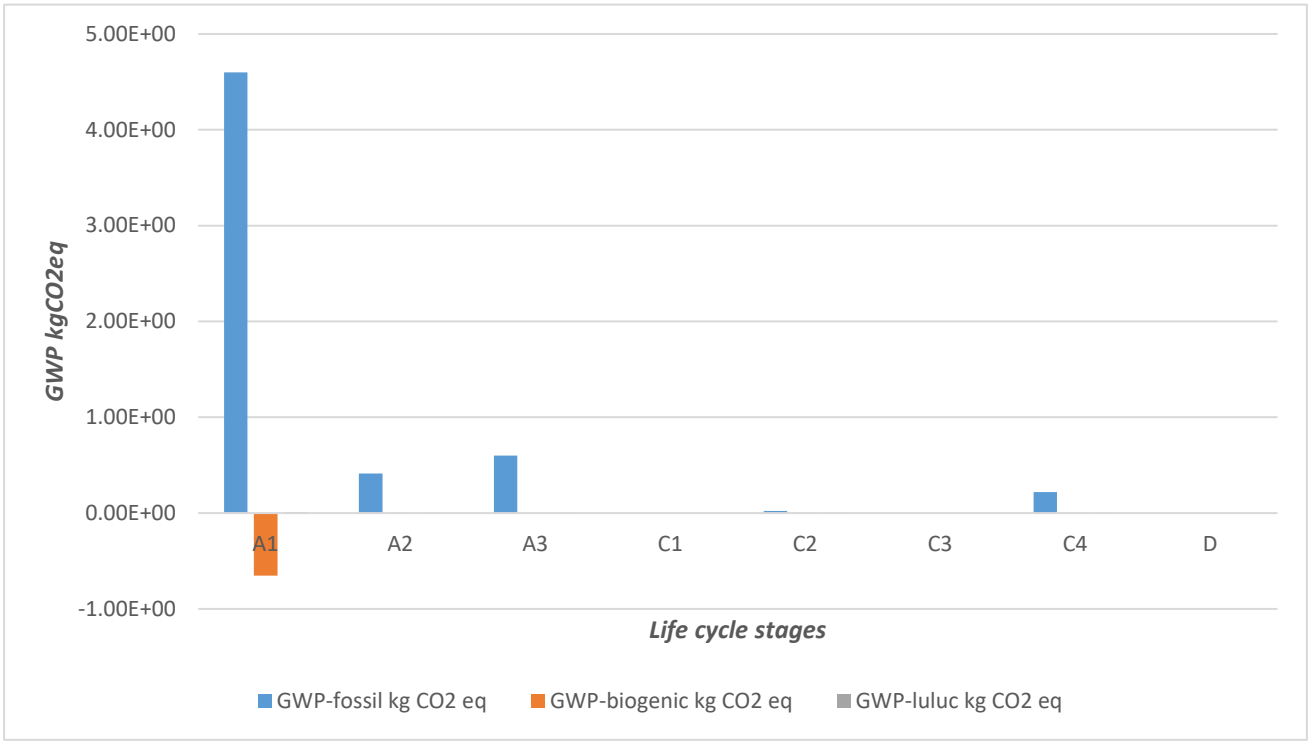
| Scenarios and additional technical information | | | |
|---|---|---|---|
| Scenario | Parameter | Units | Results |
| **C1 - Deconstruction** | When the product reaches the end of its life, it will be extracted from the building using power tools and sent to landfill. Unfortunately, the waste product cannot be recovered because it is contaminated with other materials such as the subfloor and adhesive. Therefore, according to BRE PCR 3.1, 100% of the Altro standard safety floor products will end up in landfill.<br><br>**Note:** The energy used for product removal is not accounted for in the LCA analysis. It can reasonably be assumed that the energy associated with deconstructing the Altro standard safety floor products is negligible compared to the overall demolition process. | | |
| **C2 – Transportation** | 50km by road has been modelled for module C2 as a typical distance from the demolition site to the disposal unit. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required. | Litres per km | 0.227 |
| | Fuel type / Vehicle type | Road transport | 16–32-ton lorry |
| | Deconstruction site to the disposal unit | km | 50 |
| **C3 – Preprocessing** | No preprocessing as the product is 100% sent to landfill | | |
| **C4 – Disposal** | Recovered waste is landfilled therefore no module D benefits. | | |
| | **Products to Landfill** | **Thickness (mm)** | **kg/m²** |
| | Altro Marine 20 | 2 | 2.8 |
| | Altro Classic 25 | 2.5 | 3.1 |
| | Altro Walkway 20SD | 2 | 2.6 |
| | Altro ContraX | 2 | 2.6 |
| | Altro Impressionist II | 2 | 2.6 |

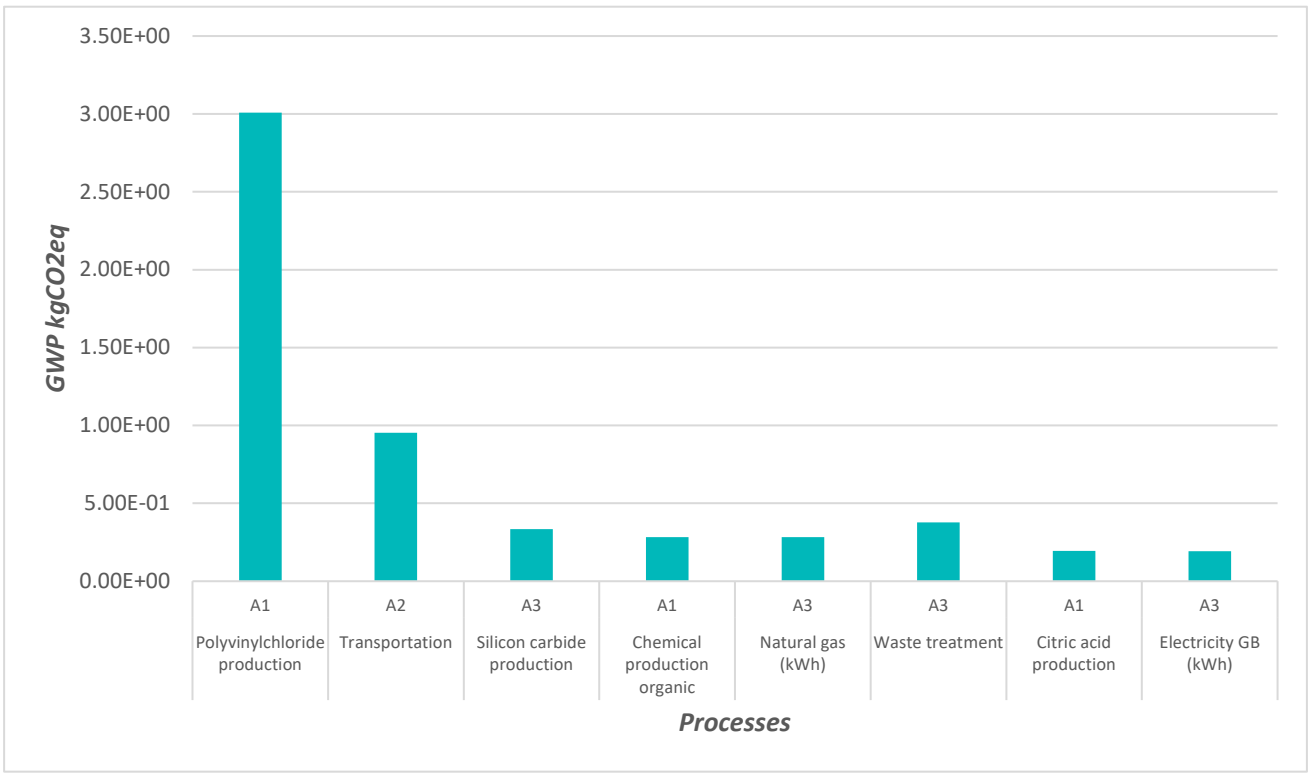
## Interpretation of results

The bulk of the environmental impacts are attributed to the manufacturing of Altro standard safety floor products (Altro ContraX, Altro Classic 25, Altro Marine 20, Altro Impressionist II and Altro Walkway 20SD) covered by information modules A1-A3 of EN15804:2012+A2:2019. The figure below breaks down the GWP of Altro Impressionist II into clear categories to understand the modules which cause the largest environmental impact. It's clear that the majority of the environmental impact stems from the product modules (A1 – A3). Stage A1 (raw material) accounts for nearly all emissions, with a minor contribution from A2 (transportation). Stage A3 (manufacturing) shows a significant negative value, indicating a reduction in $CO_2$ equivalent emissions from biogenic sources due to the use of cardboard for packaging. The product is landfilled at the end-of-life stage, leading to GWP emissions in the C4 – Disposal stage.

Figure 2 provides a detailed breakdown of the processes contributing to the impact in the A1–A3 stages. PVC and chemical production have the highest impact in Stage A1, followed by transportation (A2). In Stage A3 (manufacturing), factors such as natural gas consumption, electricity usage, waste treatment, and other processes contribute to the overall environmental impacts of the product in the production stage.


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EN 13893:2002 Resilient, laminate and textile floor coverings - Measurement of dynamic coefficient of friction on dry floor surfaces

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ASTM E648, Test for Surface Burning Characteristics of Building Materials

ASTM E662 - Standard test method for specific optical density of smoke generated by solid materials



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