

Statement of Verification

BREG EN EPD No.: 000694

Issue 01

This is to verify that the
Environmental Product Declaration
provided by:
Altro Limited



is in accordance with the requirements of:
EN 15804:2012+A2:2019
and
BRE Global Scheme Document SD207

This declaration is for:
1m² Altro Comfort Floor Products with the thickness of 2.4 - 2.85 mm

Company Address

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



Signed for BRE Global Ltd

Hayley Thomson
Operator

16 May 2025
Date of this Issue

16 May 2025
Date of First Issue

15 May 2030
Expiry Date



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To check the validity of this statement of verification please, visit www.greenbooklive.com/check or contact us.
BRE Global Ltd., Garston, Watford WD25 9XX.
T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: Enquiries@breglobal.com





Environmental Product Declaration

EPD Number: **000694**

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX 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 Works Road Letchworth Garden City Hertfordshire SG6 1NW United Kingdom	Bala Subramanian/ BRE LINA A2
Declared/Functional Unit	Applicability/Coverage
1m ² Altro Comfort Floor Products with the thickness of 2.4 - 2.85 mm	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 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
(Where appropriate ^b) Third party verifier: Roger Connick	
a: Product category rules 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	

Information modules covered

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	Related to the building fabric					Related to the building		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
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Altro Limited
 Dessau
 Ebertallee 209
 06846 Dessau
 Germany

Construction Product:

Product Description

Altro Orchestra and Altro Wood Comfort are 2.85mm thick PVC flooring products with 14-15dB sound reduction and comfort underfoot in a wide choice of colours and five designs. They are great in corridors, classrooms, housing, patient / resident rooms, retail, and co-ordinate with other ranges. They are available in a range of designs and colours, with a standard thickness of 2.85mm and a standard weight of 2.66 kg/m²

Altro Piccolo is a 2.4mm thick cushioned wood-effect sheet vinyl floor with a 0.25mm wear layer and 15dB impact sound reduction and comfort underfoot. It is available in a range of designs and colors, with a standard thickness of 2.4mm and a standard weight of 1.94 kg/m²

In this LCA analysis, the total production information of the products has been used to conduct an LCA analysis.

Technical Information

The below table covers the basic technical properties of the **Altro Orchestra**, **Altro Wood Comfort** and **Altro Piccolo** products. For these and further properties, please see the product's page on Altro's website www.altro.com :

Property	Altro Orchestra	Altro Piccolo	Altro Wood Comfort
Thickness (EN ISO 24346)	2.85 mm	2.4 mm	2.85 mm
Mass per area (EN ISO 23997)	2.6 kg/m ²	1.94 kg/m ²	2.6 kg/m ²
Slip Resistance			
EN 16165 Annex C (PTV)	-	-	≥36
EN 13845 Annex C	-	-	ESf
EN 13893	DS	DS	DS
EN 16165 Annex B	R10	R10	R10
Fire Performance			
EN 13501-1	Class Cfl s1	Class Bfl s1	Class Cfl s1
CAN/ULC S102.2	Tested	Tested	Tested
ASTM E648	Class 1	Class 1	Class 1
ASTM E662	≤ 450	≤ 450	≤ 450



Main Product Contents

The below table covers the main product contents of the Altro Orchestra, Altro Wood Comfort and Altro Piccolo products.

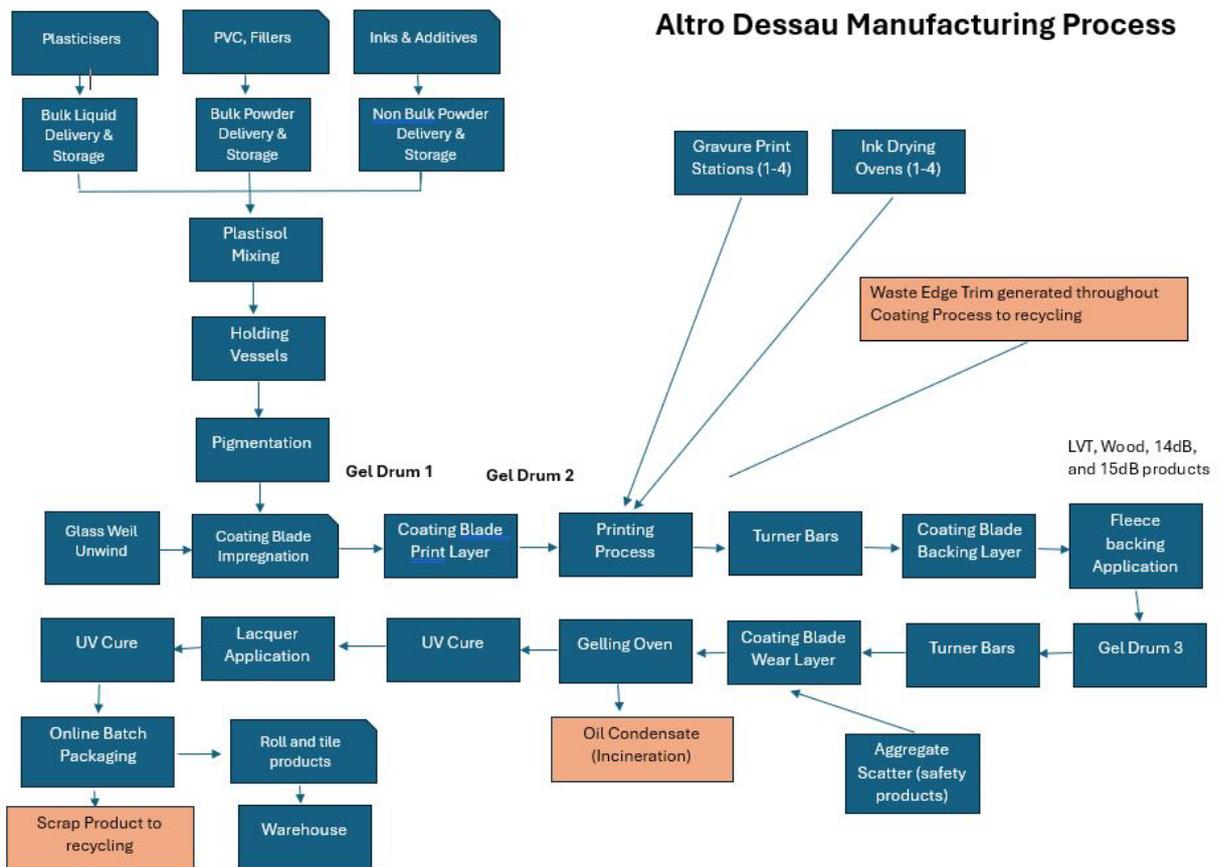
Material/Chemical Input	%
Plastisol	96
Scrim	2
Lacquer	<1
Print ink	<1
Fleece	<1

Manufacturing Process

Bulk liquids, powders, aggregates and performance additives 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 spread coated onto a scrim and gravure printed to give a range of designs. PUR is added for enhanced cleanability, and the product is then cured in an oven. The final product is then cut into rolls and packaged for dispatch.

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

Process flow diagram



End of Life

Altro Orchestra, Altro Wood Comfort and Altro Piccolo cannot be recovered at the end of life as they are bonded to the floor with an adhesive. Therefore, according to BRE PCR 3.1, these products are destined for landfill at end of life.

Life Cycle Assessment Calculation Rules

Declared unit description.

1m² Altro Comfort Floor Products with the thickness of 2.4 - 2.85 mm.

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 provided by Altro for the production period of the 12 months (01/08/2022 - 31/07/2023) at the Germany site. The Germany site produces other PVC products in addition to the Altro Orchestra, Altro Wood Comfort, and Altro Piccolo products, so allocation was applied to site wide values for packaging, energy, water, and wastewater, on a m² of production basis. Also, manufacturer has confirmed that 90% of water goes to sewer. Production and Non-production waste was allocated on a percentage mass of production basis. No uplift to the raw material input, as the total raw material usage for all the Altro Orchestra, Altro Wood Comfort, and Altro Piccolo products made over the production period was used. In this LCA analysis, the total production data has been used to conduct an LCA analysis and the individual product results has been enclosed in this EPD. During the LCA modelling, there is no direct dataset for some of the chemicals. Therefore, the most suitable proxy datasets have been selected for the LCA modelling.

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 – Germany (kWh)" has been used for the LCA modelling (Ecoinvent 3.8). The GWP carbon footprint for using 1 kWh of electricity, Germany kWh is 0.604 kgCO₂e/kWh and for the Natural gas, at industrial furnace (kWh, EU) carbon footprint for using 1 kWh is 0.256 kgCO₂e. 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.

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.

LCA Results - 1 m² of Altro Orchestra with the thickness of 2.85 mm and a weight of 2.66 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 CFC11 eq	mol H ⁺ eq	kg (PO ₄) ³⁻ eq			
Product stage	Raw material supply	A1	4.91E+00	6.18E+00	-1.39E+00	1.19E-01	1.99E-06	4.17E-02	2.68E-03
	Transport	A2	3.17E-01	3.16E-01	2.70E-04	1.24E-04	7.32E-08	1.28E-03	2.04E-05
	Manufacturing	A3	2.00E+00	1.93E+00	6.63E-02	1.60E-03	1.66E-07	3.46E-03	1.26E-03
	Total (Consumption grid)	A1-3	7.22E+00	8.43E+00	-1.33E+00	1.20E-01	2.23E-06	4.65E-02	3.97E-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	2.21E-02	2.21E-02	1.88E-05	8.68E-06	5.12E-09	8.97E-05	1.42E-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	2.25E-01	2.24E-01	2.82E-04	2.94E-05	8.53E-09	2.44E-04	4.10E-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

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	8.92E-03	9.01E-02	1.77E-02	7.86E-05	1.29E+02	7.56E+00	2.92E-07
	Transport	A2	3.87E-04	4.23E-03	1.29E-03	1.10E-06	4.78E+00	2.15E-02	2.73E-08
	Manufacturing	A3	1.19E-03	8.90E-03	2.61E-03	3.16E-06	2.89E+01	3.19E-01	2.65E-08
	Total (Consumption grid)	A1-3	1.05E-02	1.03E-01	2.16E-02	8.28E-05	1.63E+02	7.90E+00	3.45E-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	2.70E-05	2.95E-04	9.04E-05	7.69E-08	3.34E-01	1.50E-03	1.91E-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	1.05E-03	8.95E-04	3.05E-04	9.34E-08	6.64E-01	2.97E-02	4.83E-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.

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	9.00E-01	1.45E+02	6.09E-09	1.25E-07	4.21E+01
	Transport	A2	2.46E-02	3.73E+00	1.21E-10	3.91E-09	3.29E+00
	Manufacturing	A3	1.79E-01	1.16E+01	5.06E-10	9.80E-09	5.62E+00
	Total (Consumption grid)	A1-3	1.10E+00	1.60E+02	6.72E-09	1.39E-07	5.10E+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	1.72E-03	2.61E-01	8.45E-12	2.73E-10	2.30E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.14E-03	1.03E+01	2.27E-11	1.99E-09	1.58E+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.

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	5.05E+00	7.10E-01	5.76E+00	6.08E+01	3.77E+01	9.85E+01
	Transport	A2	6.74E-02	0.00E+00	6.74E-02	4.70E+00	0.00E+00	4.70E+00
	Manufacturing	A3	1.21E+00	1.15E+00	2.36E+00	6.55E+00	2.13E+01	2.78E+01
	Total (Consumption grid)	A1-3	6.33E+00	1.86E+00	8.18E+00	7.21E+01	5.89E+01	1.31E+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	4.71E-03	0.00E+00	4.71E-03	3.28E-01	0.00E+00	3.28E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.19E-02	0.00E+00	1.19E-02	-5.66E+01	5.72E+01	6.53E-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

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	6.66E-02	0.00E+00	0.00E+00	1.79E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	5.33E-04
	Manufacturing	A3	5.98E-02	0.00E+00	0.00E+00	7.86E-03
	Total (Consumption grid)	A1-3	1.26E-01	0.00E+00	0.00E+00	1.87E-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	3.73E-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	6.99E-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

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	2.56E-01	6.29E+00	1.89E-04
	Transport	A2	5.27E-03	9.36E-02	3.24E-05
	Manufacturing	A3	7.41E-02	6.15E+00	6.15E-05
	Total (Consumption grid)	A1-3	3.35E-01	1.25E+01	2.82E-04
100% - Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.68E-04	6.54E-03	2.26E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.32E-03	2.69E+00	3.94E-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

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	1.45E-05	4.50E-08	0.00E+00	-1.42E-02	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	5.06E-01	8.68E-10	0.00E+00	4.22E-03	-1.99E-02
	Total (Consumption grid)	A1-3	0.00E+00	5.06E-01	4.58E-08	0.00E+00	-9.98E-03	-1.99E-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

LCA Results - 1m² of Altro Wood Comfort with the thickness of 2.85mm and 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 CFC11 eq	mol H ⁺ eq	kg (PO ₄) ³⁻ eq			
Product stage	Raw material supply	A1	4.40E+00	5.47E+00	-1.17E+00	1.01E-01	1.71E-06	3.71E-02	2.47E-03
	Transport	A2	3.33E-01	3.32E-01	2.83E-04	1.31E-04	7.68E-08	1.35E-03	2.14E-05
	Manufacturing	A3	1.92E+00	1.85E+00	6.86E-02	1.52E-03	1.60E-07	3.22E-03	1.25E-03
	Total (Consumption grid)	A1-3	6.66E+00	7.65E+00	-1.10E+00	1.03E-01	1.94E-06	4.17E-02	3.74E-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

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	7.87E-03	7.97E-02	1.60E-02	6.64E-05	1.12E+02	6.45E+00	2.65E-07
	Transport	A2	4.07E-04	4.45E-03	1.36E-03	1.15E-06	5.02E+00	2.26E-02	2.87E-08
	Manufacturing	A3	1.10E-03	8.21E-03	2.38E-03	2.78E-06	2.80E+01	2.98E-01	2.20E-08
	Total (Consumption grid)	A1-3	9.38E-03	9.24E-02	1.98E-02	7.03E-05	1.45E+02	6.78E+00	3.15E-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.

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	7.80E-01	1.37E+02	7.64E-09	1.44E-07	3.64E+01
	Transport	A2	2.58E-02	3.92E+00	1.27E-10	4.11E-09	3.45E+00
	Manufacturing	A3	1.74E-01	1.08E+01	4.22E-10	8.99E-09	4.85E+00
	Total (Consumption grid)	A1-3	9.80E-01	1.52E+02	8.19E-09	1.57E-07	4.47E+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.

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	4.39E+00	6.03E-01	5.00E+00	5.99E+01	3.13E+01	9.12E+01
	Transport	A2	7.07E-02	0.00E+00	7.07E-02	4.93E+00	0.00E+00	4.93E+00
	Manufacturing	A3	1.22E+00	1.06E+00	2.29E+00	1.38E+01	1.36E+01	2.75E+01
	Total (Consumption grid)	A1-3	5.69E+00	1.67E+00	7.35E+00	7.86E+01	4.50E+01	1.24E+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

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	5.64E-02	0.00E+00	0.00E+00	1.53E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	5.60E-04
	Manufacturing	A3	5.35E-02	0.00E+00	0.00E+00	7.35E-03
	Total (Consumption grid)	A1-3	1.10E-01	0.00E+00	0.00E+00	1.61E-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

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	7.12E-01	6.54E+00	1.77E-04
	Transport	A2	5.53E-03	9.83E-02	3.40E-05
	Manufacturing	A3	7.17E-02	6.11E+00	6.07E-05
	Total (Consumption grid)	A1-3	7.89E-01	1.27E+01	2.71E-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

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	1.21E-05	3.73E-08	0.00E+00	-1.21E-02	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	3.29E-01	8.68E-10	0.00E+00	4.22E-03	-1.70E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.29E-01	3.81E-08	0.00E+00	-7.85E-03	-1.70E-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

LCA Results - 1m² of Altro Piccolo with the thickness of 2.4mm and a weight of 1.94 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 CFC11 eq	mol H ⁺ eq	kg (PO ₄) ³⁻ eq			
Product stage	Raw material supply	A1	3.03E+00	3.90E+00	-9.16E-01	4.40E-02	1.19E-06	2.67E-02	1.53E-03
	Transport	A2	2.18E-01	2.18E-01	1.86E-04	8.55E-05	5.03E-08	8.83E-04	1.40E-05
	Manufacturing	A3	1.82E+00	1.75E+00	6.47E-02	1.46E-03	1.54E-07	2.99E-03	1.24E-03
	Total (Consumption grid)	A1-3	5.06E+00	5.87E+00	-8.51E-01	4.55E-02	1.39E-06	3.06E-02	2.78E-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	1.61E-02	1.61E-02	1.37E-05	6.33E-06	3.73E-09	6.54E-05	1.04E-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	1.64E-01	1.64E-01	2.05E-04	2.14E-05	6.22E-09	1.78E-04	2.99E-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

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	5.59E-03	5.70E-02	1.13E-02	4.81E-05	8.15E+01	4.71E+00	1.86E-07
	Transport	A2	2.66E-04	2.91E-03	8.90E-04	7.56E-07	3.29E+00	1.48E-02	1.88E-08
	Manufacturing	A3	1.01E-03	7.49E-03	2.15E-03	2.37E-06	2.72E+01	2.77E-01	1.71E-08
	Total (Consumption grid)	A1-3	6.86E-03	6.74E-02	1.43E-02	5.12E-05	1.12E+02	5.00E+00	2.22E-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	1.97E-05	2.15E-04	6.60E-05	5.61E-08	2.44E-01	1.10E-03	1.39E-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	7.67E-04	6.53E-04	2.22E-04	6.81E-08	4.84E-01	2.17E-02	3.52E-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.

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	5.57E-01	9.10E+01	3.86E-09	7.73E-08	2.51E+01
	Transport	A2	1.69E-02	2.57E+00	8.31E-11	2.69E-09	2.26E+00
	Manufacturing	A3	1.69E-01	9.96E+00	3.24E-10	8.08E-09	4.16E+00
	Total (Consumption grid)	A1-3	7.43E-01	1.04E+02	4.26E-09	8.81E-08	3.16E+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	1.25E-03	1.90E-01	6.16E-12	1.99E-10	1.67E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.29E-03	7.48E+00	1.65E-11	1.45E-09	1.15E+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.

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	2.97E+00	2.33E-01	3.21E+00	3.73E+01	2.37E+01	6.10E+01
	Transport	A2	4.63E-02	0.00E+00	4.63E-02	3.23E+00	0.00E+00	3.23E+00
	Manufacturing	A3	1.31E+00	9.45E-01	2.26E+00	2.28E+01	4.55E+00	2.73E+01
	Total (Consumption grid)	A1-3	4.33E+00	1.18E+00	5.51E+00	6.33E+01	2.83E+01	9.16E+01
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	3.43E-03	0.00E+00	3.43E-03	2.39E-01	0.00E+00	2.39E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	8.65E-03	0.00E+00	8.65E-03	-4.13E+01	4.17E+01	4.76E-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

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	5.04E-02	0.00E+00	0.00E+00	1.12E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.67E-04
	Manufacturing	A3	5.17E-02	0.00E+00	0.00E+00	6.85E-03
	Total (Consumption grid)	A1-3	1.02E-01	0.00E+00	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	2.72E-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	5.09E-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

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	1.59E-01	3.85E+00	1.13E-04
	Transport	A2	3.62E-03	6.44E-02	2.22E-05
	Manufacturing	A3	6.90E-02	6.06E+00	6.01E-05
	Total (Consumption grid)	A1-3	2.32E-01	9.98E+00	1.96E-04
100% - Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.69E-04	4.77E-03	1.65E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	9.62E-04	1.96E+00	2.87E-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

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	1.23E-05	3.79E-08	0.00E+00	-4.67E-03	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	1.08E-01	6.48E-10	0.00E+00	3.15E-03	-1.80E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.08E-01	3.86E-08	0.00E+00	-1.52E-03	-1.80E-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

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 Comfort Floor Products will end up in landfill.		
	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 Comfort 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 100% to Landfill	The recovered waste is landfilled therefore no module D benefits.		
	Altro Orchestra	kg/m ²	2.6
	Altro Wood Comfort	kg/m ²	2.6
	Altro Piccolo	kg/m ²	1.94

Interpretation of results

The bulk of the environmental impacts are attributed to the manufacturing of Altro Comfort Floor Products covered by information modules A1-A3 of EN15804:2012+A2:2019.

The figure below breaks down the GWP of Altro Piccolo 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 CO₂ equivalent emissions from biogenic sources due to the use of cardboard for packaging. The product is landfilled at the end-of-life stage which leads to GWP emission at the C4 – Disposal stage.

Figure 2 provides a detailed breakdown of the processes contributing to the impact in the A1–A3 stages. PVC production 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.

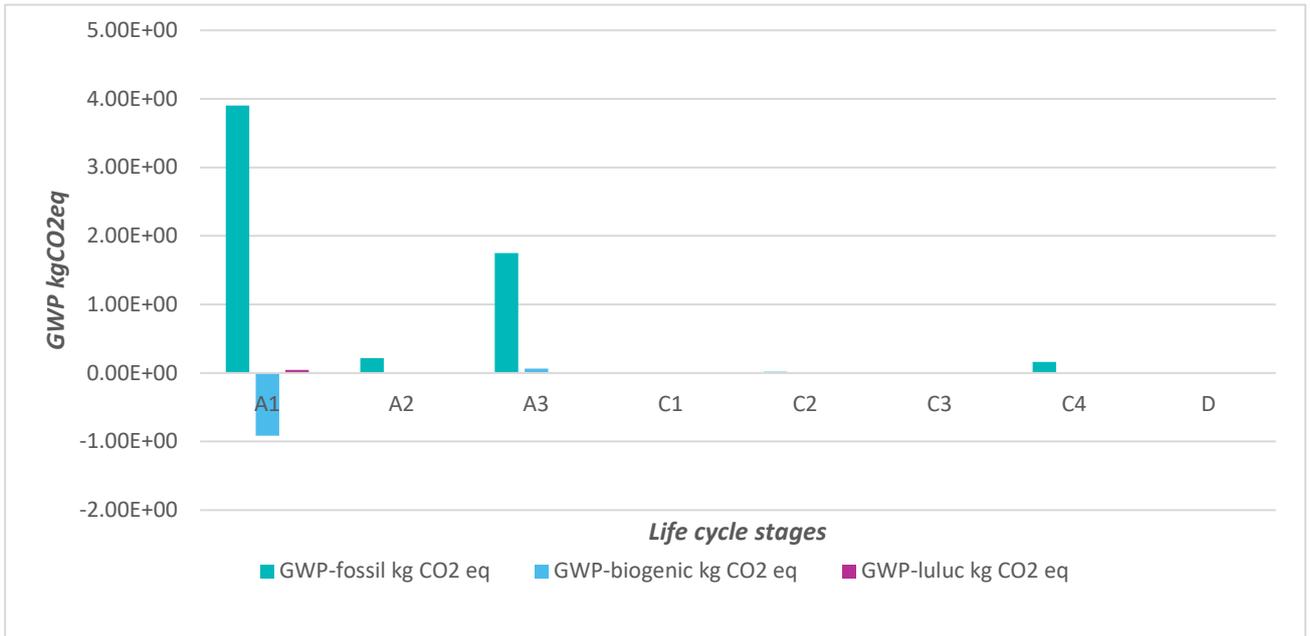


Figure 2 GWP Contribution

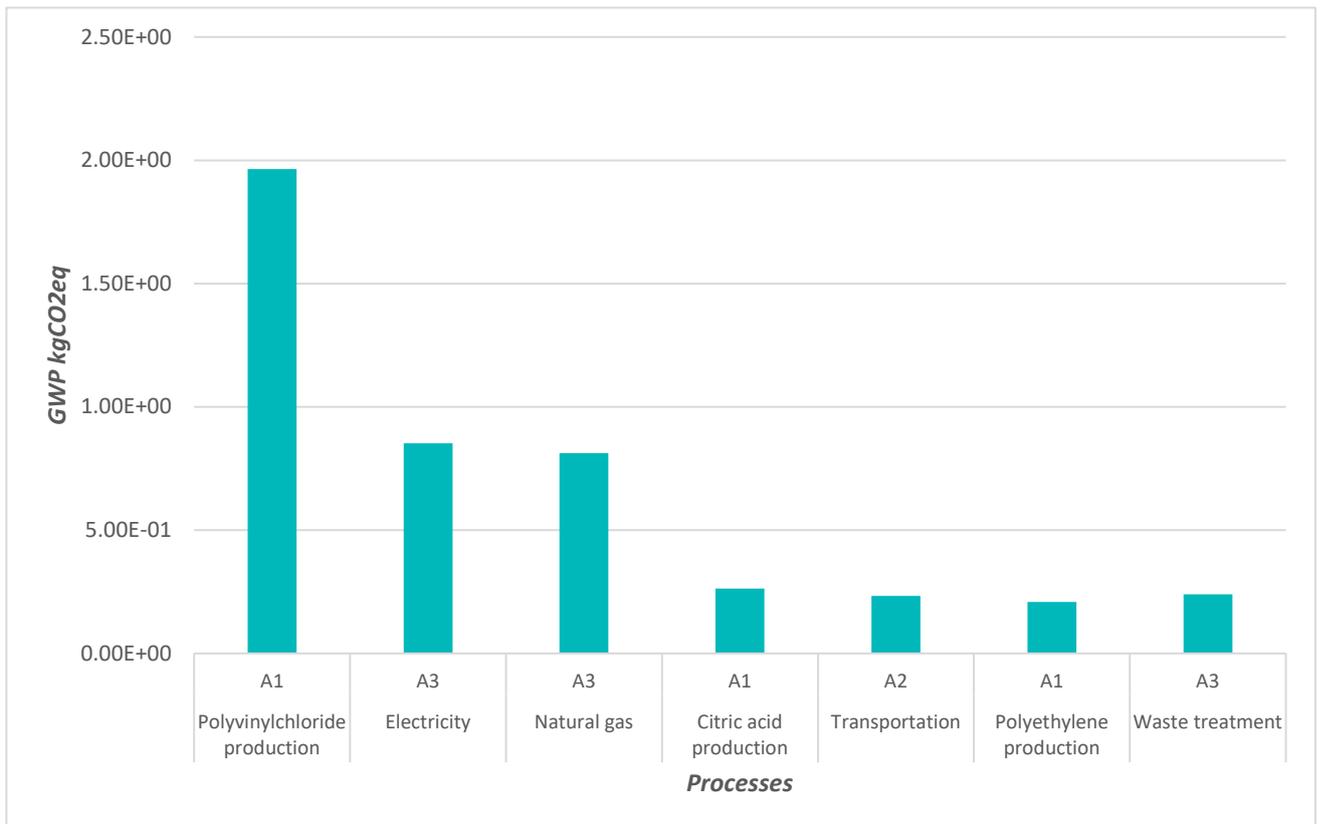


Figure 1 Process contribution

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