Statement of Verification

BREG EN EPD No.: 000602 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 Stronghold 30 adhesive-free with the weight of 3.7 kg/m².

Company Address

Altro Limited
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Letchworth Garden City
Hertfordshire
SG6 1NW
United Kingdom

Signed for BRE Global Ltd	Emma Baker Operator	27 June 2024 Date of this Issue
27 June 2024 Date of First Issue		26 June 2029 Expiry Date

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Environmental Product Declaration

EPD Number: 000602

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2023 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.1
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 of Altro Stronghold 30 adhesive-free with the weight of 3.7 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 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Pat Hermon
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
					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 Stronghold 30 adhesive-free is a 3mm thick safety flooring designed for use in commercial kitchens. It provides safety underfoot in hard working commercial kitchens where spillages of a wide range of contaminants such as fats, grease, flour, and water are often seen. Like the well-established Altro Stronghold 30 adhered product this adhesive-free version provides all the safety performance, but without the need to be fully adhered to the subfloor. This reduces installation time and quickens return to service.

Technical Information

Property	Test Standard	Performance
Fire	EN ISO 9239-1 EN ISO 11925-2 EN 13501-1	≥8 KW/m^2 Pass B_{fl}-s1
Slip	EN 13893 PTV EN 16165 Annex B EN 13845 Annex C	≥0.30 DS ≥ 55 R12 ESf
Thickness	EN ISO 24346	3mm
Weight	EN ISO 23997	3.7 kg/m^2

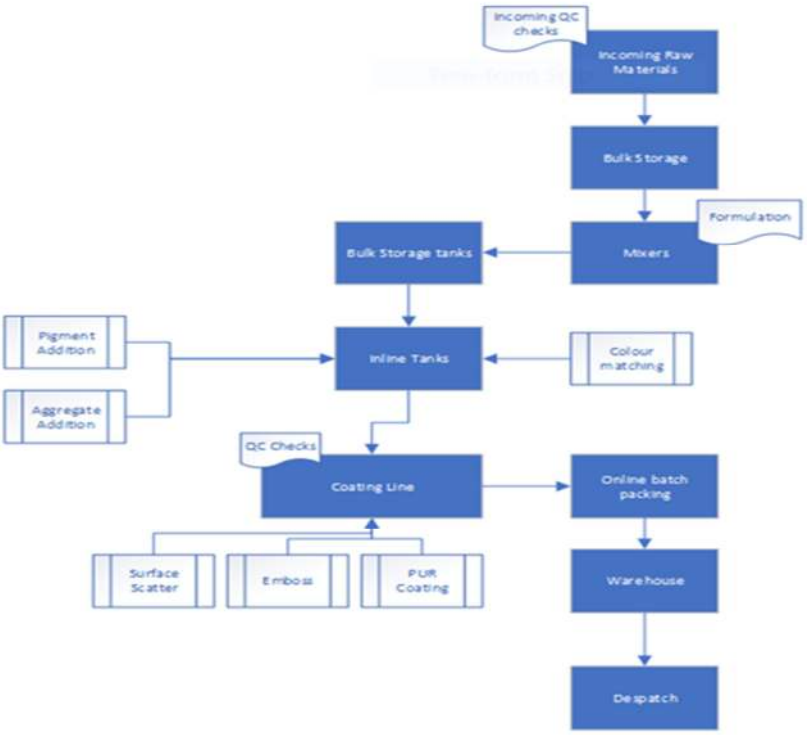
Main Product Contents

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 plastisol is then 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, cut into rolls and packaged for dispatch.

Process flow diagram



End of Life

As this product is loose laid without the need for adhesive, it can be manually uplifted at the end of its life. No ancillary items or mechanical equipment are needed to facilitate this process. Further, the product is made up of a complex chemical composition, making it unsuitable for recycling at its end of life. Therefore, according to BRE PCR 3.1, 100% of the Altro Stronghold 30 adhesive-free will be end up in landfill.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description.

1m^2 of Altro Stronghold 30 adhesive-free with the weight of 3.7 kg/m^2

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 2021 Product Category Rules (PN 514 Rev 3.1).

Data sources, quality and allocation

In this EPD, Altro Stronghold 30 adhesive-free product have been calculated for 1m^2. The quantity used in the data collection for all the components in this EPD is the total quantity of a product manufactured as a proportion of the total manufacturing during the data collection period (01/01/2022 - 31/12/2022) which was calculated as 0.3%. Other products are manufactured in addition to all components therefore, the allocation of electricity and water consumption and discharge are required, 0.3% of electricity is allocated to this product.

Water consumption is taken from utility bills and allocated for product production. The production waste is recorded on the JDE computer system per product. Therefore, the total quantity of waste from Altro Stronghold 30 adhesive-free production has been taken for the LCA analysis. Wastewater to sewer is calculated as 90% of total water consumption and allocated to 0.3% of total output for Altro Stronghold 30 adhesive-free production. Upon data review, it was noted that the raw material input quantity is less than the production output; therefore, a data uplift has been made accordingly. During the LCA modeling, there are no direct datasets for some of the chemicals in ecoinvent 3.8. Therefore, the most suitable proxy datasets have been selected for the LCA modeling.

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).	n/a
Very Good	n/a	n/a	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 0.311 in kgCO2e/kWh and the GWP of 1kWh of Natural gas, at industrial furnace is 0.2564 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.

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 - 1m^2 of Altro Stronghold 30 adhesive-free with the weight of 3.7 kg/m^2

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	7.35E+00	7.60E+00	-2.63E-01	1.12E-02	6.99E-06	4.46E-02	2.88E-03
	Transport	A2	5.07E-01	5.06E-01	4.32E-04	1.99E-04	1.17E-07	2.06E-03	3.26E-05
	Manufacturing	A3	5.30E-01	5.39E-01	-1.02E-02	6.54E-04	5.46E-08	1.24E-03	7.66E-05
	Total (Consumption grid)	A1-3	8.39E+00	8.64E+00	-2.73E-01	1.20E-02	7.17E-06	4.79E-02	2.99E-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	3.08E-02	3.07E-02	2.62E-05	1.21E-05	7.12E-09	1.25E-04	1.98E-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	3.03E-01	3.02E-01	4.72E-04	7.77E-06	1.15E-08	2.74E-04	2.48E-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)

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	7.25E-03	7.81E-02	2.28E-02	1.05E-04	1.71E+02	6.23E+00	3.12E-07
	Transport	A2	6.20E-04	6.78E-03	2.08E-03	1.76E-06	7.66E+00	3.45E-02	4.37E-08
	Manufacturing	A3	4.37E-04	3.53E-03	9.10E-04	1.12E-06	9.65E+00	1.07E-01	1.15E-08
	Total (Consumption grid)	A1-3	8.31E-03	8.84E-02	2.58E-02	1.08E-04	1.88E+02	6.38E+00	3.67E-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	3.76E-05	4.11E-04	1.26E-04	1.07E-07	4.65E-01	2.09E-03	2.65E-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	1.45E-03	1.11E-03	3.81E-04	1.04E-07	8.28E-01	4.40E-02	5.98E-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)

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	1.25E+00	1.24E+02	7.49E-09	1.61E-07	2.58E+01
	Transport	A2	3.94E-02	5.98E+00	1.94E-10	6.26E-09	5.26E+00
	Manufacturing	A3	1.75E-01	5.34E+00	1.72E-10	3.17E-09	5.28E+00
	Total (Consumption grid)	A1-3	1.47E+00	1.35E+02	7.85E-09	1.70E-07	3.64E+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	2.39E-03	3.63E-01	1.17E-11	3.80E-10	3.19E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	5.00E-03	1.40E+01	2.58E-11	2.61E-09	2.16E+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)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	7.19E+00	0.00E+00	7.19E+00	1.12E+02	4.66E+01	1.58E+02
	Transport	A2	1.08E-01	0.00E+00	1.08E-01	7.52E+00	0.00E+00	7.52E+00
	Manufacturing	A3	2.52E-01	1.28E+00	1.53E+00	3.34E+00	5.76E+00	9.10E+00
	Total (Consumption grid)	A1-3	7.55E+00	1.28E+00	8.83E+00	1.22E+02	5.23E+01	1.75E+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	6.55E-03	0.00E+00	6.55E-03	4.56E-01	0.00E+00	4.56E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.65E-02	0.00E+00	1.65E-02	-7.87E+01	7.96E+01	9.07E-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)

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	2.04E-03	0.00E+00	0.00E+00	1.49E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	8.53E-04
	Manufacturing	A3	5.16E-04	0.00E+00	0.00E+00	2.60E-03
	Total (Consumption grid)	A1-3	2.56E-03	0.00E+00	0.00E+00	1.52E-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	5.18E-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	1.05E-03
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)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	4.14E-01	1.05E+01	2.95E-04
	Transport	A2	8.44E-03	1.50E-01	5.18E-05
	Manufacturing	A3	1.41E-02	2.80E-01	4.59E-05
	Total (Consumption grid)	A1-3	4.37E-01	1.10E+01	3.92E-04
100% -Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	5.12E-04	9.10E-03	3.15E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.84E-03	3.74E+00	5.48E-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)

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	0.00E+00	0.00E+00	0.00E+00	1.03E-02	-1.61E-02
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	-1.61E-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	Uplift of flooring at end of life: As this product is loose laid without the need for adhesive, it can be manually uplifted at the end of its life. No ancillary items or mechanical equipment are needed to facilitate this process. Generally, the Altro Stronghold 30 adhesive-free flooring is made up of a complex chemical composition, making it unsuitable for recycling at its end of life. Therefore, according to BRE PCR 3.1, 100% of the floor finish PVC will be end up in landfill.		
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.		
	Fuel type / Vehicle type	Road transport	16–32-ton lorry
	Deconstruction site to the disposal unit	km	50
C3- Waste processing	No waste processing is required, as 100% of the Altro Stronghold 30 adhesive-free product will end up in landfill. (BRE PCR 3.1).		
C4 – Disposal	100% of the product will be landfilled		
	PVC Waste	kg	3.7
Module D	100% of the product will be landfilled therefore no Module D benefits		

Interpretation of results

The bulk of the environmental impacts are attributed to the manufacturing of Altro Stronghold 30 adhesive-free product covered by information modules A1-A3 of EN15804:2012+A2:2019.

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A2:2019. London, BSI, 2019.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework.
BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines.
BS EN ISO 14044:2006. London, BSI, 2006.

BRE Global Product Category Rules (PCR) For Type III EPD of Construction Products to EN 15804+A2, PN 514 Rev 3.1, Feb 2023.

ISO 11925-2:2020 Reaction to fire tests — Ignitability of products subjected to direct impingement of flamePart 2: Single-flame source test.

BS EN 13501-1 provides the reaction to fire classification procedure for all construction products, including products incorporated within building elements
EN 13893 - Resilient, laminate and textile floor coverings - Measurement of dynamic coefficient of friction on dry floor surfaces

EN 16165 - Determination of slip resistance of pedestrian surfaces - Methods of evaluation

EN 13845 - European requirements for PVC flooring with enhanced slip resistance

EN ISO 24346 - Resilient floor coverings — Determination of overall thickness

EN ISO 23997 - Resilient floor coverings — Determination of mass per unit area