Statement of Verification

BREG EN EPD No.: 000338 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Altro Ltd

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:
Altro PVCu Walls Sheet - Altro Whiterock Satins, Altro Whiterock White, Altro Whiterock Chameleon, Altro Walls Designs and Altro Fortis Titanium.

Company Address

Works Road
Letchworth Garden City
Hertfordshire
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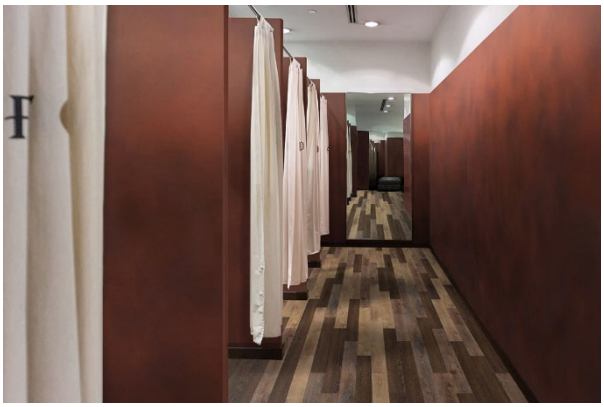

altro

Signed for BRE Global Ltd	Emma Baker Operator	02 October 2020 Date of this Issue
02 October 2020 Date of First Issue		01 October 2025 Expiry Date

BRE Global Verified EPD

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Environmental Product Declaration

EPD Number: 000338

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	**LCA consultant/Tool**
Altro Ltd Works Road Letchworth Garden City Hertfordshire SG6 1NW United Kingdom	Andrew Dutfield / BRE LINA v2.0
Declared Unit	**Applicability/Coverage**
1kg of Altro Whiterock Satins, Altro Whiterock White, Altro Whiterock Chameleon, Altro Walls Designs and Altro Fortis Titanium PVCu Walls Sheet	Manufacturer specific product
EPD Type	**Background database**
Cradle to Gate	ecoinvent v3.2

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: Nigel Jones
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+A1:2013. 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+A1:2013 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

1 manufacturing site in Germany

Construction Product

Product Description

u-PVC Wall cladding and wall protection solution

Technical Information

Property	Value, Unit (Whiterock)
Thickness (EN 428)	2.5 mm
Density (DIN EN ISO 1183)	1.43-1.46 kg/m^3
Tensile E-Modulus (ISO 527 – 50mm/min)	2950 Mpa
Impact Resistance (Charpy) (ISO 179/1eU	o.B kj/m^2
Notched Impact Resistance (Charpy) (ISO 179/1eA)	9.0-10.6 kj/m^2
Tensile Strength (ISO 527 – 50mm/min)	52 Mpa
Flexural Strength (ISO 178 – 2mm/min)	68-72 Mpa
Flexural E-Modulus (ISO 178 – 2mm/min)	2700 Mpa
Shore-Hardness (ISO 868)	76 D
Coefficient of Expansion (DIN 53 752)	0.07 mm/mK
Compressive Strength (DIN 53 421)	68 N/mm^2
Vicat-Softening Point (ISO 306-B50)	72-74 degC
Heat Distortion Temperature (ISO 75-2 (1.8 Mpa))	60 degC
Water Absorption (ISO 62 – after 216h)	0.1%

Property	Value, Unit (Whiterock)
Thermal Conductivity (DIN 52 612)	0.16 W/mK
Surface resistance ROE (DIN IEC 60 167)	n/a
Dielectric strength RD (DIN IEC 60093)	n/a
Dielectric breakdown (DIN IEC 60243-1)	n/a
Dielectric constant (DIN 53 483)	n/a

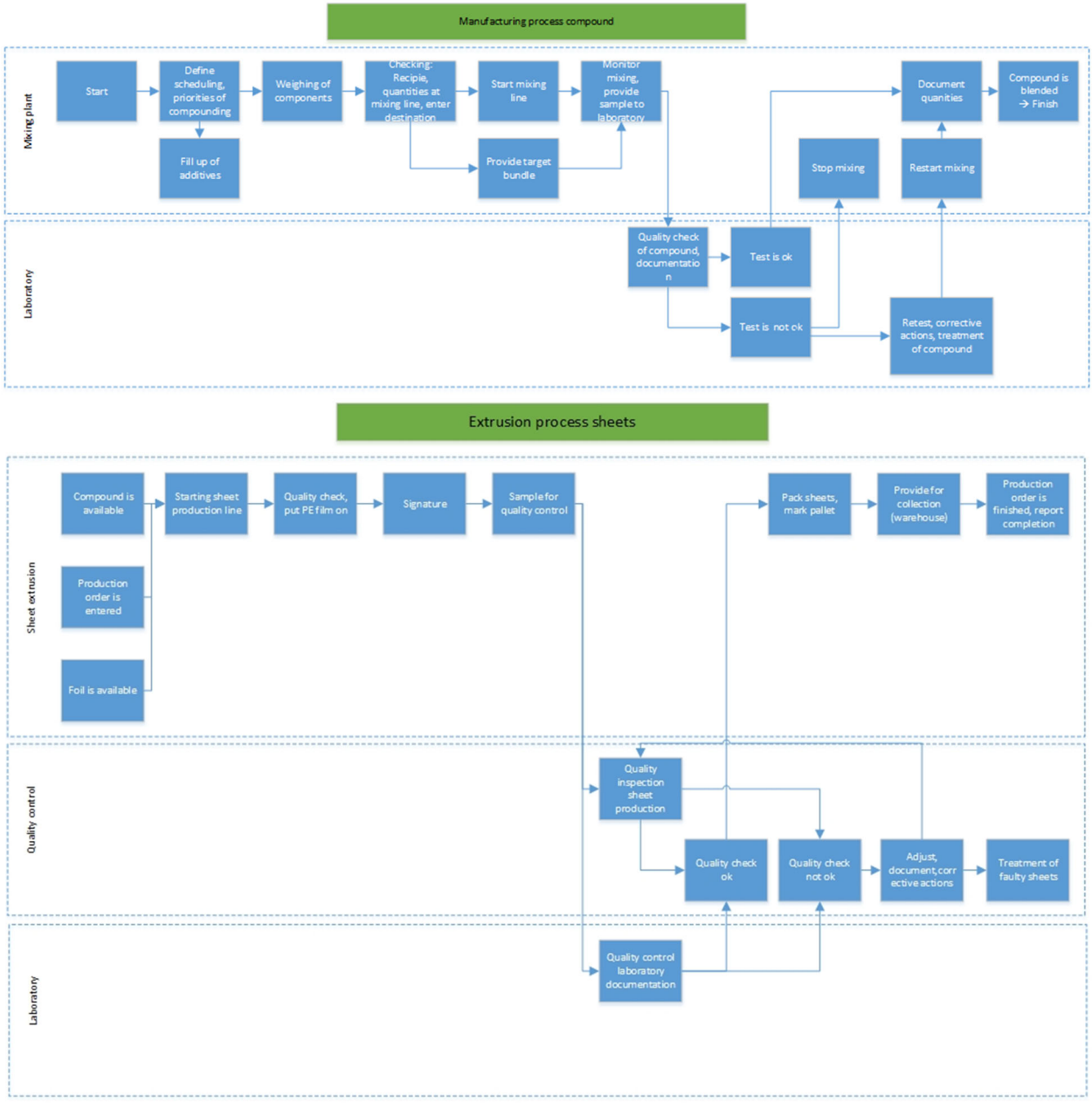
Main Product Contents

Material/Chemical Input	Mass (%)
PVC	80.5
Chalk	4.6
Modifier/ Processing aid/ Lubricant	11.8
Titanium dioxide	3.1

Manufacturing Process

Altro sheets are produced with u-PVC extrusion line with calender rolls and cooled down by ambient air on roller table. Raw materials are mixed on site.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

The declared unit is 1kg of Altro Whiterock Satins, Altro Whiterock White, Altro Whiterock Chameleon, Altro Walls Designs and Altro Fortis Titanium PVCu Walls Sheet

System boundary

This is a cradle-to-gate EPD, reporting all production life cycle stages (modules A1 to A3) in accordance with EN 15804:2012+A1:2013.

Data sources, quality and allocation

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 in accordance with EN 15804:2012+A1:2013. No inputs or outputs have been excluded and all raw materials, packaging and transport, energy, water use and wastes, are included, except for direct emissions to air, water and soil, which are not measured.

Altro PVCu Walls Sheet is a u-PVC wall cladding and wall protection solution range. The range includes Altro Whiterock Satins, Altro Whiterock White, Altro Whiterock Chameleon, Altro Walls Designs and Altro Fortis Titanium. Altro PVCu Walls Sheet products are produced at 2.5 mm (3.6 kg/m^2).

The products are manufactured on behalf of Altro by a third-party manufacturer in Germany. The data supplied relates to the German site. The site manufactures other products in addition to the Altro PVCu Walls Sheet and allocated values for energy, water, waste and wastewater have been allocated on mass basis as a percentage of total site production. The two exceptions are sheet extrusion energy and LPG which are allocated on mass basis as a percentage of sheet production only.

Secondary data has been drawn from the BRE LINA database v2.0.61 and the background LCI datasets are based on ecoinvent v3.2.

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, except for direct emissions to air, water and soil, which are not measured.

LCA Results

The results per declared unit (1 kg) of the Altro PVCu Walls Sheet for the declared modules can be found in the following tables.

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

Parameters describing environmental impacts

			GWP	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO_2 equiv.	kg CFC 11 equiv.	kg SO_2 equiv.	kg $(PO_4)^{3-}$ equiv.	kg C_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	2.32E+00	7.96E-08	9.17E-03	2.72E-03	2.84E-03	1.29E-05	5.72E+01

GWP = Global Warming Potential;
ODP = Ozone Depletion Potential;
AP = Acidification Potential for Soil and Water;
EP = Eutrophication Potential;
POCP = Formation potential of tropospheric Ozone;
ADPE = Abiotic Depletion Potential – Elements;
ADPF = Abiotic Depletion Potential – Fossil Fuels.

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	4.05E+00	7.27E-05	4.05E+00	6.55E+01	1.84E+01	8.39E+01

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.

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	1.68E-01

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

Other environmental information describing waste categories

			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG
	Total (of product stage)	A1-3	7.29E-02	2.06E-01	4.70E-05

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

Other environmental information describing output flows – at end of life

			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	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.

Additional information

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

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

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ISO 1183-1:2019 Plastics -- Methods for determining the density of non-cellular plastics -- Part 1: Immersion method, liquid pycnometer method and titration method

ISO 527-1:2012 Plastics -- Determination of tensile properties -- Part 1: General principles

ISO 179-1:2010 Plastics -- Determination of Charpy impact properties -- Part 1: Non-instrumented impact test

ISO 178:2019 Plastics -- Determination of flexural properties

ISO 868:2003 Plastics and ebonite -- Determination of indentation hardness by means of a durometer (Shore hardness)

DIN 53752 Testing of plastics; determination of the coefficient of linear thermal expansion

DIN 53421 Testing of rigid cellular plastics; compression test

ISO 306:2004 Plastics -- Thermoplastic materials -- Determination of Vicat softening temperature (VST)

ISO 75-2:2013 Plastics -- Determination of temperature of deflection under load -- Part 2: Plastics and ebonite

ISO 62:2008 Plastics -- Determination of water absorption

DIN 52612-2:1984, Testing of thermal insulating materials; determination of thermal conductivity by means of the guarded hot plate apparatus; conversion of the measured values for building applications

DIN IEC 60 167:1993-12, Methods of test for insulating materials for electrical purposes; insulation resistance of solid materials

DIN IEC 60093:1993-12, Methods of test for insulating materials for electrical purposes; volume resistivity and surface resistivity of solid electrical insulating materials

DIN EN 60243-1:2014-01, Electric strength of insulating materials - Test methods - Part 1: Tests at power frequencies

DIN 53483-1:1969, Testing of Insulating Materials; Determination of Dielectric Properties; Definitions, General Information