

EN 15804+A2 EPD



ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2.
Owner of the Declaration – Castle Paints

Declaration number: EPDIE-23-116
Issue date 18th September 2023
Valid to 17th September 2028

EPD Programme - EPD Ireland
Programme Operator - Irish Green Building Council
www.epdireland.org



Castle Paints

ESTABLISHED 1985

Castle Paints



Acrylic soft sheen

Acrylic washable matt

1. General information

PROGRAMME OPERATOR	OWNER OF DECLARATION
Irish Green Building Council 19 Mountjoy Square, Dublin D01 E8P5 info@igbc.ie	Castle Paints Cloncollig Industrial Estate, Tullamore, Co. Offaly R35 X993, Ireland +353 57 93 51583, www.castlepaints.ie
DECLARATION NUMBER	PRODUCTION SITE
EPDIE-23-116	Castle Paints Cloncollig Industrial Estate, Tullamore, Co. Offaly R35 X993, Ireland
ECO PLATFORM EPD	DECLARED UNIT
Yes	1 kg of acrylic paint
APPLICABLE PRODUCT CATEGORY RULES	DECLARED PRODUCT
1. EN 15804:2012+A2:2019 2. Product Category Rules : Part A Implementation and use of I.S. EN 15804:2012+A1 and + A2, and CEN TR 16970:2016 in Ireland for the development of Environmental Product Declarations (issued 05.03.2022), Version 2.1.	1 kg of acrylic washable matt paint (interior wall) 1 kg of acrylic soft sheen (interior wall)
DATE OF ISSUE	SCOPE OF EPD
18th September 2023	Cradle to gate with options, modules C1–C4, and module D
DATE OF EXPIRY	LCA CONSULTANT OR PERSON RESPONSIBLE FOR LCA
17th September 2028	Ecoreview, Kilkenny, Ireland. +353 (087) 258 9783 www.ecoreview.ie
TYPE OF EPD: SINGLE OR MULTI PRODUCT	LCA SOFTWARE AND DEVELOPER IF APPLICABLE
Multi product EPD	Ecochain Helix version 3.5.71
PRODUCT CLASSIFICATION OR NACE CODE	NAME AND VERSION OF INVENTORY USED
NACE Code 2030	Ecoinvent version 3.8
COMPARABILITY	
Environmental Product Declarations from different programmes may not be directly 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	
The CEN Norm /EN 15804 serves as the core PCR	
Independent verification of the declaration according to ISO 14025	

Internally Externally

SIGNATURE OF PROGRAMME OPERATOR	SIGNATURE VERIFIER
Pat Barry - CEO - Irish Green Building Council  	Jane Anderson PhD – ConstructionLCA Ltd  

2. Scope and Type of EPD

Scope

This EPD is cradle to gate with options, modules C1–C4, and module D. The Modules that are declared are shown in the table below.

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

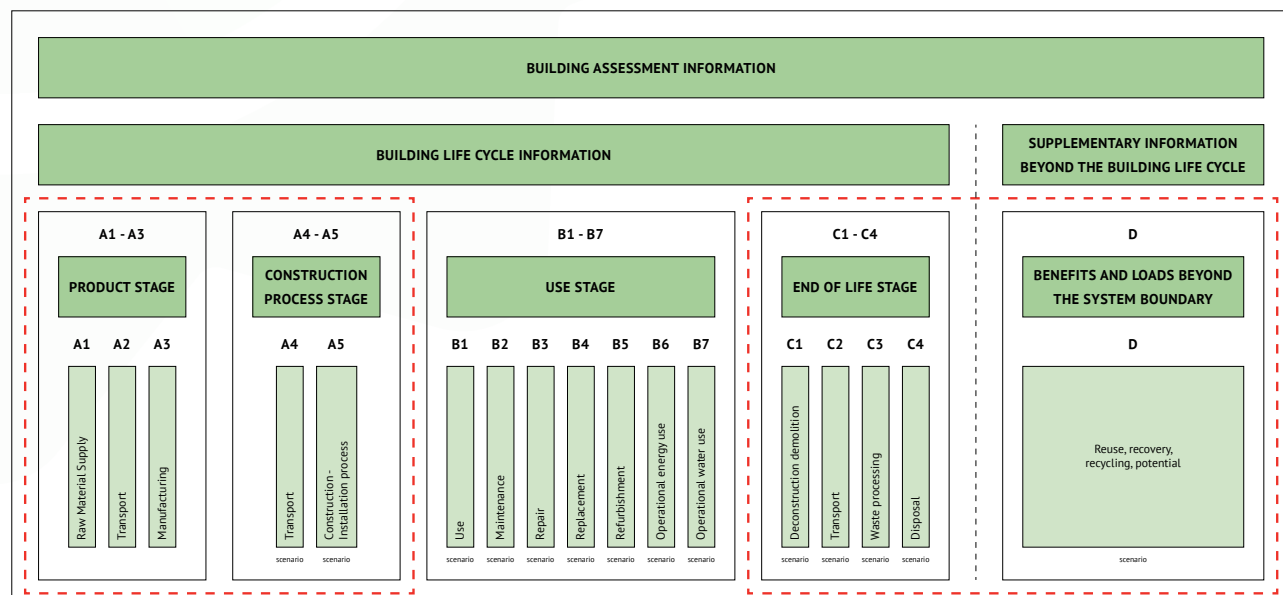
X = Module declared; ND = Module not declared; MDT = Mandatory; OP = Optional.

Declared Functional Unit

1 kg of applied acrylic wall paint

System Boundaries

This LCA covers the Product (A1 - A3), Construction Process (A4 - A5), end of Life (C1 - C4), and benefits and loads beyond the system boundary (D).



3. Detailed product description

The acrylic paints are made from a mixture of resins, pigments, specialist admixtures (for characteristics such as viscosity, flow, drying, texture, etc.) and water.

Acrylic washable matt is ideal for interior walls and ceilings. It is based on a full acrylic resin which imparts enhanced durability. The finished matt painted surface can be washed easily to remove normal household stains.

Acrylic soft sheen is ideal for bathrooms and kitchens. It has a mid-sheen finish that is hard wearing and washable on all interior wall surfaces.

It is assumed these paints are packaged in 10 litre capacity polypropylene buckets.

	Density [kg/litre]	VOC [g/litre]	Finish	Volume of solids [% of total volume]	Coverage [m ² per litre]
Acrylic washable matt	1.408	not greater than 30 g/litre	Matt	33 +/- 2%	14
Acrylic soft sheen	1.266	not greater than 30 g/litre	Soft sheen	28 +/- 2%	12 - 14

Further technical details on these paints can be obtained at:

<https://www.castlepaints.ie/acrylic-washable-matt-brilliant-white>

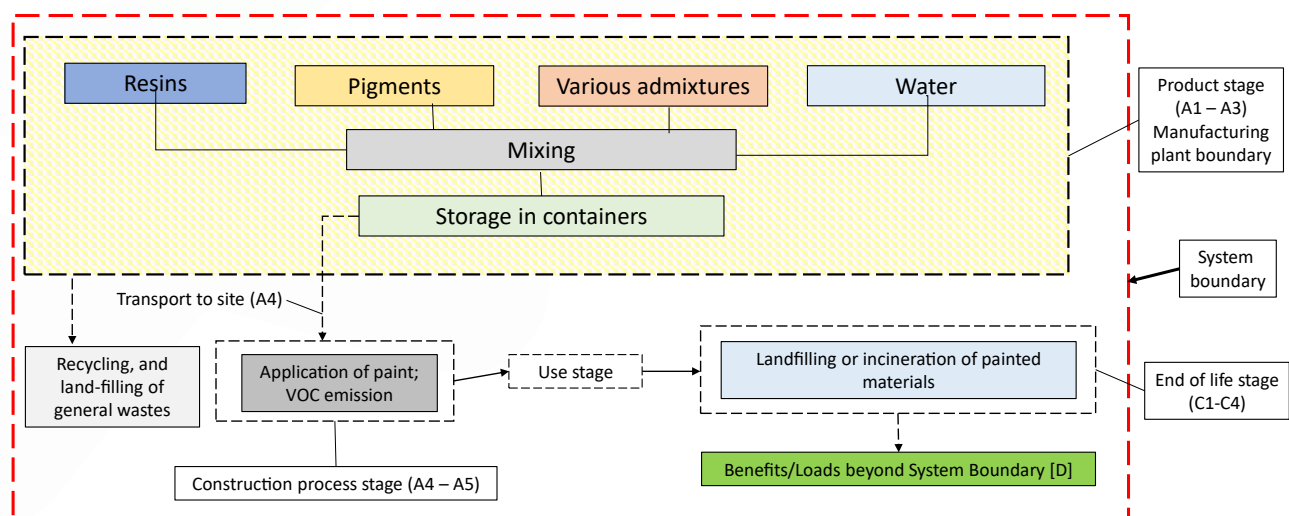
<https://www.castlepaints.ie/acrylic-soft-sheen>

The geographic area for which this EPD is representative is Europe.

3.1 Manufacturing Process Description

The manufacturing process for the paints is a series of staged mixing process. The first mix is carried out until full dispersant is achieved. This is followed by adding additional ingredients which are further mixed until all ingredients are fully dispersed. Some further additional and final mixing stages are usually carried out, where additional ingredients are added to optimise rheology and viscosity. Once the paints have achieved their desired properties, they are filled into containers for sale. Waste materials such as plastic, cardboard and metals are recycled, municipal solid wastes are sent to landfill, and solvents/rags/plastic cans sent for incineration.

The general manufacturing process, along with end-of-life stages, is shown below:





Acrylic soft sheen

4.1.A. LCA results - Acrylic soft sheen

Core Environmental impact per 1 kg of acrylic soft sheen

1 kg of Acrylic Soft Sheen Paint is equivalent of 0.79 litres of paint. This volume of paint would cover approx 11.06 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2.28E+00	6.98E-02	5.99E-03	2.36E+00	5.56E-02	1.37E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.07E-02	0.00E+00	6.09E-02	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	2.26E+00	6.98E-02	4.42E-03	2.33E+00	5.56E-02	1.36E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.07E-02	0.00E+00	6.08E-02	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-2.90E-02	1.23E-05	1.57E-03	-2.75E-02	2.54E-05	2.44E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.31E-06	0.00E+00	1.27E-04	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	5.46E-02	4.48E-05	3.29E-06	5.47E-02	3.10E-05	5.68E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.63E-06	0.00E+00	1.24E-05	0.00E+00
ODP	[kg CFC-11 eq.]	3.85E-06	1.45E-08	3.58E-10	3.86E-06	1.19E-08	4.01E-08	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.37E-09	0.00E+00	5.37E-09	0.00E+00
AP	[mol H ⁺ eq.]	1.58E-02	1.72E-03	2.71E-05	1.76E-02	1.63E-04	3.47E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.07E-05	0.00E+00	1.40E-04	0.00E+00
EP-freshwater ^[1]	[kg P eq.]	7.80E-05	3.15E-07	1.70E-07	7.85E-05	6.24E-07	1.91E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	9.81E-08	0.00E+00	2.30E-07	0.00E+00
EP-marine	[kg N eq.]	2.63E-03	4.20E-04	6.49E-06	3.05E-03	2.90E-05	6.72E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.82E-06	0.00E+00	4.77E-05	0.00E+00
EP-terrestrial	[mol N eq.]	2.42E-02	4.66E-03	5.07E-05	2.89E-02	3.27E-04	6.77E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.54E-05	0.00E+00	5.25E-04	0.00E+00
POCP	[kg NMVOC eq.]	8.19E-03	1.22E-03	2.56E-05	9.44E-03	1.26E-04	8.22E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.50E-05	0.00E+00	1.63E-04	0.00E+00
ADP-minerals&metals ^[2]	[kg Sb eq.]	3.25E-05	1.36E-07	2.54E-06	3.52E-05	2.74E-06	9.59E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.86E-07	0.00E+00	8.29E-08	0.00E+00
ADP-fossils ^[2]	[MJ] ncv	3.43E+01	9.37E-01	3.61E-02	3.53E+01	8.24E-01	8.96E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.60E-01	0.00E+00	3.96E-01	0.00E+00
WDP ^[2]	m ³ world eq. deprived	1.37E+00	1.99E-03	1.77E-03	1.37E+00	2.94E-03	2.62E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.91E-04	0.00E+00	1.74E-02	0.00E+00

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels (GWP-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; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossils = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential, deprivation-weighted water consumption.

^[2]The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ND = Module not declared; INA = Indicator not assessed.

4.1.B. LCA results - Acrylic soft sheen

Resource use per 1 kg of acrylic soft sheen

1 kg of Acrylic Soft Sheen Paint is equivalent of 0.79 litres of paint. This volume of paint would cover approx 11.06 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	2.71E+00	8.45E-03	2.08E-01	2.93E+00	1.77E-02	7.50E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.72E-03	0.00E+00	5.60E-03	0.00E+00
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.71E+00	8.45E-03	2.08E-01	2.93E+00	1.77E-02	7.50E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.72E-03	0.00E+00	5.60E-03	0.00E+00
PENRE	[MJ]	9.03E+00	9.95E-01	3.85E-02	1.01E+01	8.75E-01	9.53E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.70E-01	0.00E+00	4.21E-01	0.00E+00
PENRM	[MJ]	2.71E+01	0.00E+00	0.00E+00	2.71E+01	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.61E+01	9.95E-01	3.85E-02	3.72E+01	8.75E-01	9.53E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.70E-01	0.00E+00	4.21E-01	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	1.56E-01	7.00E-05	5.13E-05	1.56E-01	1.17E-04	1.92E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.90E-05	0.00E+00	4.19E-04	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy resources 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.

ND = Module not declared; INA = Indicator not assessed.

4.1.C. LCA results - Acrylic soft sheen

Output flows and waste categories per 1 kg of acrylic soft sheen

1 kg of Acrylic Soft Sheen Paint is equivalent of 0.79 litres of paint. This volume of paint would cover approx 11.06 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	3.18E-05	1.35E-06	4.65E-06	3.78E-05	2.29E-06	8.13E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.30E-07	0.00E+00	6.03E-07	0.00E+00
NHWD	[kg]	7.94E-01	1.64E-02	2.21E-03	8.12E-01	2.50E-02	2.45E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.31E-03	0.00E+00	2.00E+00	0.00E+00
RWD	[kg]	5.74E-05	6.45E-06	7.02E-08	6.39E-05	5.47E-06	1.41E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.08E-06	0.00E+00	2.45E-06	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software.

ND = Module not declared; INA = Indicator not assessed.

4.1.D. LCA results - Acrylic soft sheen

Additional Environmental impact per 1 kg of acrylic soft sheen

1 kg of Acrylic Soft Sheen Paint is equivalent of 0.79 litres of paint. This volume of paint would cover approx 11.06 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1.55E-07	3.08E-09	2.80E-10	1.58E-07	2.62E-09	3.52E-09	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.85E-10	0.00E+00	2.76E-09	0.00E+00
IRP ^[1]	kBq U235 eq	1.45E-01	4.03E-03	7.55E-05	1.49E-01	3.60E-03	2.33E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.99E-04	0.00E+00	1.57E-03	0.00E+00
ETP-fw ^[2]	CTUe	1.01E+02	6.22E-01	2.19E-01	1.02E+02	7.53E-01	2.16E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.35E-01	0.00E+00	9.80E-01	0.00E+00
HTP-c ^[2]	CTUe	4.78E-09	3.79E-11	7.69E-12	4.83E-09	2.61E-11	2.48E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.14E-12	0.00E+00	1.01E-11	0.00E+00
HTP-nc ^[2]	CTUe	9.51E-08	4.83E-10	2.35E-10	9.59E-08	7.51E-10	2.47E-09	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.37E-10	0.00E+00	2.98E-10	0.00E+00
SQP ^[2]	dimensionless	1.78E+01	2.84E-01	2.92E-02	1.81E+01	4.07E-01	2.94E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	9.52E-02	0.00E+00	9.02E-01	0.00E+00

PM = Potential incidence of disease due to PM emissions, 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, SQP = Potential soil quality index.

^[1] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuelcycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

^[2] The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ND = Module not declared; INA = Indicator not assessed.



Acrylic washable matt

4.2.A. LCA results - Acrylic washable matt

Core Environmental impact per 1 kg of acrylic washable matt

1 kg of Acrylic Washable Matt Paint is equivalent of 0.71 litres of paint. This volume of paint would cover approx 9.23 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2.16E+00	7.65E-02	5.99E-03	2.25E+00	5.56E-02	1.36E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.07E-02	0.00E+00	4.72E-02	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	2.14E+00	7.65E-02	4.42E-03	2.22E+00	5.56E-02	1.35E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.07E-02	0.00E+00	4.72E-02	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-3.00E-02	1.70E-05	1.57E-03	-2.84E-02	2.54E-05	2.35E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.31E-06	0.00E+00	9.85E-05	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	5.42E-02	4.79E-05	3.29E-06	5.43E-02	3.10E-05	5.64E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.63E-06	0.00E+00	9.64E-06	0.00E+00
ODP	[kg CFC-11 eq.]	3.72E-06	1.60E-08	3.58E-10	3.74E-06	1.19E-08	3.89E-08	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.37E-09	0.00E+00	4.17E-09	0.00E+00
AP	[mol H+ eq.]	1.52E-02	1.78E-03	2.71E-05	1.70E-02	1.63E-04	3.42E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.07E-05	0.00E+00	1.09E-04	0.00E+00
EP-freshwater ^[1]	[kg P eq.]	7.29E-05	3.58E-07	1.70E-07	7.34E-05	6.24E-07	1.86E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	9.81E-08	0.00E+00	1.78E-07	0.00E+00
EP-marine	[kg N eq.]	2.46E-03	4.34E-04	6.49E-06	2.90E-03	2.90E-05	6.57E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.82E-06	0.00E+00	3.70E-05	0.00E+00
EP-terrestrial	[mol N eq.]	2.30E-02	4.82E-03	5.07E-05	2.79E-02	3.27E-04	6.67E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.54E-05	0.00E+00	4.07E-04	0.00E+00
POCP	[kg NMVOC eq.]	7.78E-03	1.27E-03	2.56E-05	9.07E-03	1.26E-04	8.71E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.50E-05	0.00E+00	1.26E-04	0.00E+00
ADP-minerals&metals ^[2]	[kg Sb eq.]	3.09E-05	1.57E-07	2.54E-06	3.36E-05	2.74E-06	9.43E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.86E-07	0.00E+00	6.44E-08	0.00E+00
ADP-fossils ^[2]	[MJ] ncv	3.18E+01	1.04E+00	3.61E-02	3.29E+01	8.24E-01	8.72E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.60E-01	0.00E+00	3.08E-01	0.00E+00
WDP ^[2]	m ³ world eq. deprived	1.28E+00	2.26E-03	1.77E-03	1.29E+00	2.94E-03	2.54E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.91E-04	0.00E+00	1.35E-02	0.00E+00

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels (GWP-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; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossils = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential, deprivation-weighted water consumption.

^[2]The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ND = Module not declared; INA = Indicator not assessed.

4.2.B. LCA results - Acrylic washable matt

Resource use per 1 kg of acrylic washable matt

1 kg of Acrylic Washable Matt Paint is equivalent of 0.71 litres of paint. This volume of paint would cover approx 9.23 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	2.63E+00	9.72E-03	2.08E-01	2.85E+00	1.77E-02	7.42E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.72E-03	0.00E+00	4.34E-03	0.00E+00
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.63E+00	9.72E-03	2.08E-01	2.85E+00	1.77E-02	7.42E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.72E-03	0.00E+00	4.34E-03	0.00E+00
PENRE	[MJ]	7.55E+00	1.10E+00	3.85E-02	8.68E+00	8.75E-01	9.28E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.70E-01	0.00E+00	3.27E-01	0.00E+00
PENRM	[MJ]	2.60E+01	0.00E+00	0.00E+00	2.60E+01	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.35E+01	1.10E+00	3.85E-02	3.47E+01	8.75E-01	9.28E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.70E-01	0.00E+00	3.27E-01	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	1.47E-01	8.02E-05	5.13E-05	1.47E-01	1.17E-04	1.82E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.90E-05	0.00E+00	3.25E-04	0.00E+00

PERE = Use of renewable primary energy excluding renewable primary energy resources 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.

ND = Module not declared; INA = Indicator not assessed.

4.2.C. LCA results - Acrylic washable matt

Output flows and waste categories per 1 kg of acrylic washable matt

1 kg of Acrylic Washable Matt Paint is equivalent of 0.71 litres of paint. This volume of paint would cover approx 9.23 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	3.09E-05	1.57E-06	4.65E-06	3.71E-05	2.29E-06	8.06E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.30E-07	0.00E+00	4.68E-07	0.00E+00
NHWD	[kg]	7.89E-01	2.06E-02	2.21E-03	8.12E-01	2.50E-02	2.45E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.31E-03	0.00E+00	1.55E+00	0.00E+00
RWD	[kg]	5.62E-05	7.12E-06	7.02E-08	6.34E-05	5.47E-06	1.41E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.08E-06	0.00E+00	1.90E-06	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software.

ND = Module not declared; INA = Indicator not assessed.

4.2.D. LCA results - Acrylic washable matt white

Additional Environmental impact per 1 kg of acrylic washable matt

1 kg of Acrylic Washable Matt Paint is equivalent of 0.71 litres of paint. This volume of paint would cover approx 9.23 m² per coat

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1.46E-07	3.55E-09	2.80E-10	1.50E-07	2.62E-09	3.44E-09	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.85E-10	0.00E+00	2.14E-09	0.00E+00
IRP ^[1]	kBq U235 eq	1.39E-01	4.45E-03	7.55E-05	1.43E-01	3.60E-03	2.27E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.99E-04	0.00E+00	1.22E-03	0.00E+00
ETP-fw ^[2]	CTUe	9.27E+01	6.96E-01	2.19E-01	9.36E+01	7.53E-01	2.07E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.35E-01	0.00E+00	7.60E-01	0.00E+00
HTP-c ^[2]	CTUe	3.79E-09	4.08E-11	7.69E-12	3.84E-09	2.61E-11	2.38E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.14E-12	0.00E+00	7.86E-12	0.00E+00
HTP-nc ^[2]	CTUe	8.49E-08	5.54E-10	2.35E-10	8.57E-08	7.51E-10	2.39E-09	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.37E-10	0.00E+00	2.31E-10	0.00E+00
SQP ^[2]	dimensionless	1.77E+01	3.43E-01	2.92E-02	1.81E+01	4.07E-01	2.93E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	9.52E-02	0.00E+00	6.99E-01	0.00E+00

PM = Potential incidence of disease due to PM emissions, 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, SQP = Potential soil quality index.

^[1] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuelcycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

^[2] The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ND = Module not declared; INA = Indicator not assessed.

5. Calculation rules

The measurement of environmental impacts in this EPD are those recommended for EF 3.0 and implemented in the EN 15804 Reference Package.

The process descriptions and input quantities detailed and used in this study are a true representation of the actual processes and quantities used in the manufacturing and use of the products. The references of all sources, both primary and public sources and literature, have been documented in the LCA report. The 'polluter pays' and 'modularity' principles have been followed.

In addition, to facilitate the reproducibility of this LCA, a full set of data records has been generated which can be accessed via the LCA tool. This data portfolio contains a summary of all the data used in this LCA.

Allocations of impacts to products have been made on a mass basis.

Cut-off criteria

The cut-off criteria of section 6.3.6 of EN15804:2012+A2:2019 have been followed, where 99% of the total energy and materials are included, and the total neglected input flows for the modules reported on in the LCA are less than 5% of the energy usage and mass.

Data Quality

The dataset is representative for the production processes used in 2021, in the country of production, Republic of Ireland. The data Quality Level, according to Table E.1 of EN 15804 +A2, Annex E, is as follows:

- Geographical representativeness: Good.
- Technical representativeness: Fair to Good.
- Time representativeness: Very Good.

6. Scenarios and additional technical information

A4. Transport to site

The transport to market is based on the transport from the production site in Co. Offaly, by a distance of 100km (road) to a construction site on the island of Ireland.

Parameter	Value / Description
Road transport	Transport, freight, lorry 3.5 - 7.5 metric ton, EURO6 engine, Europe
Distance, road	100 km
Capacity utilisation, road freight	46%
Bulk density transported goods (including packaging)	Acrylic soft sheen: 1,309 kg/m ³ Acrylic washable matt: 1,459 kg/m ³

A5. Installation on site

Installation losses are assumed to be 1%. It is assumed these losses end up in landfill.

Materials for installation/application are assumed to be paint roller and plastic paint tray. The mass of roller and paint tray are based on weights of a standard 10-inch paint roller and accompanying tray that is used to paint an assumed amount of 100 litres of paint. It is assumed that after use, 90% of the polypropylene and metal is recycled, with 10% going to landfill, and that 100% of the polyurethane foam goes to landfill. It is assumed these materials travel a distance of 50km to landfill/recycling in the A5 phase.

It is assumed that 100% of the VOCs of the paints are released to air during the application stage.

It is assumed that after use are the plastic paint container buckets are incinerated, and a distance of 50 km is assumed for transport of these materials to incineration.

C. End of Life Stages

As acrylic paints form part of, and are inseparable from, the demolition rubble at end-of-life, it is assumed that they are landfilled as a component of mixed demolition rubble.

C1. De-construction demolition

It is assumed that this is zero for acrylic paints.

C2. Transport

In the transport phase C2, it is assumed that the paints travel 50km to landfill.

C3. Waste processing

There is no waste processing for acrylic paints.

C4. Disposal

100% of the acrylic paints are disposed in landfill.

D. Reuse – Recovery – Recycling potential

There are no benefits/loads beyond the system for acrylic paints.

Declaration of biogenic carbon content at the production gate

There is no biogenic carbon in the paints or packaging.

BIOGENIC CARBON PER DECLARED UNIT	PRODUCT	QUANTITY
Biogenic carbon content in product (kg C per kg)	Acrylic washable matt	0.00E+00
Biogenic carbon content in product (kg C per kg)	Acrylic soft sheen	0.00E+00
Biogenic carbon content in packaging	10 litre polypropylene paint container	0.00E+00

Additional Technical Information

N/A.

7. Mandatory additional information on release of dangerous substances to indoor air, soil and water

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

8. Other optional additional environmental information

N/A.

9. References

- [1] ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.
- [2] ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.
- [3] ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO14025:2006.
- [4] EN 15804+A2: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products EN 15804:2012+A2:2019.
- [5] Ecochain Helix 3.5.71, 2023, web: <http://app.Ecochain.com>.
- [6] Product Category Rules: Part A, Implementation and use of EN 15804:2012+A2:2019 and CEN TR 16970:2016 in Ireland for the development of Environmental Product Declarations; Version 2.1, issue date: 05.03.2022, published by the EPD Ireland Programme operator (Irish Green Building Council).
- [7] PEF methodology final draft.pdf (europa.eu).
- [8] European Commission JRC Technical Report, Supporting information to the characterisation factors of recommended EF Life Cycle Impact Assessment methods. Version 2, from ILCD to EF 3.0, 2018.

10. Annex

N/A.