Statement of Verification

BREG EN EPD No.: 000667

This is to verify that the

Environmental Product Declaration

provided by:

Newmor

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for: 1m² of Vinyl Wallcovering on Woven Backing with the average weight of 0.422 kg/m²

Company Address

Newmor Madoc Works, Henfaes Lane. Welshpool, Powys, SY21 7BE





BRE/Global

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Signed for BRE Global Ltd

Emma Baker

Operator

18 March 2025 Date of this Issue

Issue 01

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Expiry Date



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Environmental Product Declaration

EPD Number: 000667

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
Newmor Madoc Works, Henfaes Lane, Welshpool, Powys, SY21 7BE	LCA Tool: BRE LINA A2 LCA Consultant: Francis Yu
Declared/Functional Unit	Applicability/Coverage
1m ² of Vinyl Wallcovering on Woven Backing with the average weight of 0.422 kg/m ²	Product Average.
EPD Type	Background database
Cradle to Gate with Module C and D	Ecoinvent 3.8
Demonstra	tion of Verification
CEN standard EN 15	804 serves as the core PCR ^a
Independent verification of the declara	tion and data according to EN ISO 14025:2010 ⊠ External
(Where appropr Bala	iate ^b)Third party verifier: Subramanian
a: Product category rules b: Optional for business-to-business communication; mandatory	for business-to-consumer communication (see EN ISO 14025:2010, 9.4)
Co	mparability

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

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Information modules covered

			0			Use stage					Use stage			End of life				Benefits and loads beyond
l I	Produc	τ	Consti	ruction	Rel	ated to	the bui	lding fa	bric	Relat the bu	ed to iilding	End-of-life			the system boundary			
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		
V	V	V										Ŋ	V	V	V	V		

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Newmor Wallcoverings Madoc Works, Henfaes Lane, Welshpool, Powys, SY21 7BE

Construction Product:

Product Description

Newmor Wallcoverings manufactures wallcoverings in Welshpool, Wales. The products under scope are decorative vinyl wallcoverings on a woven base, for commercial applications. The weights of these products are 350gsm, 400gsm, 675gsm Type I and 460gsm, 800gsm Type II.

The woven base can be cotton or a cotton-polyester blend. The plasticised vinyl layer is pigmented before application, providing colour depth. Each design has a unique print which is applied using gravure printing. The wallcoverings are available with an embossed texture.

This EPD is using the 0.422kg/m² average weight of all Vinyl Wallcovering on Woven Backing products made in the production period, ranging from 350-800gsm. The total production quantity (kg) of all the woven product variants has been divided by the total production in m2 to get the average weight per m2. Since the product variants (350 gsm, 400gsm, 460gsm, 675gsm, and 800gsm) have the same composition, design mix and manufacturing process, therefore the end-user of this EPD can use the EPD results, and the conversion factor table listed at the end of this document to calculate the impacts for 1m² of the other specific products.

Technical Information

Property	350gsm	400gsm	460gsm	675gsm	800gsm
General			-		
Overall wall covering thickness (determined by Exova Warringtonfire)	0.55mm	0.5mm	0.7mm	1.05mm	0.8mm
Weight per unit area of wall covering (determined by Exova Warringtonfire)	350g/m²	400g/m ²	460g/m ²	675g/m²	800g/m²
Coating					
Generic type	PVC plastisol	PVC plastisol	PVC plastisol	PVC plastisol	PVC plastisol
Application rate	310g/m ²	360g/m ²	400g/m ²	635g/m ²	740g/m ²
Application method	Laminating	Laminating	Laminating	Laminating	Laminating
Curing process	Hot air oven at 220 °C for 30 seconds	Hot air oven at 220 °C for 30 seconds	Hot air oven at 220 °C for 30 seconds	Hot air oven at 220 °C for 30 seconds	Hot air oven at 220 °C for 30 seconds
Woven backing		·			
Generic type	Cotton scrim	Cotton scrim	Osnaburg scrim	Cotton scrim	Osnaburg scrim
Thickness	0.25mm	0.16mm nominal	0.2mm	0.25mm	0.25mm
Weight per unit area	40g/m ²	40g/m ² nominal	60g/m ²	40g/m ²	60g/m ²
Adhesive					
Generic type	PVA/ starch/ water				
Application rate	200g/m ²				
Application method	Lambswool roller	Lambswool roller	Lambswool roller	Lambswool roller	Lambswool roller
Primer					
Generic type	PVA/ starch/ water				
Application rate	85g/m ²	85g/m ² nominal wet	85g/m ² wet	85g/m ²	85g/m ²
Application method	Lambswool roller	Lambswool roller	Lambswool roller	Lambswool roller	Lambswool roller
Substrate					
Generic type	Fibre cement board				
Thickness	8mm	6mm	6mm	8mm	8mm
Density	1800kg/m ³				

Test method & test number

		35	0gsm	400gsm		460gsm		675gsm		800gsm	
Parameter	No. tests	Continuous parameter Mean (m)	Compliance parameters								
EN ISO 1	1925	5-2 (30s	exposure -	surface)						
Fs	6	29.2	Compliant	7	Compliant	0	Compliant	≤ 50mm	Compliant	None	Compliant (≤60mm)
Flaming droplets/ particles	0	None	Compliant								
EN ISO 17	1925	5-2 (30s	exposure -	edge)							
Fs		16.7	Compliant	43	Compliant	0	Compliant	≤ 30mm	Compliant	None	Compliant (≤40mm)
Flaming droplets/ particles	6	None	Compliant								
EN 13823											
FIGRA 0.2MJ		16.54	Compliant	29.41	Compliant	11.49	Compliant	67.00	Compliant	78	-
FIGRA 0.4MJ		7.53	Compliant	-	-	10.97	Compliant	24.90	Compliant	27	-
THR 600s		1.47	Compliant	2.00	Compliant	1.50	Compliant	2.44	Compliant	1.7	-
LFS		None	Compliant	None	Compliant	None	Compliant	-	-	-	Compliant
SMOGRA		0.00	Compliant	10.64	Compliant	0	Compliant	6.99	Compliant	33	-
TSP 600s		44.00	Compliant	95.23	Compliant	46.92	Compliant	82.56	Compliant	68	-
Lateral Flame Spread to End of Specimen ?	3	-	-	-	-	-	-	None	Compliant	-	-
Fall of Flaming Drop/Parti cle?		-	-	-	-	-	-	None	Compliant	-	Compliant
Flaming of Fallen Particle Exceeding 10s?		-	-	-	-	-	-	None	Compliant	-	Compliant

Note: The technical properties and the test results are taken from Exova Warrington fire classification reports. The Sponsor weights form the classification reports have been used here and they are consistent with the sales weights of the products. Please contact Newmor for details.



Main Product Contents

Material/Chemical Input	%
PVC resin	35
Filler	23
Woven substrate (cotton/polyester)	10
Others	32

The product content is the same for all the product variants included in this EPD.

Manufacturing Process

The woven base is coated with pigmented, plasticised PVC which is then cured in an oven. The PVC may contain different additives depending on the product. The coated woven base is then sent for printing with solvent based inks using the gravure method. If the product is to be laminated, it is done at this stage. The printed product is then embossed with the chosen texture. The last stage of production is the final inspection – this is where the product is inspected, cut to length and packaged before being sent to the customer or our warehouse for stock.

Process flow diagram



End of Life

There is currently no process in place to process the product waste. Therefore, an industrial average end-oflife data has been used according to BRE 2023 Product Category Rules (PN 514 Rev 3.1), which is 100% of waste to energy-recovery incineration.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m2 of Vinyl Wallcovering on Woven Backing with the average weight of 0.422 kg/m2

System boundary

This is a Cradle-to-Gate with Module C & 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

Specific primary data derived from Newmor Wallcoverings production process in Madoc Works, Henfaes Lane, Welshpool, Powys, SY21 7BE factory, have been modelled using the LINA LCA A2 software A2 and the ecoinvent 3.8 database. In accordance with the requirements of EN 15804:2012+A2:2019, the most current available data has been used. The manufacturer-specific data from Newmor covers a period of one year (01/10/2022 – 30/09/2023). 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 EN 15804:2012+A2:2019.

The LCA study includes all Newmor Vinyl Wallcovering on Woven Backing products (350 gsm, 400 gsm, 460 gsm, 675 gsm, and 800 gsm), which account for 17.7% of the site's total production. The factory also produces other products in addition to the woven backing products; therefore, allocation of energy, waste, water, non-production waste, and water discharge is required. This has been done on the following basis: Production waste and energy used to manufacture the woven backing products have been derived from actual measurements, so no allocation is required. Sitewide values for energy, water, and wastewater have been taken from bills.

There is no water used for production, and there are no breakdowns from the water bills. However, some water is used for office and factory operations, which must be allocated to product production. Since production does not require any water, water and wastewater for office and factory operations have been allocated based on a 5% assumption. Non-production waste has been allocated to the products by m² according to the provisions of the BRE PCR PN514 Rev 3.1 and EN 15804:2012+A2:2019. Figures for raw materials, ancillary materials, and packaging are based on actual usage.

The mass balance of the LCA is within the correct range.

Proxy datasets are used for some chemicals, such as pigments, plasticisers, and stabilisers.

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Good	Data from area under study.	Data from processes and products under study (with similar technology). Evidence of deviations in state of technology, e.g. different by-product.	There is less than 5 years between the ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific UK datasets have been selected from the ecoinvent LCI for this LCA. The quality level of geographical representativeness is therefore very good. The proxies are mainly used for pigments. The reasons are Safety Data Sheets do not provide a full breakdown of material composition and percentages, or suitable chemicals cannot be found in the Ecoinvent database. Therefore, default unspecified organic/in organic chemical datasets from ecoinvent 3.8 have been used for LCA modelling. According to ISO 14044+A1:2018, some proxy datasets have been used in the analysis; however, the overall data quality is considered good. The quality level of time representativeness is very good as the background LCI datasets

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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.

UK 2022 Consumption mix was used for electricity with an emissions factor of 0.239kgCO2e/kWh. UK Natural gas data (at industrial furnace) was used with an emissions factor of 0.232 kgCO2eq/kWh.

Cut-off criteria

All processes associated with the manufacturing process have been included. All inputs and outputs have been included and all raw materials, packaging, transport, energy, water and wastes are included, except for direct emissions to air, water and soil, which are not measured. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA.

LCA Results

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

			GWP- total	GWP- fossil	GWP- biogenic	GWP- Iuluc	ODP	AP	EP- freshwat er	
			kg CO₂ eq	kg CO₂ eq	kg CO₂ eq	kg CO₂ eq	kg CFC11 eq	mol H⁺ eq	kg (PO ₄) ³⁻ eq	
	Raw material supply	A1	1.16E+00	1.20E+00	-1.12E-01	6.64E-02	4.44E-07	9.51E-03	7.90E-04	
Product stage	Transport	A2	5.84E-02	5.83E-02	4.16E-05	2.57E-05	1.32E-08	4.73E-04	3.49E-06	
i loudot stage	Manufacturing	A3	6.46E-01	6.23E-01	2.27E-02	1.60E-04	5.02E-08	6.50E-04	3.01E-05	
	Total (of product stage)	A1-3	1.86E+00	1.89E+00	-8.96E-02	6.66E-02	5.07E-07	1.06E-02	8.23E-04	
Construction	Transport	A4	MND	MND	MND	MND	MND	MND	MND	
process stage	Construction	A5	MND	MND	MND	MND	MND	MND	MND	
	Use	B1	MND	MND	MND	MND	MND	MND	MND	
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND	
	Repair	B3	MND	MND	MND	MND	MND	MND	MND	
Use stage	Replacement	B4	MND	MND	MND	MND	MND	MND	MND	
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND	
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND	
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND	
100% to incineratio	n Scenario									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
End of life	Transport	C2	3.51E-03	3.51E-03	2.99E-06	1.38E-06	8.12E-10	1.42E-05	2.26E-07	
End of life	Waste processing	C3	8.91E-01	8.89E-01	1.92E-03	1.23E-04	2.80E-08	6.62E-04	3.90E-05	
	Disposal	C4	0.00E+00	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	-1.93E-01	-1.90E-01	-2.48E-03	-2.01E-04	-1.34E-08	-1.10E-03	-1.04E-04	

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 nutrientsreaching 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	
	Raw material supply	A1	8.89E-03	2.93E-02	4.37E-03	1.01E-03	2.46E+01	1.04E+01	7.41E-08	
Product stage	Transport	A2	1.28E-04	1.41E-03	3.96E-04	1.85E-07	8.63E-01	3.65E-03	4.58E-09	
i foddel slage	Manufacturing	A3	2.49E-04	2.19E-03	6.72E-04	9.97E-07	1.12E+01	1.10E-01	4.83E-09	
	Total (of product stage)	A1-3	9.26E-03	3.29E-02	5.44E-03	1.01E-03	3.67E+01	1.05E+01	8.35E-08	
Construction	Transport	A4	MND	MND	MND	MND	MND	MND	MND	
process stage	Construction	A5	MND	MND	MND	MND	MND	MND	MND	
	Use	B1	MND	MND	MND	MND	MND	MND	MND	
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND	
	Repair	B3	MND	MND	MND	MND	MND	MND	MND	
Use stage	Replacement	B4	MND	MND	MND	MND	MND	MND	MND	
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND	
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND	
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND	
100% to incineratio	n Scenario									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
End of life	Transport	C2	4.29E-06	4.68E-05	1.43E-05	1.22E-08	5.30E-02	2.39E-04	3.03E-10	
	Waste processing	C3	1.92E-04	1.76E-03	4.90E-04	9.55E-07	1.38E+00	1.68E+00	5.27E-09	
	Disposal	C4	0.00E+00	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	-1.61E-04	-1.60E-03	-4.48E-04	-1.12E-07	-3.00E+00	-7.98E-02	-7.71E-09	

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			
	Raw material supply	A1	1.10E-01	4.49E+01	1.76E-09	2.40E-08	1.91E+01			
Droduct store	Transport	A2	4.37E-03	6.55E-01	2.41E-11	6.61E-10	5.34E-01			
Floduct stage	Manufacturing	A3	1.16E-01	4.80E+00	1.04E-10	2.61E-09	2.07E+00			
	Total (of product stage)	A1-3	2.31E-01	5.04E+01	1.88E-09	2.72E-08	2.17E+01			
Construction	Transport	A4	MND	MND	MND	MND	MND			
process stage	Construction	A5	MND	MND	MND	MND	MND			
	Use	B1	MND	MND	MND	MND	MND			
	Maintenance	B2	MND	MND	MND	MND	MND			
	Repair	B3	MND	MND	MND	MND	MND			
Use stage	Replacement	B4	MND	MND	MND	MND	MND			
	Refurbishment	B5	MND	MND	MND	MND	MND			
	Operational energy use	B6	MND	MND	MND	MND	MND			
	Operational water use	B7	MND	MND	MND	MND	MND			
100% to incineration	Scenario									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
End of life	Transport	C2	2.73E-04	4.14E-02	1.34E-12	4.34E-11	3.64E-02			
End of life	Waste processing	C3	9.34E-03	4.96E+01	1.80E-10	1.39E-08	7.80E-01			
	Disposal	C4	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	-4.85E-02	-2.74E+00	-4.51E-11	-1.41E-09	-9.12E-01			

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		
	Raw material supply	A1	2.50E+00	4.01E-01	2.90E+00	1.69E+01	7.89E+00	2.48E+01		
Broduct store	Transport	A2	1.14E-02	0.00E+00	1.14E-02	8.47E-01	0.00E+00	8.47E-01		
Floduct stage	Manufacturing	A3	6.21E-01	2.68E-01	8.89E-01	1.03E+01	2.33E+00	1.27E+01		
	Total (of product stage)	A1-3	3.13E+00	6.69E-01	3.80E+00	2.81E+01	1.02E+01	3.84E+01		
Construction	Transport	A4	MND	MND	MND	MND	MND	MND		
process stage	Construction	A5	MND	MND	MND	MND	MND	MND		
	Use	B1	MND	MND	MND	MND	MND	MND		
	Maintenance	B2	MND	MND	MND	MND	MND	MND		
	Repair	B3	MND	MND	MND	MND	MND	MND		
Use stage	Replacement	B4	MND	MND	MND	MND	MND	MND		
	Refurbishment	B5	MND	MND	MND	MND	MND	MND		
	Operational energy use	B6	MND	MND	MND	MND	MND	MND		
	Operational water use	B7	MND	MND	MND	MND	MND	MND		
100% to incineration	Scenario									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
End of life	Transport	C2	7.47E-04	0.00E+00	7.47E-04	5.21E-02	0.00E+00	5.21E-02		
End of life	Waste processing	C3	1.26E-01	0.00E+00	1.26E-01	-7.71E+00	9.08E+00	1.36E+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	-4.43E-01	0.00E+00	-4.43E-01	-3.01E+00	0.00E+00	-3.01E+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 nonrenewable 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	m³				
	Raw material supply	A1	3.96E-03	0.00E+00	0.00E+00	2.43E-01				
Droduct store	Transport	A2	0.00E+00	0.00E+00	0.00E+00	9.05E-05				
Flouder stage	Manufacturing	A3	6.23E-04	2.90E-06	0.00E+00	3.13E-03				
	Total (of product stage)	A1-3	4.58E-03	2.90E-06	0.00E+00	2.46E-01				
Construction	Transport	A4	MND	MND	MND	MND				
process stage	Construction	A5	MND	MND	MND	MND				
	Use	B1	MND	MND	MND	MND				
	Maintenance	B2	MND	MND	MND	MND				
	Repair	B3	MND	MND	MND	MND				
Use stage	Replacement	B4	MND	MND	MND	MND				
	Refurbishment	B5	MND	MND	MND	MND				
	Operational energy use	B6	MND	MND	MND	MND				
	Operational water use	B7	MND	MND	MND	MND				
100% to incineration	Scenario									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
End of life	Transport	C2	0.00E+00	0.00E+00	0.00E+00	5.91E-06				
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.92E-02				
	Disposal	C4	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	-1.99E-03				

SM = Use of secondary material; RSF = Use of renewable secondary fuels; $\label{eq:NRSF} \begin{array}{l} \mbox{NRSF} = \mbox{Use of non-renewable secondary fuels;} \\ \mbox{FW} = \mbox{Net use of fresh water} \end{array}$

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					
	Raw material supply	A1	7.83E-02	2.05E+00	3.60E-04					
Desident stars	Transport	A2	9.76E-04	1.60E-02	3.99E-04					
Floudel stage	Manufacturing	A3	1.76E-02	1.96E-01	4.85E-05					
	Total (of product stage)	A1-3	9.68E-02	2.26E+00	8.07E-04					
Construction	Transport	A4	MND	MND	MND					
process stage	Construction	A5	MND	MND	MND					
	Use	B1	MND	MND	MND					
	Maintenance	B2	MND	MND	MND					
	Repair	B3	MND	MND	MND					
Use stage	Replacement	B4	MND	MND	MND					
	Refurbishment	B5	MND	MND	MND					
	Operational energy use	B6	MND	MND	MND					
	Operational water use	B7	MND	MND	MND					
100% to incineration	Scenario									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00					
End of life	Transport	C2	5.84E-05	1.04E-03	3.59E-07					
	Waste processing	C3	2.33E-01	5.70E-01	6.79E-06					
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00					
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.23E-02	-6.52E-01	-1.47E-05					

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	0.00E+00	0.00E+00	0.00E+00	-2.38E-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	1.92E-02	1.97E-02	2.69E-03	3.10E-03	-1.63E-03
	Total (of product stage)	A1-3	0.00E+00	1.92E-02	1.97E-02	2.69E-03	-2.07E-02	-1.63E-03
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
100% to incineration Scenario								
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	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	4.22E-01	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				
Reference service life	Newmor Vinyl Wallcovering on Woven Backing products have a reference service life of 10 years.						
C1 – Deconstruction	At the end of this product's life, it can be simply stripped from the wall by hand. It requires no additional tools or materials. We assume a 100% recovery rate of the product at its end of life, and the recovered product will be sent to an incineration facility for waste treatment.						
C2 – Transport from site to pre-processing	There is currently no process in place to transport the product waste. 50km by road has been modelled for module C2 as a typical distance from the demolition site to the recycling plant. Therefore, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required.						
	Road transportation- Lorry 16-32 tonne	km	50				
C3 - Pre-processing of uninstalled product	There is currently no process in place to process the product waste. The Newmor Vinyl Wallcovering on Woven Backing products typically made of 35% PVC resin, along with 32% other chemicals, 23% filler and 10% cotton/polyester. Once manufactured, these components cannot be separated out. Therefore, at the end of its life, the waste is assumed to be treated as PVC waste. Therefore, the most appropriate end-of-life scenario has been selected by referencing BRE PCR EN15804 3.1. An industrial average end-of-life data for PVC membrane has been used, with 100% waste to energy recovery.						
	100% Newmor Vinyl Wallcovering on Woven Backing waste to incineration for energy recovery	kg/m2	0.422				
C4 – Disposal	100% of product will be incinerate at the waste processing unit, therefore no end-of-life waste will be landfilled in C4.						
Module D	The benefits of Module D include the energy credits from incineration of waste product at end- of-life. Non-combustible contents (mineral fillers) have been excluded from per m2 of Newmor Vinyl Wallcovering on Woven Backing, only the remaining combustible content are accounted for in Module D energy recovery calculation, i.e. 79.2% combustible content can be claimed for module D benefits. The incinerated energy and heat will replace the European average mix.						
	Recovered for heat and energy	kg/m2	0.3342				

Individual product calculations:

The LCA results listed in the EPD are for 1m2 of Vinyl Wallcovering on Woven Backing products with the weight of 0.422 kg/m2, which represents an average weight of overall woven wallcovering production. The end-user of this EPD can therefore use these results and the conversion factors listed below to calculate the impacts for 1m2 of the other specific products:

Product name	kg/m2	Conversion factor
350gsm Vinyl Wallcovering on Woven Backing Type I	0.35	0.829
400gsm Vinyl Wallcovering on Woven Backing Type I	0.40	0.948
460gsm Vinyl Wallcovering on Woven Backing Type II	0.46	1.090
675gsm Vinyl Wallcovering on Woven Backing Type I	0.675	1.600
800gsm Vinyl Wallcovering on Woven Backing Type II	0.8	1.896

Interpretation

Out of the total mass of input materials, PVC resin makes up 35%; followed by other additives of 32%; fillers of 23%, Woven substrate (cotton/polyester) makes up the remaining of 10%. The bulk of the environmental impacts and primary energy demand are attributed to the production phase, covered by information modules A1-A3 of EN15804:2012+A2:2019. Some additives and pigments are included as raw material inputs, and the unspecified organic chemical dataset has been used for these components as a worst-case scenario. The global warming potential (GWP) of the proxy additives and pigments account for 16% of the total GWP across the whole life cycle.

As a result, the additives and Woven substrate rank the first and second in terms of overall environmental impacts and are responsible for the greatest impact on GWP-total indicator. PVC resin ranks the third in terms of overall environmental impact indicators. Although the total mass of fillers is 23%, it contributes a very small part of the overall impacts. Ref: Figure 1 below.



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.

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ISO. Reaction to fire tests — Ignitability of products subjected to direct impingement of flame. - Part 2: Single-flame source test. EN ISO 11925-2:2010. ISO, 2010.

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