EPD™

Environmental Product Declaration

in accordance with ISO 14025 and EN 15804

Acoufelt Pty Ltd

QuietBack Carpet Tile

acoufelt
making quiet

Company Address:	Level 8, 26 Flinders St, Adelaide, SA, Australia, 5000
Issue Date:	11 March 2024
Valid to:	11 March 2029
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ECO PLATFORM

ECO PLATFORM EPD VERIFIED

Environment Product Declaration Details

EPD Scope	Cradle to Gate with options (A1 to A3,C1-C4 and D)
EPD Type	Product Specific EPD
EPD Number	ACP:AC02:2024:EP
Issue Date	11 March 2024
Valid Until	11 March 2029

CEN standard EN 15804 serves as the core PCR

Compliant with EN 15804:2012+A2:2019

Independent external verification of the declaration and data, according to ISO 14025:2010

☐Internal ☒External

Third Party Verifier Name	Angel Avadi
Internal LCA Reviewed by	Dr.Nana Bortsie-Aryee
Internal EPD Reviewed by	Dr.Nana Bortise-Aryee

The EPD is property of declared manufacturer. Different program EPDs may not be comparable as e.g. Australian transport is often more than elsewhere. Comparability is further dependent on the product category rules used and the source of the data. EPDs of construction products may not be comparable if they do not comply with EN15804. Further explanatory information is found at globalgreentag.com or contact: epd@globalgreentag.com.

This Environmental Product Declaration (EPD) discloses potential environmental outcomes compliant with EN 15804:2012+A2 2019 for business to business communication and currency as per Section 7.1 Table 2.

EPD Program Operator	EPD Producer	Declaration Owner
Global GreenTag International Pty Ltd PO Box 311 Level 38, 71 Eagle Street Brisbane City QLD 4000 Australia Phone: +61 1300 263 586 http://www.globalgreentag.com	IKE Environmental Technology Co. Ltd. PO Box 610000 No.139 Kehua Middle Road, Wuhou District Phone: +86 18280064252 http://www.ike-global.com	Acoufelt Pty Ltd . Level 8, 26 Flinders St, Adelaide, South Australia, Australia, 5000 Phone:+61 1800 626 462 https://www.acoufelt.com.au

Product Information

Product Name	QuietBack Carpet Tile
Description	Soundproof flooring
PCR	CEN Standard EN 15804+A2:2019 serves as core Product Category Rules (PCR) [Sub PCR IFC:2021 - Interior Floor Covering Version 1 (Global GreenTag International, 2021)]
Declared Unit/ Functional Unit	The function unit is 1 m^2 of QuietBack Carpet Tile with a weight of 2.5 kg/m^2 from cradle to Gate with options, C1-C4 and module D
Manufacturer warranty	20 years
Manufacturing Site	Bangkok, Thailand
Site Representation & Geography	Thailand
Cut-off criteria & Data quality	Complies with EN 15804+A2:2019
Standards	This product complies with ISO 14044: 2006 EM: LCA: Requirement & guideline for data review: LCI; LCIA, Interpretation results: Include additional quality testing as required by PCR.
Restricted Substance List	N/A
Functional & Technical Performance	Industrial, commercial and residential building interior flooring. 10mm tile Mean Critical Radiant Flux 7.4 kW/m^2 and Mean Smoke Development Rate 175 percent-minutes in accordance with AS/ISO 9239.1:2003. 8mm tile Mean Critical Radian Flux 4.9 kW/m^2 and Mean Smoke Development Rate 187 percent-minutes in accordance with AS/ISO 9239.1:2003. Slip resistance classification P5 – Surface Tested Dry in accordance with AS 4586:2013. Passed VOC Emissions 24 Hours ASTM D5116 TVOC <0.5 mg/m2/hr.

Range and variability

QuietBack Carpet Tile	
Thickness (mm)	kg/m^2
7 mm	2.10
8 mm	2.4
10 mm	2.75

Primary Data	Data was collected in accordance with EN ISO 14044:2006, 4.3.2, from primary sources including factory audits, suppliers and their publications on corporate locations, logistics, technology, market share, management system, standards and commitment to improved environmental performance.
Substances of Very High Concern	Contains no substances that exceed 0.1% (1000 ppm) in the “Candidate List of Substances of Very High Concern for authorisation” of the European Chemicals Agency

Manufacturing Process

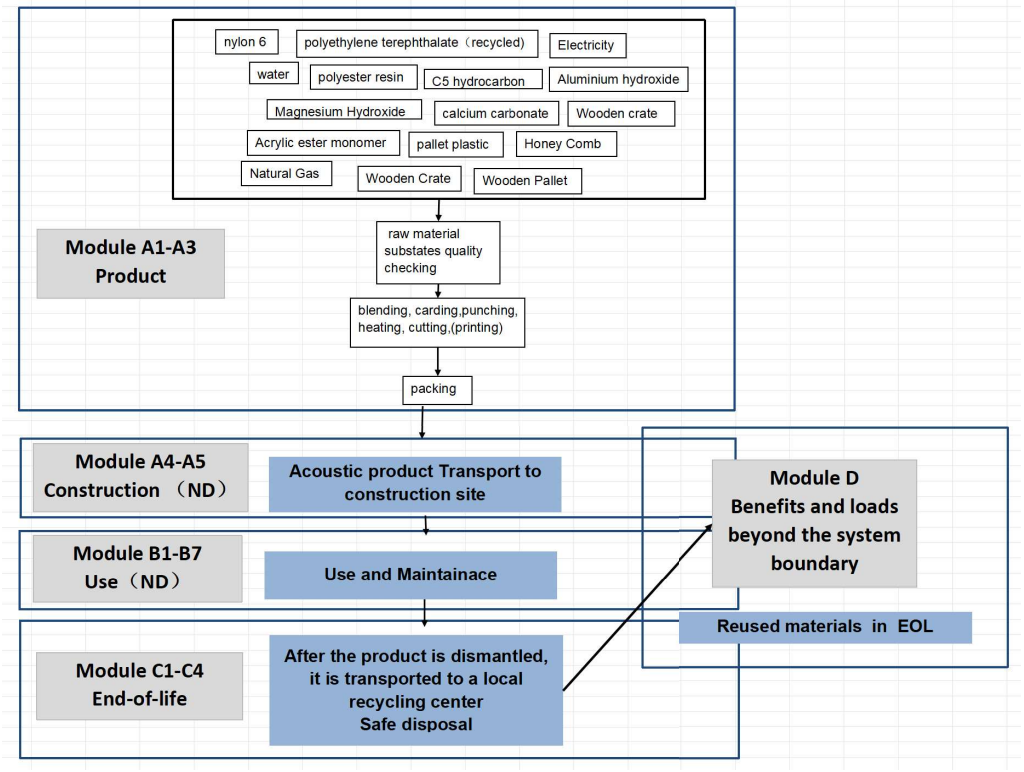

Figure 1 QuietBack Carpet Tile Products Cradle to Gate System Boundary

Base Material Origin and Detail

Table 1 lists key components and additives by function, type, source and amount.

Table 1 Base Material

Product	Component	Material	Source	% mass
QuietBack Carpet Tile	Solution Dyed Nylon Filaments	Nylon 6	China	＜30%
	Polyethylene Terephthalate non woven spunbond	Polyethylene terephthalate	China	＜5%
	Styrene Butadiene Rubber Latex	PET,PA	Netherlands	＜10%
	Aluminum Hydroxide (ATH)	Aluminium hydroxide	China	＜10%
	Calcium Carbonate	Calcium carbonate	Thailand	＜10%
	Carbon Black	Carbon black	Thailand	＜1%
	Fume Silica	Silica fume	Thailand	＜1%
	Anti-microbial	Undecanol monoglyceride emulsion	Thailand	＜1%
	Anti-soil & Anti - stain	Modified polymer emulsion	Thailand	＜1%
	Recycled Polyethylene Teraphthalate staple fiber	Polyethylene terephthalate(recycled)	Thailand	＜30%
	Polyethylene Teraphthalate staple low melting fiber	Polyethylene terephthalate	Korea	＜5%
	Hydrocarbon resin	C5 hydrocarbon	China	＜10%
	Polyolefin resin	Polyester resin	Thailand	＜10%
	Magnesium Hydroxide	Magnesium Hydroxide	China	＜10%

Mass Balance

According to Table 2, the output mass data supplied by the factory is expressed in tonnes; while the input mass data provided is the percentage of ingredient composition in the product. This results in a difference between the mass of the input and output. The product input and output data has been almost mass balanced for this LCA analysis.

Table 2 The mass balance of the 1 m^2 QuietBack Carpet Tile

QuietBack Carpet Tile manufactured in Thailand		
	Name	Weight（kg）
Inputs	Solution Dyed Nylon Filaments	0.608

QuietBack Carpet Tile manufactured in Thailand		
	Polyethylene Terephthalate Non-Woven Spunbond	0.112
	Styrene Butadiene Rubber Latex	0.18
	Aluminum Hydroxide (ATH)	0.161
	Calcium Carbonate	0.2
	Carbon Black	0.00038
	Fume Silica	0.0029
	Anti-microbial	0.0018
	Anti-soil & Anti-stain	0.00083
	Recycled Polyethylene Terephthalate Staple Fiber	0.62
	Polyethylene Terephthalate Staple Low Melting Fiber	0.11
	Hydrocarbon Resin	0.1765
	Polyolefin Resin	0.20
	Magnesium Hydroxide	0.176
	Total	2.54941
Outputs	QuietBack Carpet Tile	2.5
	General Waste to Energy Recovery	0.167
	Seconds to Sale	0.016
	Liquid Waste	0.01
	Hazardous Waste	0.059
	Total	2.752

Greenhouse Gas Emissions and Fossil Fuel Inputs

Table 3 Greenhouse Gas Emissions and Fossil Fuel Inputs for 1 m^2 QuietBack Carpet Tile

Fossil Fuel	Usage	Emission factors			Emission factor sources
		CO_2	CH_4	N_2O	
Natural Gas	0.00015m^3	2.09 CO_2 kg/m^3	3.73E-05 CH_4 kg/m^3	3.73E-06 N_2O kg/m^3	IPCC

Program Description

EPD Scope	Cradle to gate with options (A1 to A3,C1-C4 and D) as defined by EN 15804+A2 and depicted in Figure 1 QuietBack Carpet Tile Products Cradle to Gate System Boundary
System boundary	The system boundary with nature included processing material and energy system inputs, manufacture and transport to factory gate plus waste arising and waste disposal.
Reference Service Life	20 years (The reference service life was determined by the manufacturer's extended warranty.)
Comparability	EPD of construction products may not be comparable if they do not comply with EN 15804
Product stages included	A1 Raw material supply • Raw material acquisition, extraction, refining and processing • Secondary material acquisition and processing • Electricity generated from all sources with extraction, refining & transport A2 Transport internal and to the factory gate A3 Manufacture of product co-products and packaging plus • Production of inputs and ancillary material • System flows leaving at end-of-waste boundary allocated as coproducts C1 Deconstruction demolition C2 Transport to waste processing C3 Waste processing for reuse, recovery and/or recycling C4 Disposal D Reuse, recovery and/or recycling potentials, expressed as net impacts and benefits.

Cut off criteria	In this study, the "Anti-microbial", "Anti-soil & Anti - stain", "Plastic strap", "Stretch Wrapping", "OPP Tape", used in the production process were excluded in accordance with EN 15804:2012+A2 2019 because they accounted for less than 1% of the total mass input for the overall life cycle. The sum of the neglected processes over their entire life cycle does not exceed 5% of energy use and mass. The manufacturer provides transport expenditure data for all relevant material flows. Excluding machines and facilities required in the production process.
Stages excluded	A4-5, B1-7
Data collection Year	2022
Background Data	Table 4
Allocations Method	In this LCA study allocation of inputs and outputs is based on the physical property of weight. Allocation is used because a variety of acoustic products not included in the scope of the EPD are produced in one factory. The allocation ratio is obtained by dividing the total annual production weight of the target product over the total annual production weight of all products the factory produces. The result is an allocation ratio based on the physical property of weight for the target product. This allocation ratio is used where allocation cannot be avoided. According to ISO 14044/44 allocation principles and procedures apply to reuse and recycling situations. This study has used a variation on the open-loop 50/50 allocation method referenced in Annex V of the EU Commissions Commission Recommendation 2013/179/EU. In this study 50% of the environmental benefits credited for recyclable materials in the product is not reflected in the EOL stage of Module C, but fully reflected in Module D. At the same time, the load/environmental impacts of waste processing for recyclable content in discarded QuietBack Carpet Tile product is fully reflected in the EOL stage without allocating 50% to the next life cycle.
Scenario Modelling Assumption	Stage C - end of life: it is assumed that the product be disassembled manually and transport distance of product to waste treatment facilities site is 50km.In addition, it is also assumed that the product be broken up by machine and the PET materials in them are recycled, non-recyclable waste is disposed of in landfills, and the landfill process is connected to the Ecoinvent 3.9.1 database. Stage D – benefits and loads beyond the system boundary: includes reuse, recovery and/or recycling. We assume scrap waste PET replaces granulate PET.[1]
Product Average	Table 8 and Table 9

[1] What a Waste: A Global Review of Solid Waste Management. The World Bank. 2012.

Background data

Table 4 Data sources for the QuietBack Carpet Tile

Component	Material Description	Material Dataset	Data Source	Publication Date
QuietBack Carpet Tile Product Component				
Solution Dyed Nylon Filaments	Nylon 6	Nylon 6, glass-filled (Rest of world)	Ecoinvent 3.9.1	2022
Polyethylene Terephthalate non woven spunbond	Polyethylene terephthalate	Polyethylene terephthalate, granulate, amorphous (Rest of world)	Ecoinvent 3.9.1	2022
Aluminum Hydroxide	Aluminum hydroxide	Aluminum hydroxide (Rest of world)	Ecoinvent 3.9.1	2022
Styrene Butadiene Rubber Latex	PET, PA	Polyethylene terephthalate, granulate, amorphous (Rest of world)	Ecoinvent 3.9.1	2022
Calcium Carbonate	Calcium carbonate	Calcium carbonate, precipitated (Rest of world)	Ecoinvent 3.9.1	2022
Carbon Black	Carbon black	Carbon black (Global)	Ecoinvent 3.9.1	2022
Fume Silica	Silica fume	Silica fume, densified (Global)	Ecoinvent 3.9.1	2022
Recycled Polyethylene Terephthalate staple fiber	Polyethylene terephthalate(recycled)	Polyethylene terephthalate, granulate, bottle grade, recycled (Rest of world)	Ecoinvent 3.9.1	2022
Polyethylene Terephthalate staple low melting fiber	Polyethylene terephthalate	Polyethylene terephthalate, granulate, bottle grade (Rest of world)	Ecoinvent 3.9.1	2022
Hydrocarbon resin	C5 hydrocarbon	C3 hydrocarbon mixture (Rest of world)	Ecoinvent 3.9.1	2022
Polyolefin resin	Polyester resin	Polyester resin, unsaturated (Rest of world)	Ecoinvent 3.9.1	2022
Magnesium Hydroxide	Magnesium Hydroxide	Magnesium oxide (Rest of world)	Ecoinvent 3.9.1	2022
Transportation				
Netherland Freight to Thailand	Aircraft	Transport, freight, aircraft, unspecified (Global)	Ecoinvent 3.9.1	2022
China Freight to Thailand-Sea transport	Container ship	Market for transport, freight, sea, container ship (Global)	Ecoinvent 3.9.1	2022

Component	Material Description	Material Dataset	Data Source	Publication Date
Local Supplier Freight to Factory	Lorry	Transport, freight, lorry, unspecified (Rest of world)	Ecoinvent 3.9.1	2022
Korea Freight to Thailand	Container ship	Market for transport, freight, sea, container ship (Global)	Ecoinvent 3.9.1	2022
Packing				
Reuseable pallet plastic	HDPE	Market for polyethylene, high density, granulate (Global)	Ecoinvent 3.9.1	2022
Carton	Boxboard carton	Folding boxboard carton production (Rest of world)	Ecoinvent 3.9.1	2022
Card board	Corrugated board	Corrugated board box production (Rest of world)	Ecoinvent 3.9.1	2022
Honey Comb	Corrugated board	Corrugated board box production (Rest of world)	Ecoinvent 3.9.1	2022
Wooden Pallet	Wooden Pallet	Market for furniture, wooden (Global)	Ecoinvent 3.9.1	2022
Wooden Crate	Wooden Crate	Market for furniture, wooden (Global)	Ecoinvent 3.9.1	2022
Energy				
Grid Electricity	Electricity	Market for electricity, medium voltage (Thailand)	Ecoinvent 3.9.1	2022
Solar Electricity	Electricity production, solar	Electricity production, photovoltaic, 3 kWp slanted-roof Installation, multi-Si, panel, mounted (Thailand)	Ecoinvent 3.9.1	2022
Natural Gas	Natural gas	Natural gas production (Global)	Ecoinvent 3.9.1	2022
Water	Tap Water	Tap water production, conventional treatment (Rest of world)	Ecoinvent 3.9.1	2022
Waste treatment				
General waste to energy recovery	Waste incineration to produce electricity	Treatment of residue from mechanical treatment, industrial device, municipal waste incineration (Rest of world)	Ecoinvent 3.9.1	2022
Liquid waste	wastewater	Treatment of wastewater, average, wastewater treatment(Rest of world)	Ecoinvent 3.9.1	2022

Component	Material Description	Material Dataset	Data Source	Publication Date
Seconds to sale	Waste polyethylene terephthalate	Polyethylene terephthalate production, granulate, amorphous (Rest of world)	Ecoinvent 3.9.1	2022
Hazardous waste	Hazardous waste	Market for hazardous waste, for underground deposit (Rest of world)	Ecoinvent 3.9.1	2022

Data quality Assessment

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

Table 5 Data quality assessment for the QuietBack Carpet Tile product system

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are less than 2 years old (typically 2022 and 2021). All of the data used represented an average of at least one year's worth of data collection, and up to two years in some cases. Manufacturer-supplied data (primary data) are based on annualized production for 2022.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provides the best possible representation available with current data. Electricity use for product manufacture is modelled using representative data for Thailand. Surrogate data used in the assessment are representative of global or rest of world operations. Data representative of rest of world operations are considered sufficiently similar to actual processes. Data representing product disposal are based on regional statistics.
Technology Coverage: Specific technology or technology mix	For the most part, data is representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate.
Precision: Measure of the variability of the data values for each data expressed	Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the QuietBack Carpet Tile products. No known processes or activities contributing to more than 5% of the total environmental impact for each indicator are excluded.

Data Quality Parameter	Data Quality Discussion
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Different portions of the product life cycle are equally considered; however, it must be noted that final disposition of the product is based on assumptions of current practices in Australia.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.
Sources of the Data: Description of all primary and secondary data sources	Data representing energy use at the facility represent an annual average and are considered of high quality due to the length of time over which these data are collected. For secondary LCI datasets, Ecoinvent v3.9.1 LCI data are used.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the QuietBack Carpet Tile products and packaging is low. Actual supplier data for upstream operations was not available for all suppliers and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<3 years).

LCA Scenarios and Additional Technical Information

Product stage (A1-A3)

For raw and auxiliary materials both the transportation from their source countries to Thailand and their transportation distance from the local supplier warehouse to the factory are considered. The specific details are shown in the Table 6 below

Table 6 Details transportation of Acoufelt raw and auxiliary materials from their producing countries to Thailand

Material not supplied by local suppliers and are used in large quantities	Place of origin	Distance (km）	Way of Transportation
Solution Dyed Nylon Filaments	China	3000	container ship
Polyethylene Terephthalate non woven spunbond	China	3000	container ship
Styrene Butadiene Rubber Latex	Netherlands	9000	freight, aircraft
Aluminum Hydroxide (ATH)	China	3000	container ship
Polyethylene Terephthalate staple low melting fiber	Korea	3800	container ship
Hydrocarbon resin	China	3000	container ship
Magnesium Hydroxide	China	3000	container ship

EoL stage (C1 - C4, D)

The disposal stage includes demolition of the products (C1): These products can be disassembled manually, so no emissions are generated during demolition

Transport of the disassembled products to waste treatment facilities (C2): assumes a 50 km average distance to disposal, and transportation load assumes a 25 t truck. The data for waste transportation per tkm are obtained from Ecoinvent 3.9.1. The functional unit was defined as diesel trucks completing 1 tkm on the suburbs highway with 25 t load capacity.

Waste processing (C3): assumes that the disassembled product are broken up by machine and the PET in them are recycled. After checking the published EPD reports of the same type of products and related literature, it is assumed that the energy consumption of the machine for crushing each square meter of waste products is 0.2 kWh.

Waste disposal (C4): non-recyclable waste is disposed of in landfills, and the landfill process is modelled from the Ecoinvent 3.9.1 database. It represents the treatment of waste, including foundation sealing, leachate collection systems, leachate wastewater treatment plants.

Table 7 EoL parameters for QuietBack Carpet Tile products, per 1 m^2

Processes	Unit	QuietBack Carpet Tile
Collection Process	kg: collected separately	2.5
Transportation	km	50
Recovery System	kWh: for crushing	0.2
Recovery System	kg:recycling	1.66
Safe Disposal	kg: for final disposal	0.84

(D) : PET material is highly recyclable and it is assumed in this study that the PET component of the target product is recycled. Conservatively, the recovery rate for PET is assumed to be 5%, based on the recovery rate for *South East Asia - other* in the "What a Waste: A Global Review of Solid Waste Management", and 10% value correction factor of the recycled PET material is based upon empirical data. Loads includes scrap PET recycling in the end-of-life stage C1-C4, sealing, leachate collection systems, leachate wastewater treatment plants.

Product Average

The environmental impact category indicators are also reported based on the Environmental Footprint v3.1 characterization factors according to EN 15804.

Table 8 LCA impact indicators

Core environmental impact indicators		
Impact category	**Indicator**	**Unit**
Climate change - fossil	GWP-fossil	kg CO_2 eq
Climate change - biogenic	GWP-biogenic	kg CO_2 eq
Climate change - land use and land use change	GWP-luluc	kg CO_2 eq
Climate change – total	GWP-total	kg CO_2 eq
Ozone Depletion	ODP	kg CFC 11 eq.
Acidification	AP	mol H+ eq.
Depletion of abiotic resources -fossil fuels	ADP-fossil	MJ, net calorific value
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.
Eutrophication aquatic marine	EP-marine	kg N eq.
Eutrophication terrestrial	EP-terrestrial	mol N eq
Photochemical ozone formation	POCP	kg NMVOC eq.
Water use	WDP	m^3 world eq
Additional environmental impact indicators		
Impact category	**Indicator**	**Unit**
Particulate Matter emissions	PM	Disease incidence
Ionizing radiation, human health	IRP	kBq U235 eq
Eco-toxicity (freshwater)	ETP-fw	CTUe
Human toxicity, cancer effects	HTP-c	CTUh
Human toxicity, non-cancer effects	HTP-nc	CTUh
Land use related impacts/ Soil quality	SQP	dimensionless

Results of the Life Cycle Assessment are presented below.

Table 9 Cradle to Gate LCA results for 1 m^2 QuietBack Carpet Tile

QuietBack Carpet Tile		
Core environmental impact indicators	GWP	1.44E+01
	GWP-LU	1.28E-02
	GWP-Biogenic	1.04E+00
	GWP-Fossil	1.33E+01
	ADP-fossil	1.98E+02
	ADP-minerals and metals	7.81E-05
	WU	5.35E+00
	EP-freshwater	2.95E-03
	POFP	4.68E-02
	AP	5.82E-02
	EP-terrestrial	1.30E-01
	EP-marine	1.70E-02
	ODP	5.49E-06
Additional environmental impact indicators	ET-freshwater	5.97E+01
	HT-cancer	5.31E-09
	HT-non-cancer	1.08E-07
	SQP	4.76E+01
	PM	7.08E-07
	IR	1.96E-01

Information Modules

The LCA and EPD declare results for mandatory A1-A3, C1-C4 and D information modules as shown in Figure 2. Optional modules and stages A4-A5, B1-B7 are excluded and are marked Not Declared (ND). ND does not indicate zero inventory or impact results.

	Product			Construction		Use stage of building fabric and operation							End of life stage				Resource recovery stage
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Modules	✓	✓	✓	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	✓	✓	✓	✓	✓
Modelling	**Actual**			**Scenarios**													**Optional**

MND = Module not declared ✓= included

Figure 2 Phases and Stages Cradle to Gate

The description of life cycle stage A-D are as follows:

A1 Extraction and processing of raw materials for the QuietBack Carpet Tile products components.

A2 Transport of component materials to the manufacturing facilities

A3 Manufacturing of QuietBack Carpet Tile products and packaging

A4 Transport of product (including packaging) to the building site（ND）

A5 Install the product（ND）

B1 Use of the QuietBack Carpet Tile products in a building setting（ND）

B2 Maintenance of the usage phase（ND）

B3-B5 Repairing, replacing and refurbishing during the use phase (ND)

B6 Energy use during the use phase (ND)

B7 Water use during the use phase (ND)

C1 Disassembling of the products is accomplished using hand tools with no associated emissions and negligible impacts

C2 Transport of QuietBack Carpet Tile products to local recycling centre at end-of-life

C3 The disassembled product are broken up by machine and the PET in them is recycled.

C4 Disposal of remaining materials in the QuietBack Carpet Tile products to landfill.

D Recyclable material from C3

Cradle to Gate + Options Inventory

Table 10 Key life cycle inventory parameters for 1 m^2 QuietBack Carpet Tile using 20 years

Parameter	Units	A1-A3	C1	C2	C3	C4	D
Indicators describing resource use							
Non-renewable primary energy resources not feedstock	MJ	1.25E+02	0	3.34E-01	1.62E+00	5.75E-01	-
Non-renewable primary energy resources feedstock	MJ	7.00E+01	0	0.00E+00	0.00E+00	0.00E+00	-
Total Non-renewable primary energy resources	MJ	1.95E+02	0	3.34E-01	1.62E+00	5.75E-01	-
Renewable primary energy not feedstock	MJ	5.54E+00	0	4.29E-03	4.06E-03	2.69E-02	-
Renewable primary energy feedstock	MJ	8.26E+00	0	0.00E+00	0.00E+00	0.00E+00	-
Total Renewable primary energy	MJ	1.38E+01	0	4.29E-03	4.06E-03	2.69E-02	-
Use of secondary material	kg	6.19E-01	0	0.00E+00	0.00E+00	0.00E+00	-
Use of renewable secondary fuels	MJ	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	-
Use of non-renewable secondary fuels	MJ	7.29E-01	0	0.00E+00	0.00E+00	0.00E+00	-
Net use of fresh water	m3	3.54E-02	0	2.10E-05	3.22E-04	1.15E-04	-
Environmental information describing waste categories							
Hazardous waste	kg	6.00E-02	0	0.00E+00	0.00E+00	0.00E+00	-
Non-hazardous waste	kg	1.68E-01	0	0.00E+00	0.00E+00	1.66E+00	-
Radioactive waste disposed	kg	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	-
Environmental information describing output flows							
Components for re-use	kg	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.60E-02	0	0.00E+00	0.00E+00	8.40E-01	8.40E-01
Materials for energy recovery	kg	1.67E-01	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	1.74E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 11 LCIA results for 1 m^2 QuietBack Carpet Tile product in the production and waste phase cycle for 20 years use

QuietBack Carpet Tile	A1-A3	C1	C2	C3	C4	D
GWP-LU	1.28E-02	0.00E+00	1.24E-05	9.95E-06	3.62E-05	-9.09E-07
GWP	1.33E+01	0.00E+00	2.36E-02	9.85E-02	1.01E+00	-1.21E-03
GWP-Biogenic	1.14E-01	0.00E+00	6.23E-06	1.17E-05	9.24E-01	-1.78E-06
GWP-Fossil	1.31E+01	0.00E+00	2.36E-02	9.85E-02	9.01E-02	-1.20E-03
ADP-fossil	1.95E+02	0.00E+00	3.34E-01	1.62E+00	5.75E-01	-2.76E-02
ADP-minerals and metals	7.79E-05	0.00E+00	7.66E-08	3.87E-08	1.04E-07	-9.24E-09
WU	5.33E+00	0.00E+00	1.59E-03	8.58E-03	5.26E-03	-5.76E-04
EP-freshwater	2.92E-03	0.00E+00	1.93E-06	1.93E-06	2.64E-05	-2.42E-07
POFP	4.59E-02	0.00E+00	7.80E-05	2.16E-04	6.13E-04	-4.20E-06
AP	5.78E-02	0.00E+00	5.83E-05	1.05E-04	2.85E-04	-5.21E-06
EP-terrestrial	1.29E-01	0.00E+00	1.46E-04	3.64E-04	8.08E-04	-1.05E-05
EP-marine	1.39E-02	0.00E+00	1.42E-05	3.36E-05	2.97E-03	-1.01E-06
ODP	5.49E-06	0.00E+00	3.71E-10	3.91E-09	5.88E-10	-5.69E-09
ET-freshwater	5.52E+01	0.00E+00	1.81E-01	9.54E-02	4.29E+00	-3.92E-03
HT-cancer	5.23E-09	0.00E+00	1.07E-11	1.31E-11	5.35E-11	-4.70E-13
HT-non-cancer	1.06E-07	0.00E+00	2.41E-10	1.42E-10	2.44E-09	-1.22E-11
SQP	4.64E+01	0.00E+00	2.01E-01	2.37E-02	9.91E-01	-2.70E-03
PM	7.02E-07	0.00E+00	1.76E-09	4.20E-10	3.71E-09	-5.68E-11
IR	1.93E-01	0.00E+00	2.86E-04	2.95E-04	2.11E-03	-5.21E-05

Interpretation

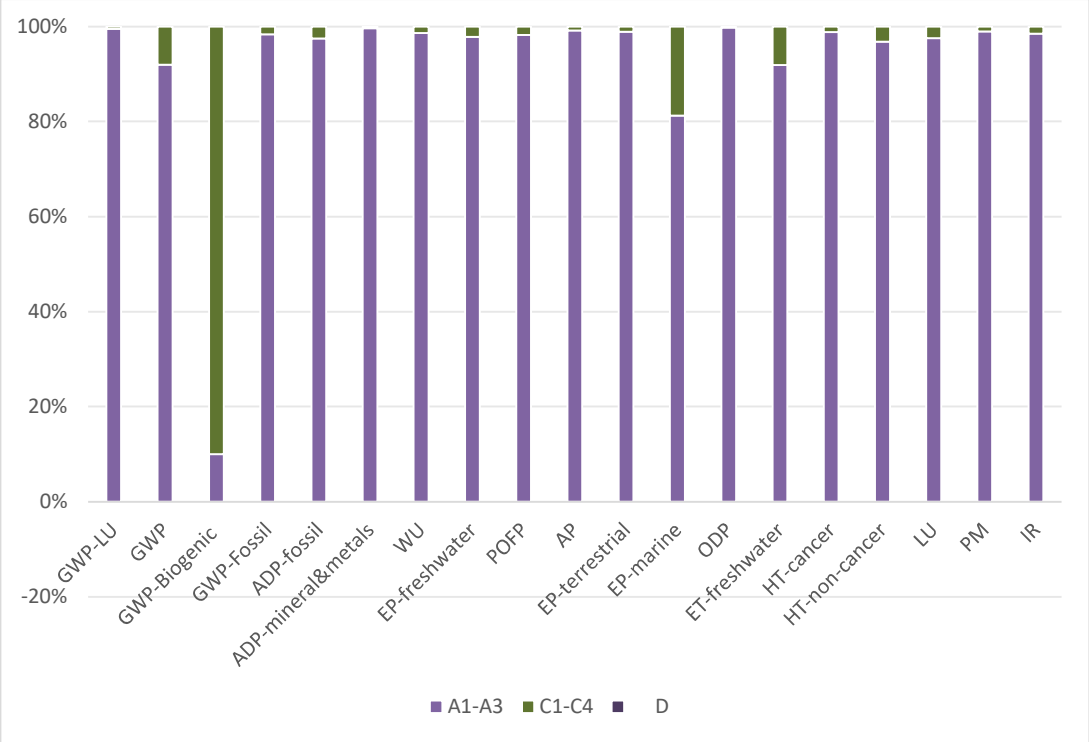

Figure 3 QuietBack Carpet Tile product each stage contribution to LCA results

Description of Interpretation

Shown in Figure 3 under the 20-year service life assumption, the A1-A3 manufacturing module presents the highest proportion of total environmental impacts for all indicators in the modelled life-cycle modules (A1-A3, C1-C4 and D) except GWP-Biogenic. GWP-Biogenic is higher in C1-C4 than A1-A3 because conventional landfill of domestic waste will product greenhouse gas emissions, such as methane, which has an impact on GWP-biogenic. This has been determined by the background database Ecoinvent 3.9.1's treatment of municipal solid waste.

In Module D, although recycled materials are present, the environmental benefits of recycled materials are not obvious because the PET material quality correction factor is assumed to be only 10% and the recovery rate for PET is assumed to be 5%.

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