EPD™

Environmental Product Declaration

Global GreenTag EPD Program:

Compliant to EN15804+A2 2019

Vertilux Corporation Pty Ltd

Euroview® Transparent Blind Fabric

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vertilux®

Mandatory Disclosures

EPD type	Cradle to grave A1 to C4 + D	**EPD Numbers**	VER TR02 2022EP
Issue Date	15 February 2023	**Valid Until**	15 February 2028

Demonstration of Verification	
PCR	Standard EN 15804+A2 2019 serves as core Product Category Rules (PCR) [1]. Sub PCR 2022 TEX V1 also applies [2].
☑ Internal	14 Feb 2014 — LCA Developed by Delwyn Jones, The Evah Institute 15 Feb 2022 — LCA Reviewed by Direshni Naiker Ecquate Pty Ltd 22/07/2024 — EPD Reviewed by David Baggs, Global GreenTag Pty Ltd
☑ External	15 02 2023 — Third Party Verifier[a] Mathilde Vlieg Malaika LCT a. Independent external verification of the declaration and data, mandatory for business-to-consumer communication according to ISO 14025:2010 [2].
Communication	This EPD discloses potential environmental outcomes compliant with EN 15804 for business-to-business communication.
Comparability	Construction product EPDs may not be comparable if not EN15804 compliant. Different program EPDs may not be comparable. Comparability is further dependent on the product category rules and data source used.
Reliability	LCIA results are relative expressions that do not predict impacts on category endpoints, exceeding of thresholds, safety margins or risks.
Owner	This EPD is the property of the declared manufacturer.
Explanations	Further explanatory information is available at info@globalgreentag.com or by contacting certification1@globalgreentag.com [3].

EPD Program Operator	**LCA and EPD Producer**	**Declaration Owner**
Global GreenTag Pty Ltd	Ecquate Pty Ltd	Vertilux Corporation Pty Ltd
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Program Description

EPD Scope	Cradle to grave A1 to C4 + D as defined by EN 15804 [1]
System boundary	The system boundary with nature includes material and energy acquisition, processing, manufacture, transport, installation, use plus waste arising.to end of life.
Stages included	Operations A1 to D3
Stages excluded	No operation was excluded but no flows arose in modules B4, B5, B6, B7 and C3.
Information Modules	Figure 1 depicts all modules being declared including some with zero results. Any module not declared (MND) does not indicate a zero result.

Model	**Actual**					**Scenarios**											**Potential**		
Information	Building Life Cycle Assessment																Supplementary		
Stages	Product			Construct		Use							End-of-Life				Benefit & load beyond system		
Modules						Fabric					Operation								
Unit Operations	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D1	D2	D3
Cradle to grave phases	Resources	Transport	Manufacture	Transport	Construct	Use	Maintain	Repair	Replace	Refurbish	Energy use	Water use	Demolish	Transport	Process Waste	Disposal	Reuse	Recovery	Recycling

Figure 1 EPD Life Cycle Modules Cradle to Grave

Data Sources

Primary Data	Data is from primary sources 2017 to 2022 including the manufacturer and suppliers' standards, logistics, technology, market share, management system in accordance with EN ISO 14044:2006, 4.3.2 [4]. All are physically allocated not economically allocated.
A1-A3 Stage inclusions	Operations include all known raw material acquisition, refining and processing plus scrap or material reuse from prior systems; electricity generated from all sources with extraction, refining & transport plus secondary fuel energy and recovery processes. Also, transport to factory gate; manufacture of inputs, ancillary material, product, packaging, maintenance, replacement plus flows leaving at end-of-waste boundary and fates of all flows at end of life
Variability	Significant differences of average LCIA results are declared.
Chemicals of Concern	Contains no substances in the European Chemicals Agency "Authorised or Candidate Lists of Substances of Very High Concern (SVHCs)".

Data Quality

Data cut-off & quality criteria complies with EN 15804 [1] The LCA used background data aged <10 years and quality parameters tabled below.

Background	**Data Quality**	**Parameters and Uncertainty (U)**			
Correlation	**Metric σg**	U ±0.01	U ±0.05	U ±0.10	U ±0.20
Reliability	**Reporting**	Site Audit	Expert verify	Region	Sector
	Sample	>66% trend	>25% trend	>10% batch	>5% batch
Completion	**Including**	>50%	>25%	>10%	>5%
	Cut-off	0.01%w/w	0.05%w/w	0.1%w/w	0.5%w/w
Temporal	**Data Age**	<3 years	≤5 years	<7.5 years	<10 years
	Duration	>3 years	<3 years	<2 years	1 year
Technology	**Typology**	Actual	Comparable	In Class	Convention
Geography	**Focus**	Process	Line	Plant	Corporate
	Range	Continent	Nation	Plant	Line
	Jurisdiction	Representation is Global. Africa, North America, Europe, Pacific Rim			

System Analysis Scope and Boundaries

Stages A1 to 3 model actual operations. Stage A4 to C4 are model scenarios.

Typical scenarios are assumed to forecast unit operations as described in the next section.

Figure 2. shows included processes in a cradle to grave system boundary to end of life fates reuse, recycling, or landfill grave beyond the boundary.

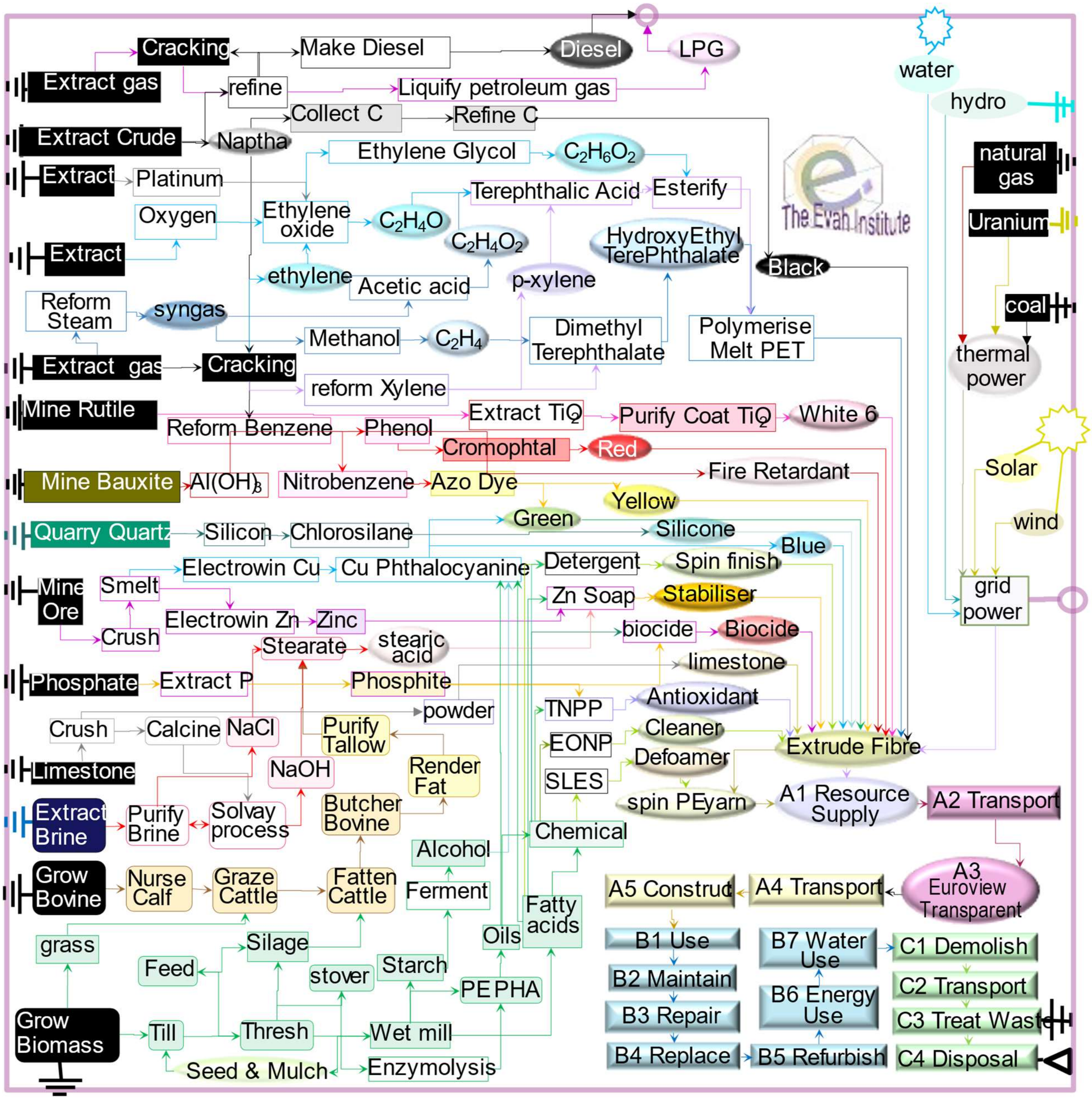


Figure 2. Product Process Flow Chart

Environmental Impact Terminology

Environmental impacts contributing to risks of social and ecological issues and collapse are tabled below with common names and remedies given for each indicator.

Global warming forcing Climate Change	Greenhouse gases absorb infra-red radiation. This heat reduces thermal energy differentials, from equator to poles, forcing ocean current and wind circulation to blend and regulate climate. Weakly blended "lumpier" weather has more frequent, extreme heat wave, fire-storm, cyclone, rain-storm, flood and blizzard events. Accumulation of carbon dioxide, natural gas methane, nitrous oxides and volatile organic compounds from burning fossil fuels causes global warming. Forest and wilderness growth absorbing air-borne carbon in biomass can drawdown such accumulation. Urgent renewable energy reliance is vital in time to avoid imminent tipping points and the worsening "***climate emergency***".
Ozone layer depletion	Stratospheric ozone loss weakens the planet's solar shield so more shorter wavelength ultraviolet (UVB) light reaching earth damages plants and increases malignant melanoma and skin cancer in humans and animals. Chlorofluorocarbons, hydrochlorofluorocarbons (HCFC), chlorobromomethane, hydrobromofluorocarbons, carbon tetrachloride, methyl chloroform, methyl bromide and halon gas cause ozone layer loss. To repair the "***ozone hole***" reliance on ozone-safe refrigerants, aerosols and solvents is essential to avoid further its depletion and enable accumulation of naturally-formed ozone.
Acidification	Acidification reduces soil and waterway pH, impedes nitrogen fixation vital for plant growth and inhibits natural decomposition. It increases rates and incidence of fish kills, forest loss and deterioration of buildings and materials. Chief synthetic causes of "***acid rain***" are emissions of sulphur and nitrogen oxides, hydrochloric and hydrofluoric acids and ammonia from burning fossil fuels polluting precipitation of rain and snow world-wide.
Eutrophication of terrestrial, freshwater and marine life	Eutrophication from excessively high macronutrient levels added to natural waters promotes excessive plant growth that severely reduces oxygen, water and habitat security for aquatic and terrestrial organisms across related ecosystems. Chief synthetic cause of "***algal blooms***" is nitrogen (N, NOx, NH_4) and phosphorus (P, PO_4^{3-}) in rain run-off over-fertilised land catchments.
Photochemical ozone creation	Tropospheric photochemical ozone, called "***summer smog***" near ground level, is created from natural and synthetic compounds in UV sunlight. Low concentration smog damages vegetation and crops. High concentration smog is hazardous to human health. Chief synthetic causes are nitrogen oxides, carbon monoxide and volatile organic compounds (VOC) pollutants. Avoiding reliance on dirtiest coal fuel and volatile chemicals has reduced smog incidence in many areas globally.
Depletion of minerals, metals & water	Abiotic depletion of finite mineral resources increases time, effort and money required to obtain more resources to the point of extinction of naturally viable reserves. This can limit access to available, valuable and scarce elements vital for human-life. The youth movement "***extinction rebellion***" calls on adults to secure climate, reserves and biodiversity for current and future generations.
Depletion of fossil fuel reserves	Abiotic depletion of resources by consuming finite oil, natural gas, coal and yellowcake fossil fuel reserves leaves current and future generations suffering limited available, accessible, plentiful, essential valuable as well as scarce raw material, medicinal, chemical, feedstock and fuel stock. Approaching "***peak oil***" acknowledged fossil fuel reserves are finite and the need for decision-makers to act to avoid market instability, insecurity and or oil and gas wars.

Glossary of Terms, Methods and Units

Acronyms, methods and units of impact potentials plus inventory inputs and outputs, are defined below

Impact Potentials	Acronym	Description of Methods	Units
Climate Change fossil	GWP_{ff}	GWP fossil fuels [7]	kg CO_{2eq}
Climate Change biogenic	GWP_{bio}	GWP biogenic [7]	kg CO_{2eq}
Climate Change land use	GWP_{luluc}	GWP land use & change [7]	kg CO_{2eq}
Climate Change total	GWP_{t}	Global Warming Potential [7]	kg CO_{2eq}
Stratospheric Ozone Depletion	ODP	Stratospheric Ozone Loss [8]	kg CFC_{11eq}
Photochemical Ozone Creation	POCP	Summer Smog [9]	kg $NMOC_{eq}$
Acidification Potential	AP	Accumulated Exceedance [10]	mol H^{+}_{eq}
Eutrophication Freshwater	EP_{fresh}	Excess nutrients freshwater [11]	kg P_{eq}
Eutrophication Marine	EP_{marine}	Excess marine nutrients [11]	kg N_{eq}
Eutrophication Terrestrial	EP_{land}	Excess Terrestrial nutrients [11]	mol N_{eq}
Mineral & Metal Depletion	ADP_{min}	Abiotic Depletion minerals [12]	kg Sb_{eq}
Fossil Fuel Depletion	ADP_{ff}	Abiotic Depletion fossil fuel [13]	MJ_{ncv}
Water Depletion	WDP	Water Deprivation Scarcity [14, 15]	$m^3_{WDP\ eq}$
Fresh Water Net	FW	Lake, river, well & town water	m^3
Secondary Material	SM	Post-consumer recycled (PCR)	kg
Secondary Renewable Fuel	RSF	PCR biomass burnt	MJ_{ncv}
Primary Energy Renewable Material	PERM	Biomass retained material	MJ_{ncv}
Primary Energy Renewable Not Feedstock	PERE	biomass fuels burnt	MJ_{ncv}
Primary Energy Renewable Total	PERT	Biomass burnt + retained	MJ_{ncv}
Secondary Non-renewable Fuel	NRSF	PCR fossil-fuels burnt	MJ_{ncv}
Primary Energy Non-renewable Material	PENRM	Fossil feedstock retained	MJ_{ncv}
Primary Energy Non-renewable Not Feedstock	PENRE	fossil-fuel used or burnt	MJ_{ncv}
Primary Energy Non-renewable Total	PENRT	Fossil feedstock & fuel use	MJ_{ncv}
Hazardous Waste Disposed	HWD	Reprocessed to contain risks	kg
Non-hazardous Waste Disposed	NHWD	Municipal landfill facility waste	kg
Radioactive Waste Disposed	RWD	Mostly ex nuclear power stations	kg
Components For Reuse	CRU	Product scrap for reuse as is	kg
Material For Recycling	MFR	Factory scrap to remanufacture	kg
Material For Energy Recovery	MER	Factory scrap use as fuel	kg
Exported Energy Electrical	EEE	Uncommon for building products	MJ_{ncv}
Exported Energy Thermal	EET	Uncommon for building products	MJ_{ncv}

Product Information

This section provides data required to calculate assessment results factoring different mass and periods.

Brand Name & Code	Euroview® Transparent
Range Names	Transparent blind fabric
Factory warranty	7 years internal use only
Manufacturer, site address & site representation	Textile cutting and dispatch by Verotex AG, Germany 95236 Stammbach. Dyeing: Textilveredlung Drechsel GmbH Lohmuehle 1 Germany95100 Selb. Fabric: SR Webatex GmbH Tunnelstr. 6 Germany-95448 Bayreuth.
Application	Window Coverings
Function in Building	Glare and light control designed for interior dry areas of all buildings
Declared unit	1 kg 0.38mm thick 3m wide Euroview™ Transparent 130 grams/m² blind fabric
Functional unit	20 years use of a kilogram of Euroview™ Transparent blind fabric

Product Components

This section summarises factory components, functions, source nation and % mass share. In product content listed below the % mass has a ±5% range and a confidence interval that is 90% certain to contain true population means at any time. Listing such 90±5% certainty considers normal resource acquisition, supply chain, sedimentation, seasonal, manufacturing and product colour variation over this EPD's 5-year validity period. This also allows for intellectual property protection whilst ensuring fullest possible transparency.

Function	Component	Source	Amount
Fabric	Polyester	Germany	>89 <91
White pigment	Titanium Dioxide	Europe	>3.6 <4.0
Vehicle	Melamine copolymer	Europe	>3.1 <3.2
Colours & black	Organic pigment	Germany	>1.3<1.4
Plasticiser	Dioctyl phthalate	Germany	>1.2 <1.3
Solubiliser	C9 & C10 fatty acids	Global	>1.2 <1.3
Antioxidant	Dimethylheptan3yl phenol	Europe	>1.2 <1.3
Fire retarder	Nonyl Phenyl Phosphite	Europe	>0.3 <0.5
Biocide	Nano Silver	Global	>0.1<0.2
Packing			
Forms & packing	Cardboard and paper	Germany	>20 <28
Caps & wrapping	Polyethylene	Germany	>0.5 <0.7
Pallets	Wood	Germany	>0.5 <0.6
Strapping	Polypropylene	Germany	>0.2 <0.4

Product Functional & Technical Performance Information

This section provides manufacturer specifications and additional information

Specifications	https://www.vertilux.com.au/blind_fabrics/euroview-transparent/
Practices Reference	http://www.vertilux.com.au/materials/blind-fabrics
Installation Process	http://www.blindsinstallationguide.com.au
Practicality	A transparent open weave high quality 100% Trevira CS fabric designed to reduce light glare and harmful UV rays.
Fire Classification	AWTA AS1530.2 1993, AWTA AS1530.3 1993, AWTA AS3837 1998, German Standard DIN 4102 – B1 and French Standard: M1
Emissions	Volatile Organic Compound (VOC) ASTM D5116 and 100% Trevira CS Free of PVC, Formaldehyde and Halogen
Durability	Oeko-Tex Certified DIN EN ISO 105 B2: 6 - 7 Excellent Lightfastness 5+

Scenarios for Modules

This section defines modelling stages scenarios A4 to D3 beyond actual operations in module A1 to A3.

A4 Transport to Site	Type specified	Amount	Type specified	Amount
Intercity road trucking	2t to 5t vans	220 km	85% Capacity	Full back load
Long distance road trucking	25t semi-trailer	600 km	85% Capacity	Full back load
Continental freight rail	Diesel train	600 km	85% Capacity	Full back load
Global container shipping	Factory to CBD	1,200km	85% Capacity	Full back load
Volume capacity (<1 to ≥1)	Utilisation factor	1	Uncompressed	Un-nested
A5 Installation				
Utilities used	Grid Power	0.0042MJ	Town water	Nil
Emissions	VOCs indoors	Nil		
Waste on site	Scrap Trim	5%	Scrap Fate	Landfill
Emissions	From landfill	All known		
Collection	Council site bins	0.05 kg	Landfill route	50km no return
All packaging	As declared	kg	Energy recovery	nil
Pack waste collection	Council site bins	0.0004kg	Landfill route	50km no return
Pack scrap recycled	Council site bins	0.003kg	To Recycler	50km no return

Modules B1 Use of building fabric, B4 Replacement, B5 Refurbishment, B6 Operating Energy and B7 Operating Water each have zero flows. Scenarios for Building B2 and B3 are listed below.

2 Maintenance	Type specified	Amount	Type specified	Amount
Maker's specified process	URL declared	Specified	Clean cycle	Annual
Vacuum cleaning energy	Annually	0.007MJpa	Power mix	National grid
B3 Repair	Damaged	5%	Maker's process	As per website
New Product	As manufactured	5%	Freight to site	5% A5
Scrap	Fate landfill	0.025kg	Recyling	0.025kg
Energy input & source	No excess	Nil	Packaging	5% A5

Module C3 Waste Treatment has zero flows. End of Life scenarios C1, C2 and C4 are listed below.

C1 Demolition	Type specified	Amount	Type specified	Amount
Operation	remove damaged	5%	Collection	Separate
Collection process	In site waste	5%	Separate to reuse	0
C2 Transport	25t truck road	50km	85% capacity	No back load
C4 Disposal	Product specific	0.025kg	Collect separately	0.025kg
Typical Scenario	Damaged to landfill	2.5%	All emissions	mass share
Recovery system	Recycling	2.5% kg	Not for energy	0.0 kg

Scenarios for modules D1Reuse, D2 Recovery and D3 Recycling are listed below.

D Beyond System Boundary

D1 Reuse	Type specified	Amount	Type specified	Amount
Typical performance	Fit for purpose	95%	Reuse in place	0.95kg
D2 Recovery	Surface Vacuum	95%	Clean in place	0.95kg
D3 Recycle	Take back	2.5%	Clean fibre	0.025kg

Module A1 to A5 Results

Table 1 shows results from A1 Resources, A2 Transport, A3 Manufacture, A4 Transport to A5 Construction.

Table 1 A1-3 to A5 Impact & Inventory Results/Functional Unit

Result	A1-3	A4	A5
Climate Change biogenic	-0.79	-1.0E-06	-3.5E-02
Climate Change luluc	6.7E-05	2.8E-09	3.0E-06
Climate Change fossil	13	0.17	0.58
Climate Change total	12	0.17	0.55
Stratospheric Ozone Depletion	1.0E-07	2.9E-13	5.7E-09
Photochemical Ozone Creation	4.5E-02	9.3E-04	2.1E-03
Acidification Potential	1.8E-02	9.0E-05	8.1E-04
Eutrophication Freshwater	5.2E-06	2.1E-09	2.2E-07
Eutrophication Marine	3.6E-03	1.7E-05	1.7E-04
Eutrophication Terrestrial	1.5E-02	5.5E-05	7.0E-04
Fossil Depletion	12	0.20	0.55
Mineral and Metal Depletion	1.5E-03	1.1E-05	7.4E-05
Water Scarcity Depletion	0.32	1.6E-05	1.4E-02
Net Fresh Water Use	2.0	1.0E-04	8.9E-02
Secondary Material	0.49	4.7E-06	2.2E-02
Secondary Renewable Fuel	2.5	0	0.11
Primary Renewable Material	8.9	3.7E-03	0.39
Primary Energy Renewable Not Feedstock	7.7	5.1E-04	0.35
Primary Energy Renewable Total	19	4.2E-03	0.85
Secondary Non-renewable Fuel	1.5	1.1E-03	0.06
Primary Energy Non-renewable Material	82	0.97	3.6
Primary Non-renewable Energy Not Feedstock	144	1.6	6.5
Primary Energy Non-renewable Total	226	2.6	10
Hazardous Waste Disposed	1.4E-02	3.3E-04	6.2E-04
Non-hazardous Waste Disposed	0.86	2.9E-03	6.0E-02
Radioactive Waste Disposed	1.5E-15	1.7E-31	7.2E-17
Components For Reuse	0	0	0
Material For Recycling	0.25	1.0E-05	1.4E-02
Material For Energy Recovery	1.1E-03	3.4E-07	5.0E-05
Exported Energy Electrical	0	0	0
Exported Energy Thermal	0	0	0

Module B1 to B7 Results

Table 2 shows results for B1 Use, B2 Maintain, B3 Repair, B4 Replace, B5 Refurbish, B6 Energy Use to B7 Water Use.

Table 2 B1 to B7 Impact & Inventory Results/Functional Unit

Result	B1	B2	B3	B4	B5	B6	B7
Climate Change biogenic	0	-2.60E-04	-4.4E-04	0	0	0	0
Climate Change luluc	0	4.10E-07	3.0E-06	0	0	0	0
Climate Change fossil	0	0.05	0.58	0	0	0	0
Climate Change total	0	4.5E-02	0.55	0	0	0	0
Stratospheric Ozone Depletion	0	2.1E-15	5.7E-09	0	0	0	0
Photochemical Ozone Creation	0	2.4E-04	2.1E-03	0	0	0	0
Acidification Potential	0	1.1E-04	8.1E-04	0	0	0	0
Eutrophication Freshwater	0	1.3E-11	2.2E-07	0	0	0	0
Eutrophication Marine	0	2.0E-05	1.7E-04	0	0	0	0
Eutrophication Terrestrial	0	1.5E-04	7.0E-04	0	0	0	0
Fossil Depletion	0	2.8E-02	0.55	0	0	0	0
Mineral and Metal Depletion	0	2.2E-10	7.4E-05	0	0	0	0
Water Scarcity Depletion	0	4.1E-07	1.4E-02	0	0	0	0
Net Fresh Water Use	0	2.8E-09	8.9E-02	0	0	0	0
Secondary Material	0	2.6E-04	2.2E-02	0	0	0	0
Secondary Renewable Fuel	0	1.2E-03	0.11	0	0	0	0
Primary Renewable Material	0	5.2E-08	0.39	0	0	0	0
Primary Energy Renewable Not Feedstock	0	2.7E-02	0.35	0	0	0	0
Primary Energy Renewable Total	0	2.7E-02	0.85	0	0	0	0
Secondary Non-renewable Fuel	0	1.6E-08	6.3E-02	0	0	0	0
Primary Energy Non-renewable Material	0	8.4E-03	3.6	0	0	0	0
Primary Non-renewable Energy Not Feedstock	0	0.5	6.5	0	0	0	0
Primary Energy Non-renewable Total	0	0.51	10	0	0	0	0
Hazardous Waste Disposed	0	8.0E-04	6.2E-04	0	0	0	0
Non-hazardous Waste Disposed	0	0.32	4.3E-02	0	0	0	0
Radioactive Waste Disposed	0	8.3E-16	7.2E-17	0	0	0	0
Components For Reuse	0	0	0	0	0	0	0
Material For Recycling	0	6.0E-02	1.2E-02	0	0	0	0
Material For Energy Recovery	0	1.0E-04	5.0E-05	0	0	0	0
Exported Energy Electrical	0	0	0	0	0	0	0
Exported Energy Thermal	0	0	0	0	0	0	0

Module C1 to C4 Results

Table 3 shows results for C1 Demolish, C2 Transport, C3 Process waste and C4 Disposal at end of life.

Table 3 C1 to C4 Impact & Inventory Results/Functional Unit

Result	C1	C2	C3	C4
Climate Change biogenic	-1.1E-04	-1.0E-06	0	-5.6E-07
Climate Change luluc	1.7E-07	1.4E-09	0	1.7E-10
Climate Change fossil	1.9E-02	6.1E-03	0	1.2E-03
Climate Change total	1.9E-02	6.1E-03	0	1.2E-03
Stratospheric Ozone Depletion	9.0E-16	1.1E-13	0	1.8E-14
Photochemical Ozone Creation	1.0E-04	6.0E-05	0	2.8E-05
Acidification Potential	4.6E-05	5.1E-06	0	3.6E-06
Eutrophication Freshwater	5.7E-12	3.1E-10	0	5.2E-11
Eutrophication Marine	8.5E-06	9.5E-07	0	6.6E-07
Eutrophication Terrestrial	6.2E-05	3.4E-06	0	1.3E-06
Fossil Depletion	1.2E-02	7.5E-03	0	1.4E-03
Mineral and Metal Depletion	9.5E-11	4.0E-06	0	8.0E-07
Water Scarcity Depletion	8.5E-07	1.4E-06	0	1.2E-06
Net Fresh Water Use	5.2E-06	8.7E-06	0	7.5E-06
Secondary Material	2.2E-04	2.2E-06	0	3.0E-07
Secondary Renewable Fuel	5.3E-04	2.2E-06	0	6.8E-07
Primary Renewable Material	2.2E-08	0	0	2.6E-04
Primary Energy Renewable Not Feedstock	1.1E-02	0	0	1.9E-05
Primary Energy Renewable Total	1.1E-02	1.6E-03	0	2.8E-04
Secondary Non-renewable Fuel	6.7E-09	2.1E-04	0	7.8E-05
Primary Energy Non-renewable Material	3.6E-03	1.8E-03	0	7.2E-03
Primary Non-renewable Energy Not Feedstock	2.1E-01	4.8E-04	0	1.2E-02
Primary Energy Non-renewable Total	2.2E-01	3.7E-02	0	1.9E-02
Hazardous Waste Disposed	1.0E-06	1.2E-05	0	2.4E-06
Non-hazardous Waste Disposed	5.4E-05	9.7E-05	0	5.0E-02
Radioactive Waste Disposed	9.2E-37	8.5E-32	0	1.1E-32
Components For Reuse	0	0	0	0
Material For Recycling	2.9E-04	4.6E-06	0	1.5E-01
Material For Energy Recovery	2.1E-12	1.5E-07	0	2.4E-08
Exported Energy Electrical	0	0	0	0
Exported Energy Thermal	0	0	0	0

Module D1 to D4 Results Beyond System Boundaries

Table 4 shows results Beyond System Boundaries for phases D1 Reuse, D2 Recovery to D3 Recycle.

Table 4 D1 to D4 Impact & Inventory Results/Functional Unit

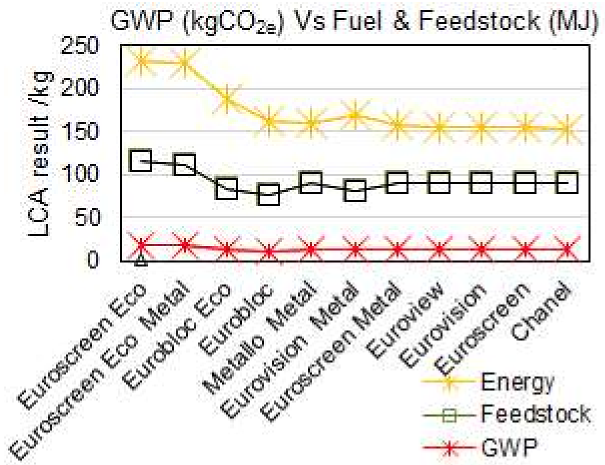
Result	D1	D2	D3
Climate Change biogenic	-4.8E-02	-1.8E-05	-1.3E-03
Climate Change luluc	7.2E-06	1.8E-09	5.2E-07
Climate Change fossil	3.3	2.5E-04	0.16
Climate Change total	3.2	2.3E-04	0.15
Stratospheric Ozone Depletion	3.2E-08	5.9E-13	2.3E-09
Photochemical Ozone Creation	1.2E-02	1.0E-06	7.2E-04
Acidification Potential	4.6E-03	4.4E-07	3.5E-04
Eutrophication Freshwater	5.8E-07	1.2E-10	6.8E-09
Eutrophication Marine	9.6E-04	7.7E-08	7.8E-05
Eutrophication Terrestrial	2.6E-03	5.2E-07	2.1E-04
Fossil Depletion	3.03	1.5E-04	1.2E-01
Mineral and Metal Depletion	4.5E-04	5.7E-08	4.1E-05
Water Scarcity Depletion	8.4E-02	1.8E-05	1.6E-03
Net Fresh Water Use	5.2E-01	1.1E-04	1.0E-02
Secondary Material	6.4E-01	0	3.3E-02
Secondary Renewable Fuel	0.13	4.2E-05	1.5E-03
Primary Renewable Material	0.13	2.0E-04	6.0E-03
Primary Energy Renewable Not Feedstock	1.7	2.3E-04	0.2
Primary Energy Renewable Total	2	4.7E-04	0.21
Secondary Non-renewable Fuel	0.35	7.7E-06	1.5E-03
Primary Energy Non-renewable Material	21	3.2E-04	0.14
Primary Non-renewable Energy Not Feedstock	38	2.4E-03	1.9
Primary Energy Non-renewable Total	58	2.7E-03	2
Hazardous Waste Disposed	3.5E-03	1.9E-07	1.5E-04
Non-hazardous Waste Disposed	0.21	2.0E-05	1.4E-02
Radioactive Waste Disposed	4.1E-16	4.9E-21	4.3E-17
Components For Reuse	0	0	0
Material For Recycling	6.2E-03	1.5E-05	5.9E-04
Material For Energy Recovery	2.7E-04	6.5E-09	3.3E-06
Exported Energy Electrical	0	0	0
Exported Energy Thermal	0	0	0

Interpretation

This interpretation discusses product results cradle to grave.

Figure 3 shows A1 to A3 GWP results which are most sensitive to recycled then primary Polyester content.

Figure 4 shows A1 to A3 Acidification (AP), Marine Eutrophication (EP_{Mar}) and Terrestrial (EP_{Terra}) results /kg product which is most sensitive to recycled then primary Polyester content.



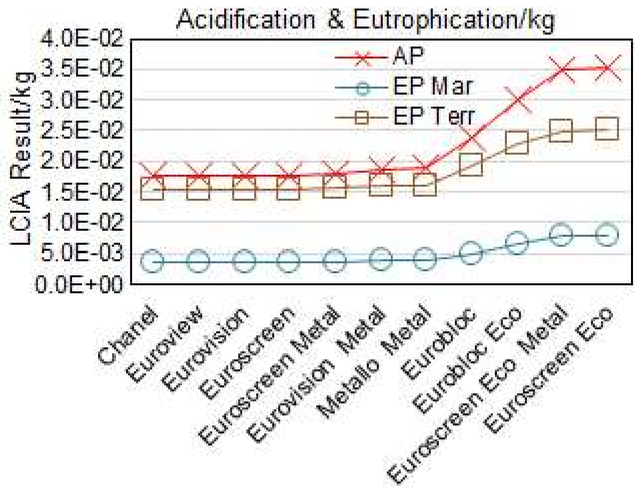
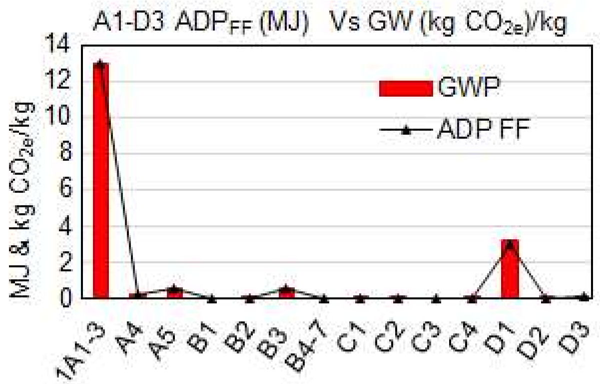


Figure 3 A1-A3 Component & EE% share//kg

Figure 4 A1-A3 GWP Vs ADP FF/kg A1 to D3

Figure 5 shows GWP and Abiotic Depletion of Fossil Fuel (ADP FF) /kg product. Figure 6 shows AP, EP_{Mar} and GWP/kg product. Both Figures show most damages from A1-A3 with insignificant results from other phases, until D1 reuse beyond the system boundary typically replacing 5% worn fabric with the same new product.



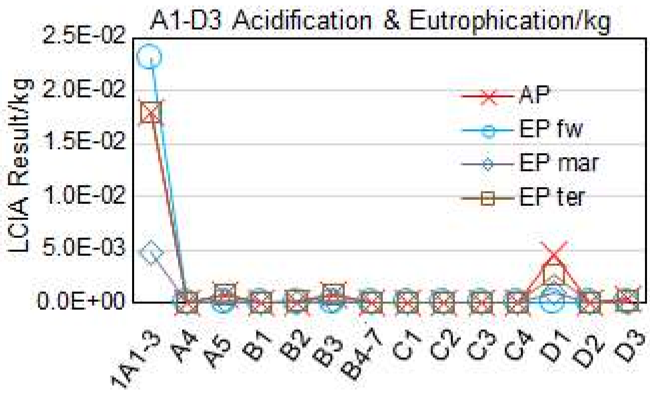


Figure 5 GWP Vs ADPFF /kg A1 to C4

Figure 6 AP & EP/kg A1 to C4

Module D Beyond System Boundary results show typical D1 Reuse of 95% of intact product for 40 more years. Over a 60-year building life such reuse reduces all impacts >95%/kg.

Subsequently as most remain unchanged over built life no significant damages arise for phases A4 to C4.

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