EPD™

Environmental Product Declaration

Global GreenTag^CertTM EPD Program

Compliant to EN 15804:2012+A1 2013

Heterogeneous Flooring

Forest fx PUR

Teesside Manufacturing Fleck Way, Teesside Industrial Estate Thornaby-on-Tees TS17 9JZ UK

POLYFLOR™

COVERING THE WORLD

Compliant to EN 15804:2012 +A1 2013 ISO 14025 ISO 21930

Heterogeneous Flooring

Forest fx PUR

EPD Verification and LCA Details

EPD Scope	Cradle to Gate
EPD Number	PLF H3 2021EP
Issue Date	10th August 2021
Valid Until	10th August 2026

Demonstration of Verification

CEN standard EN 15804 serves as the core Product Category Rules (PCR)

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

☒ External — Third Party Verifier [a] Shloka Ashar, Sustainability Consultant
LCA Reviewed by Shloka Ashar, Sustainability Consultant

☒ Internal — EPD Reviewed by David Baggs, Global GreenTag Pty Ltd

a: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

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. Further explanatory information is found at info@globalgreentag.com or contact: certification1@globalgreentag.com.

This EPD discloses potential environmental outcomes compliant with EN 15804 for business-to-business communication.

LCIA results are relative expressions that do not predict impacts on category endpoints, exceeding of thresholds, safety margins or risks.

EPD Program Operator	LCA and EPD Producer	Declaration Owner
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Product Information

Product name	Polyflor Heterogeneous flooring		
Product codes	Forest fx PUR		
Declared Unit	The declared product per kilogram		
Product Specifications	Heterogeneous 2.0mm gauge flooring		
Standards	ISO 10582: 2017: Resilient floor coverings – Heterogeneous Polyvinylchloride floor coverings - Specification.		
Manufacture	Fleck Way, Teesside Industrial Estate, Thornaby-on-Tees, TS17 9JZ, UK		
Manufacture warranty	10 years		
Representation Site & Geography	United Kingdom, Europe, Pacific Rim and Australasia.		
Functional & Technical Performance	**Property**	**Conformance to Standard**	**Forest fx PUR**
	Performance	ISO10582	Conforms
	Reaction to Fire	EN 13501-1 Class	Bfl-S1
	Use Area	EN 685/ISO 10874	23, 34 & 43
	Slip Resistance	DIN51130	R10
	VOC Emissions	Indoor Air Comfort	Eurofins Gold certified
		AgBB/ABG	Pass
Data quality, range & variability	Cut-off criteria and data quality complies with EN 15804 Significant differences of average LCIA results are declared		
Primary Data	Data was collected in accordance with EN ISO 14044:2006, 4.3.2, from primary sources including the manufacturer, suppliers and their publications on standards, locations, logistics, technology, market share, management systems and commitments to improved environmental performance.		
No Chemicals of Very High Concern	Contains no substances in the “Authorised or Candidate Lists of Substances of Very High Concern (SVHCs)” with the European Chemicals Agency		

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Program Description

EPD type	Cradle to gate (A1 to A3) as defined by EN 15804 and depicted in Figure 1
System boundary	The system boundary with nature includes material and energy system input processing plus manufacture and transport to factory gate plus waste arising.
Service Life	The reference service life is unspecified for cradle to gate scope
Comparability	Construction product EPDs may not be comparable if not EN15804 compliant
Stages included	A1, A2, A3 as depicted and denoted by x in Figure 1
Stages excluded	A4-5, B1-7, C1-1& D as depicted and denoted by MND in Figure 1
Product stages included	Stages are included from A1 raw material acquisition, extraction, refining and processing plus reuse of scrap or material from previous systems; electricity generated from all sources with extraction, refining & transport; plus, secondary fuel energy and recovery processes. Also, A2 transport internal and to the factory gate as well as A3 manufacture of product packaging, inputs, ancillary material and system flows leaving at end-of-waste boundary as coproducts

Information Modules

As Figure 1 shows an x marking LCA and EPD results to be shown summed for modules A1-3. Modules A4 to C4 and D are not declared marked MND which does not indicate zero inventory or impact.

Model Phase	Actual					Scenarios											Potential		
	Produce			Construct		Building Fabric					Building Use		End of life				Beyond Boundary		
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D1, D2		D3
Unit Operations	Resource supply	Transport	Manufacturing	Transport	Construction	Use	Maintain	Repair	Replace	Refurbish	Operating Energy	Operating Water	Demolish	Transport	Process Waste	Disposal	Reuse	Recovery	Recycling
Cradle to Gate	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Figure 1 Life Cycle Phases and Declared Stages in Cradle to Grave Boundary

Base Material Origin and Detail

Table 1 lists product composition by function, component, source and mass share amount.

Function	Component	Source	Forest fx PUR
Binder	Polyvinylchloride	UK, EU	>50<53
Filler	Dolomite	UK	>26<29
Plasticiser	Dioctyl terephthalate	South Korea	>23<25
Carrier	Fibreglass	EU	>1<3
Plasticiser	Epoxidised Soy Bean Oil	UK	>1<3
Stabiliser	Calcium Zinc Soap	EU	>1<3
Viscosity depressant	Fatty acid esters	UK	>1<2
Coating	Polyurethane	UK, EU	>0.5<1.5
Print pattern	Pigmented Inks	EU	>0.5<1.0
White	Titania	UK	>0.3<0.8
UV stabiliser	Hydroxyoctyloxybenzophenone	UK	>0.1<0.2
Other	Colour, defoamer	UK, EU	>0.1<0.6

Scope and System Boundary

Figure 2 shows included processes in a cradle to gate system boundary and dashed lines defining excluded scenarios to end of life fate to recycling or to landfill grave.

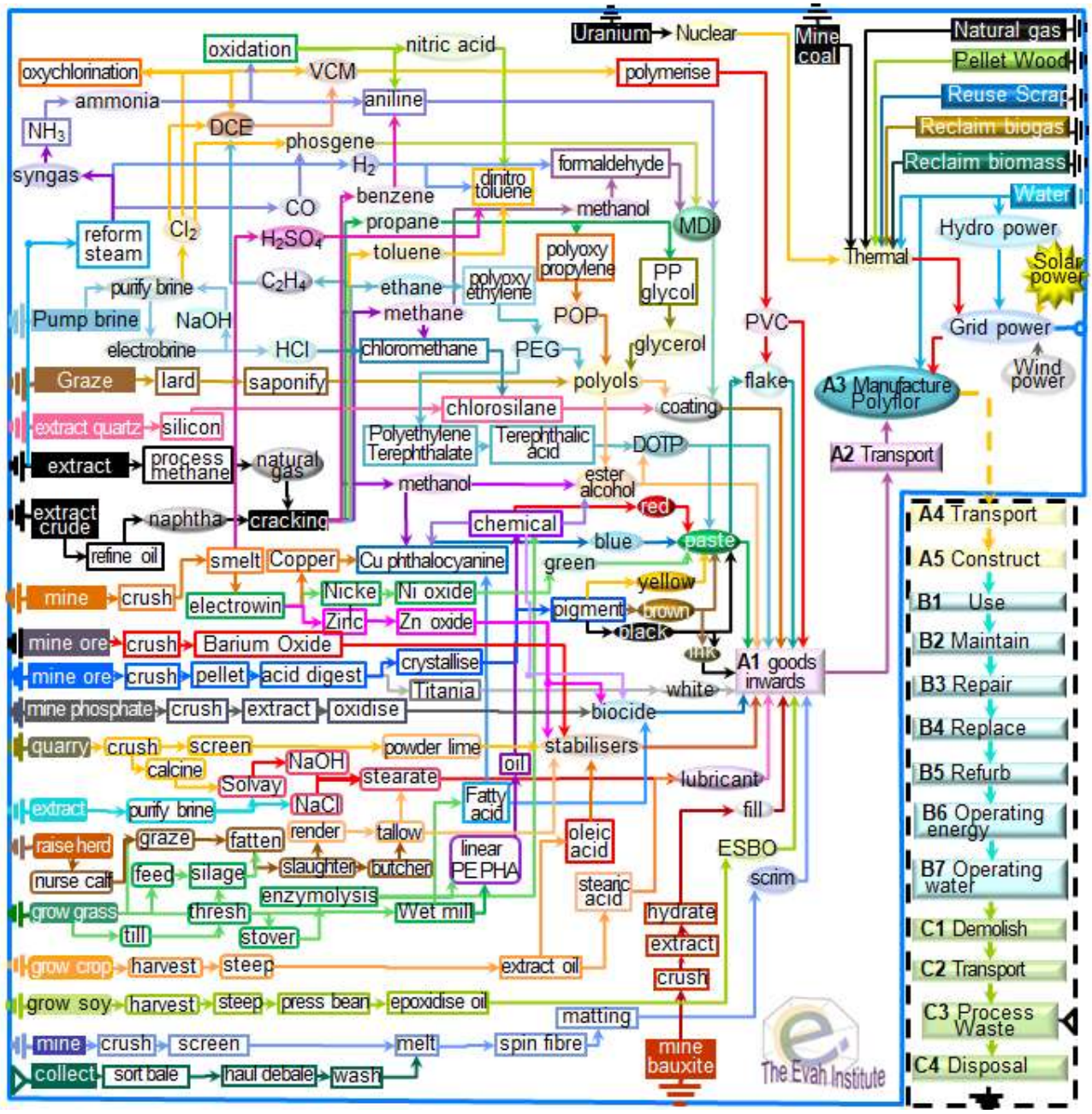

Figure 2 Process Flow Cradle to Gate Scope in Cradle to Grave System Boundary

Cradle to Gate Inventory and Potential Impact Results

Table 2 shows inputs, outputs and potential impacts per declared unit.

Table 2 Resource Amounts A1-A3 /kg

Inventory Input Categories	Unit	Forest fx PUR
Net Fresh Water	m^3	0.83
Secondary Material	kg	3.5E-03
Renewable Secondary Fuels	MJ $_{ncv}$	0.E+00
Primary Renewable Energy Not Feedstock	MJ $_{ncv}$[1]	0.32
Primary Energy Renewable Feedstock Material	MJ $_{ncv}$	15
Total Primary Renewable Energy Resources	MJ $_{ncv}$	1.5
Non-Renewable Secondary Fuels	MJ $_{ncv}$	16
Primary Energy Non-renewable Not Feedstock	MJ $_{ncv}$	59
Non-renewable Primary Energy Feedstock	MJ $_{ncv}$	24
Total Non-renewable Primary Energy Resources	MJ $_{ncv}$	82
Inventory Output Categories		
Hazardous Waste Disposed	kg	1.1E-02
Non-hazardous Waste Disposed	kg	0.68
Radioactive Waste Disposed	kg	1.8E-09
Components for Reuse	kg	0.59
Material for Recycling	kg	0
Material for Energy Recovery	kg	4.7E-02
Exported Electrical Energy	MJ $_{ncv}$	0.E+00
Exported Thermal Energy	MJ $_{ncv}$	0.E+00
Potential Impact Categories		
Global Warming	kg CO_{2e}	3.5
Stratospheric Ozone Depletion	kg $R11_e$	2.0E-09
Photochemical Ozone Creation	kg C_2H_{4e}	1.2E-02
Acidification of Land and Water	kg SO_{2e}	1.2E-02
Eutrophication	kg PO_{4e}[3]	2.6E-03
Abiotic Depletion Fossil Fuel	MJ $_{ncv}$	4.0
Abiotic Depletion Mineral (Elemental)	kg Sb $_{eq}$	4.9E-03

[1] ncv stands for net calorific value

Interpretation

The majority of impacts derive from the binder. Typically, of the gross energy embodied in these products, a quarter is used at the Teesside factory half is in making PVC, 20% in plasticisers and 5% in all remaining operations.

The product Global Warming Potential (GWP) correlated with ADP Fossil Fuel Depletion which is typical of mineral filled polymer floorcovering.

References for this EPD

CML LCA methodology, Institute of Environmental Sciences (CML), Faculty of Science, University of Leiden, Netherlands

GreenTag™ 2021 http://www.globalgreentag.com/get-certified

GreenTag™ 2021 Product Category Rules https://www.globalgreentag.com/greentag-epd-program/

International Energy Agency, Energy Statistics 2020 http://www.iea.org

ISO 14015:2001 EMS: Environmental assessment of sites & organizations (EASO)

ISO 14020:2000 Environmental labels & declarations — General principles

ISO 14025:2006 Environmental labelling & declarations Type III EPDs Principles & procedures

ISO 14031:1999 EM: Environmental performance evaluation: Guidelines

ISO 14040:2006 EM: Life cycle assessment (LCA): Principles & framework, London, BSI, 2006.

ISO 14044:2006 EM: LCA: Requirement & guideline LCI; LCIA Interpretation, London, BSI, 2006.

ISO 15392:2008 Sustainability in building construction General principles

ISO 15686-1:2011 Buildings & constructed assets - Service life planning - Part 1: General principles & framework

ISO 15686-2:2012 Buildings & constructed assets - Service life planning- Part 2: Service life prediction procedures

ISO 15686-8:2008 Buildings & constructed assets - Service-life planning - Part 8: Reference service life & service-life estimation

EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

ISO 21929-1:2011 Sustainability in building construction — Sustainability indicators — Part 1: Framework for the development of indicators and a core set of indicators for buildings

ISO 21930:2007 Sustainability in building construction — Environmental declaration of building products

ISO 21931-1:2010 Sustainability in building construction — Framework for methods of assessment of the environmental performance of construction works — Part 1: Buildings

ISO/TR 21932:2013 Sustainability in buildings and civil engineering works — A review of terminology