

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

PaveX™ Systems

from

Reid Construction Systems Danley



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD Australasia Ltd, www.epd-australasia.com
EPD registration number:	S-P-10954
Publication date:	2024-02-10
Valid until:	2029-02-10

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



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General information

Programme information

Programme:	EPD Australasia
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

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

Product Category Rules (PCR): *PCR 2019:14; Construction products (EN 15804+A2) (1.3.2)*

PCR review was conducted by: *The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com for a list of members. The review panel may be contacted via info@environdec.com. Review chair: Claudia A. Peña, University of Concepción, Chile.*

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Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third-party verifier: ANGELA SCHINDLER, Umweltberatung, Salem, Germany, E: angela@schindler-umwelt.de

Approved by: EPD Australasia

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical

functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

With a history spanning over 25 years, RCS Danley is an iconic Australian brand synonymous with quality designed and manufactured engineered load transfer, joint edge protection and crack control systems. Recognising a need within the industry to provide durable floors for today's materials handling and warehousing systems, Residential slabs and Pavements, our Danley™ branded solutions incorporate research, design and product testing into every product we manufacture. With well-known product brands such as Diamond™ Dowel, ArmourMate™ Joint Edge Protection, PD3™ Plate Dowel System and PodRail™, the Danley range of innovative flooring solutions improve the quality and life of slab-on-ground concrete floors and pavements.

Owner of the EPD	RCS Danley
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Product information

PaveX™ Expanda™ & Expanda™ HD

PaveX™ Expanda™ is a core component of the broader PaveX™ Residential Pavement eco-system. Designed and developed in conjunction with councils and concrete contractors alike, PaveX™ Expanda™ is a lightweight, corrosion-free and modular expansion joint system that is quick & easy to install. Available in 100mm and 125mm profiles, PaveX™ Expanda™ complies with the requirements of Australian Standard. AS 3727.1:2016 Residential Pavements. Innovative 14mm diameter Glass Fibre Reinforced Polymer dowels and sleeves provide load transfer between pavement sections.

The unique design of the uPVC extruded PaveX™ Expanda™ sacrificial formwork profiles provide up to 10mm of thermal expansion of concrete and are job site tough. Proudly designed and developed in Australia, PaveX™ Expanda™ is supported by best-in-class specification detail and installation guidelines. PaveX™ Expanda™ can be easily added to Council Master Specifications and is intuitive to use on site. SMART: Fully integrated pavement system. EFFECTIVE: Reduces maintenance & repair costs. SAFE: Mitigates trip hazards and public liability exposure.

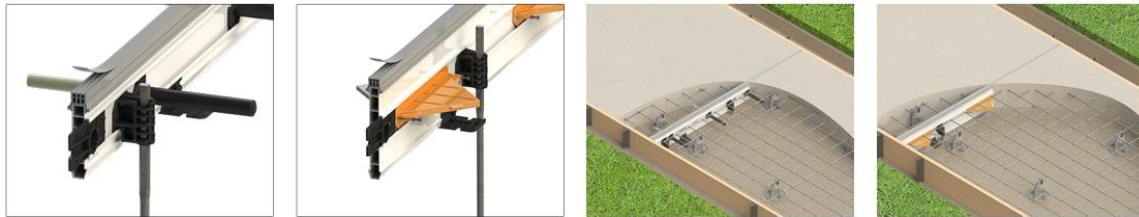


Figure 1 – Product image for Expanda and Expanda HD system

PaveX™ Expanda™ HD is a core component of the broader PaveX™ Residential Pavement eco-system. Designed specifically for use in heavy duty residential pavement applications including service vehicle cross-overs, driveways, shared bikeways and urban streetscapes. PaveX™ Expanda™ HD is a lightweight, modular expansion joint system that is quick & easy to install. Designed for use with 6mm Danley™ Diamond™ Galvanised Dowels & Sleeves at 450mm centres, PaveX™ Expanda™ HD provides high-capacity load transfer between pavement sections, to the requirements of AS 3727.1:2016 Residential Pavements.

PaveX™ Geared™

PaveX™ Geared™ is designed specifically for concrete footpaths and shared bikeways impacted by soil heave or tree root ingress. An innovative articulating formed control joint system, PaveX™ Geared™ allows for concrete pavement sections to rise and/or fall whilst limiting differential deflection and mitigating tripping hazards. PaveX™ Geared™ is available in 100mm, 125mm and 150mm profile heights.



Figure 2 – Product image for Geared system

Extruded in corrosion free, UV stabilised uPVC to standard 3 metre lengths, PaveX™ Geared™ profiles are co-extruded with Rip-A-Strip™ Capping in either Black or Grey that provide clean, laitance-free joint lines. PaveX™ Geared™ complies with the requirements of AS 3727.1:2016 Residential Pavements.

PaveX™ Crack-A-Joint™

As an alternative to traditional saw cutting and tooled joints, PaveX™ Crack-A-Joint™ with Rip-A-Strip™ Capping induces a weakened plane joint to the full depth of the concrete. PaveX™ Crack-A-Joint™ is available in 3 metre lengths, with profile heights

of 25mm and 38mm which initiate a crack in slabs between 75mm and 150mm in depth. **PaveX™ Crack-A-Joint™** is co-extruded with flexible **PVC Rip-A-Strip™ Capping** that provides a clean, laitance-free joint line.

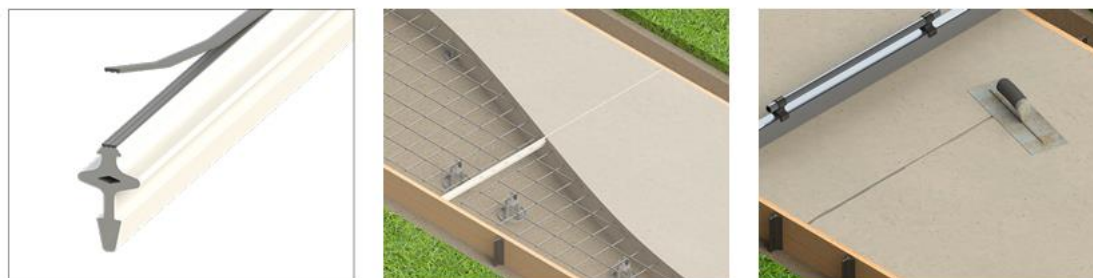


Figure 3 – Product image for Crack-A-Joint system

Available in Black and Grey. A smoother ride: **PaveX™ Crack-A-Joint™** provides a low-noise transition over weakened plane joints. Corrosionfree: **PaveX™ Crack-A-Joint™** profiles are co-extruded in UV stabilised uPVC and a flexible PVC Capping that is suitable for use in pavements in chemically corrosive environments including chlorinated or salt-water swimming pool surrounds and coastal environments. **PaveX™ Crack-A-Joint™** complies with the requirements of AS 3727.1:2016 Residential Pavements.

Product Weights

Product Line	Product/Part Code	Description	Length (mm)	Weight each (kg)	Weight per m (kg)
PaveX™ Crack-A-Joint™	PXCAJ25B	PaveX™ Crack-A-Joint™ 25mm x 3000mm, Black	3000	0.511	0.170
PaveX™ Crack-A-Joint™	PXCAJ25G	PaveX™ Crack-A-Joint™ 25mm x 3000mm, Grey	3000	0.511	0.170
PaveX™ Crack-A-Joint™	PXCAJ38B	PaveX™ Crack-A-Joint™ 38mm x 3000mm, Black	3000	0.731	0.244
PaveX™ Crack-A-Joint™	PXCAJ38G	PaveX™ Crack-A-Joint™ 38mm x 3000mm, Grey	3000	0.731	0.244
PaveX™ Crack-A-Joint™	PXCAJ CJ	PaveX™ Crack-A-Joint™ Joiner, 200mm	200	0.02	0.100
PaveX™ Expanda™	PX100KIT	PaveX™ Expanda™ 100mm x 3000mm Assembly	3000	11.76	3.920
PaveX™ Expanda™	PX125KIT	PaveX™ Expanda™ 125mm x 3000mm Assembly	3000	11.955	3.985
PaveX™ Expanda™	3PX100	PaveX™ Expanda™ Panel, 100mm x 3000mm	3000	1.04	0.347
PaveX™ Expanda™	3PX125	PaveX™ Expanda™ Panel, 125mm x 3000mm	3000	1.235	0.412
PaveX™ Expanda™	3PXCAP	PaveX™ Expanda™ Capping	3000	0.79	0.263
PaveX™ Expanda™	3PXD14	PaveX™ Expanda™ 14mm x 240mm GFRP Round Dowel	240	0.5	0.167
PaveX™ Expanda™	CKP0001	PaveX™ Expanda™ Dowel Sleeve	N/A	0.14	N/A
PaveX™ Expanda™	PX100C	PaveX Expanda™ End Cap, 100mm	100	0.009	0.090
PaveX™ Expanda™	PX125C	PaveX Expanda™ End Cap, 125mm	125	0.011	0.088
PaveX™ Expanda™	3PXSTB	PaveX™ Expanda™ Stake Bracket	N/A	0.16	N/A
PaveX™ Expanda™	3PXJPT	PaveX™ Expanda™ Joiner Plate	N/A	0.12	N/A
PaveX™ Expanda™	3PXFTB	PaveX™ Expanda™ Foot	N/A	0.29	N/A
PaveX™ Expanda™	3PXSTK	PaveX™ Stake, 350mm, Galv	350	0.215	0.072

Product Line	Product/Part Code	Description	Length (mm)	Weight each (kg)	Weight per m (kg)
PaveX™ Expanda™ HD	PX150HDSET	PaveX™ Expanda™ HD 150mm x 3000mm Assembly	3000	17.5298	5.843
PaveX™ Expanda™ HD	3PX150	PaveX™ Expanda™ HD Panel, 150mm x 3000mm	3000	1.51	0.503
PaveX™ Expanda™ HD	3PXCAP	PaveX™ Expanda™ Capping	3000	0.79	0.263
PaveX™ Expanda™ HD	3DDSLPL06X110G	6mm Diamond™ Dowel Plate, Galv	N/A	0.9438	N/A
PaveX™ Expanda™ HD	3DDSL06O	6mm Diamond™ Dowel AirEx™ Sleeve, Orange	N/A	0.7276	N/A
PaveX™ Expanda™ HD	PX150C	PaveX Expanda™ HD End Cap, 150mm	150	0.014	0.093
PaveX™ Expanda™ HD	3PXSTB	PaveX™ Expanda™ Stake Bracket	N/A	0.16	N/A
PaveX™ Expanda™ HD	3PXJPT	PaveX™ Expanda™ Joiner Plate	N/A	0.12	N/A
PaveX™ Expanda™ HD	3PXFTB	PaveX™ Expanda™ Foot	N/A	0.29	N/A
PaveX™ Expanda™ HD	3PXSTK	PaveX™ Stake, 350mm, Galv	350	0.215	0.072
PaveX™ Geared™	PXG100BKIT	PaveX™ Geared™ 100mm x 3000mm Assembly, Black	3000	3.2187	1.073
PaveX™ Geared™	PXG100GKIT	PaveX™ Geared™ 100mm x 3000mm Assembly, Grey	3000	3.2187	1.073
PaveX™ Geared™	PXG125BKIT	PaveX™ Geared™ 125mm x 3000mm Assembly, Black	3000	3.6147	1.205
PaveX™ Geared™	PXG125GKIT	PaveX™ Geared™ 125mm x 3000mm Assembly, Grey	3000	3.6147	1.205
PaveX™ Geared™	PXG150BKIT	PaveX™ Geared™ 150mm x 3000mm Assembly, Black	3000	4.00538	1.335
PaveX™ Geared™	PXG150GKIT	PaveX™ Geared™ 150mm x 3000mm Assembly, Grey	3000	4.00538	1.335
PaveX™ Geared™	3PXG100B	PaveX™ Geared™ 100mm x 3000mm Panel, Black	3000	1.7367	0.579
PaveX™ Geared™	3PXG100G	PaveX™ Geared™ 100mm x 3000mm Panel, Grey	3000	1.7367	0.579
PaveX™ Geared™	3PXG125B	PaveX™ Geared™ 125mm x 3000mm Panel, Black	3000	2.1027	0.701
PaveX™ Geared™	3PXG125G	PaveX™ Geared™ 125mm x 3000mm Panel, Grey	3000	2.1027	0.701
PaveX™ Geared™	3PXG150B	PaveX™ Geared™ 150mm x 3000mm Panel, Black	3000	2.47538	0.825
PaveX™ Geared™	3PXG150G	PaveX™ Geared™ 150mm x 3000mm Panel, Grey	3000	2.47538	0.825
PaveX™ Geared™	3PXGCJ	PaveX™ Geared™ Joiner, 200mm	200	0.01213	0.061
PaveX™ Geared™	3PXGSB100	PaveX™ Geared™ Stake Bracket, 100mm	N/A	0.032	N/A
PaveX™ Geared™	3PXGSB125	PaveX™ Geared™ Stake Bracket, 125mm	N/A	0.037	N/A
PaveX™ Geared™	3PXGSB150	PaveX™ Geared™ Stake Bracket, 150mm	N/A	0.04	N/A
PaveX™ Geared™	3PXSTK	PaveX™ Stake, 350mm, Galv	350	0.215	0.614

Industry classification

UN CPC code:

UN CPC Group: 369 – Other plastics products

UN CPC Class: 3695 – Builders' ware of plastics, not elsewhere specified or included.

Geographical scope: Australia

LCA information

Declared Unit	1m of PaveX™ system
Reference service life (RSL)	100 years
LCA Scope	Cradle to gate plus options scope (A1-A3, A4-A5, C1-C4 and D)
Time Representativeness	The LCA study was conducted on the financial year 2021-2022 production data.

Databases and LCA software used:

The inventory data for the process are entered into the SimaPro (v9.4.0.2) LCA software program and linked to the pre-existing data for the upstream feedstocks and services selected in order of preference from:

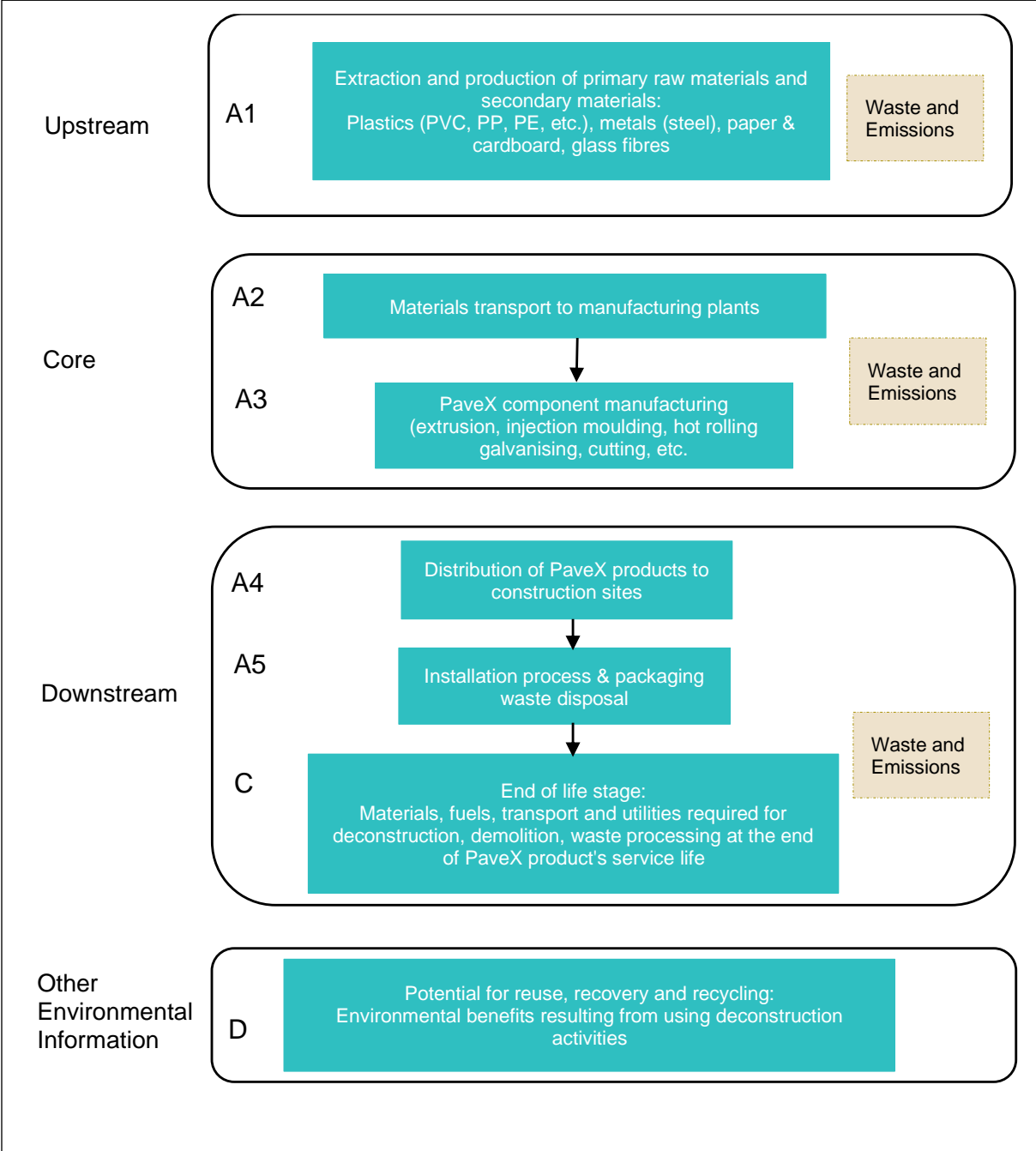
- For Australia, the Australian Life Cycle Inventory (AusLCI) v1.39 compiled by the Australian Life Cycle Assessment Society ((ALCAS), 2022) and the Australasian Unit Process LCI v2014.09. The AusLCI database at the time of this report was 1 year old, while the Australasian Unit Process LCI was 8 years old.
- Other authoritative sources (e.g., Ecoinvent v3.8,(Moreno, 2021)), where necessary adapted for relevance to Australian conditions (energy sources, transport distances and modes and so on, and documented to show how the data is adapted for national relevance). At the time of reporting, the Ecoinvent v3.8 database was 2-year-old.
- Other sources with sensitivity analysis reported to show the significance of this data for the results and conclusions drawn.
- Inti also considered the following additional five criteria in selecting data for modelling:
 - Relevance: select sources, data and methods appropriate to assessing the chosen product's LCI
 - Completeness: include all LCI items that provide a material's contribution to a product's life cycle emissions
 - Consistency: enable meaningful comparisons in life cycle impact assessment (LCIA) information
 - Accuracy: reduce bias and uncertainty as far as is practical.
 - Transparency: when communicating, disclose enough information to allow third parties to make decisions.

Description of system boundaries:

The scope of this EPD is cradle-to-gate plus options (modules A1 – A3, C, D & A4 – A5). It includes life cycle stages from raw materials extraction, transport,

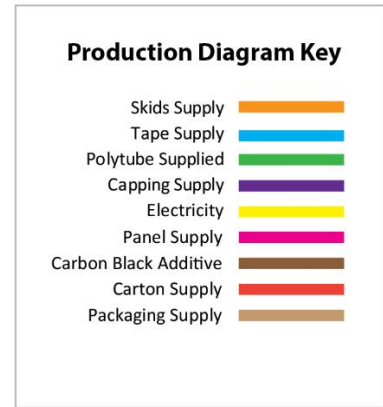
manufacturing, distribution, installation, and disposal and/or recycling at the end-of-life.

System diagram:

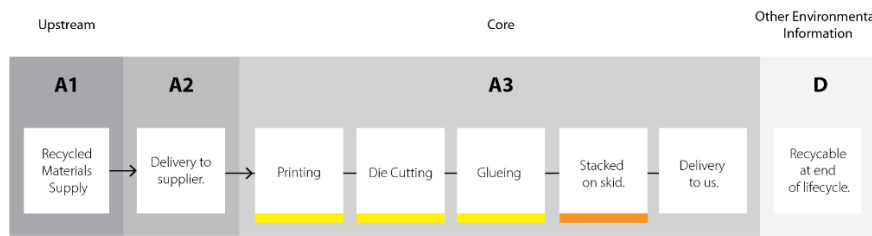


Manufacturing process:

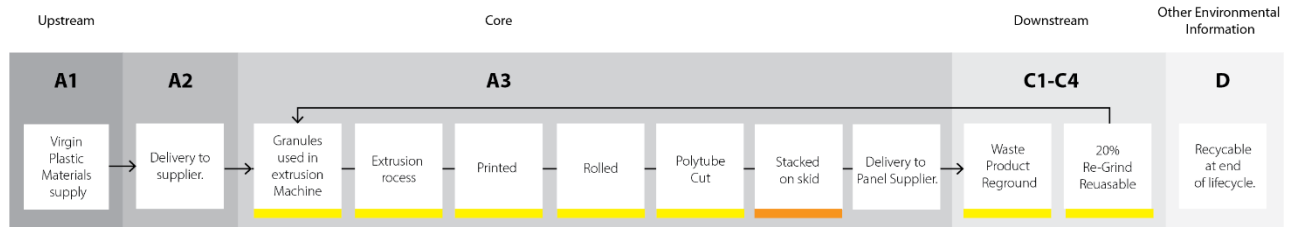
- **PaveX™ Expanda™ & Expanda™ HD**



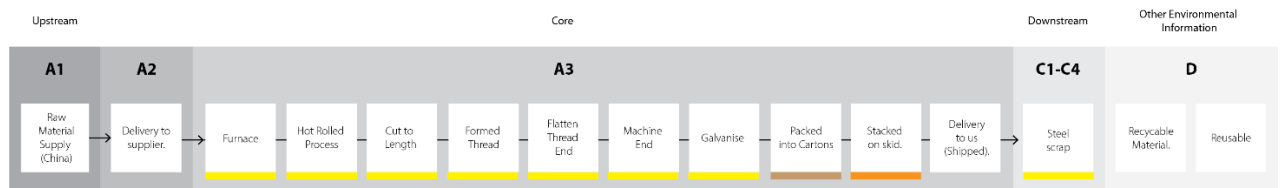
Production Diagram - Danley™ PaveX™ Expanda™ - Cartons



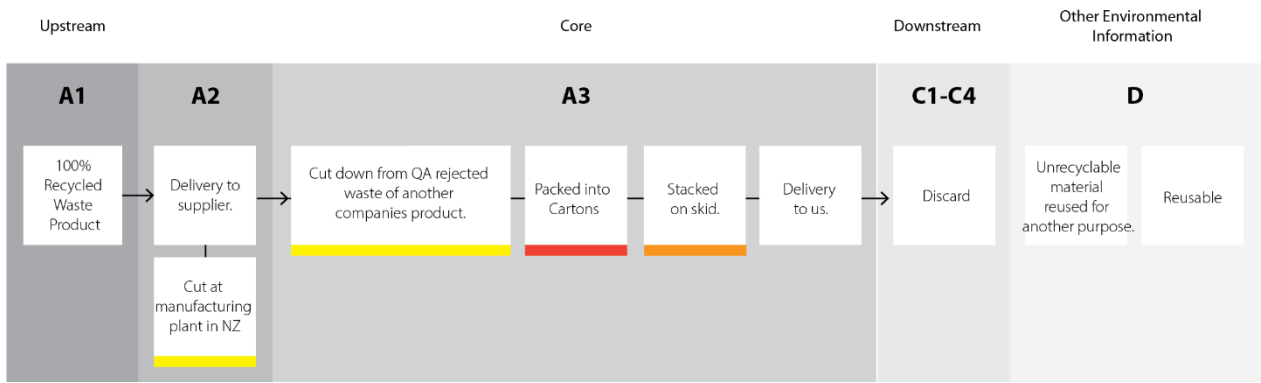
Production Diagram - Danley™ PaveX™ Expanda™ - Polytube



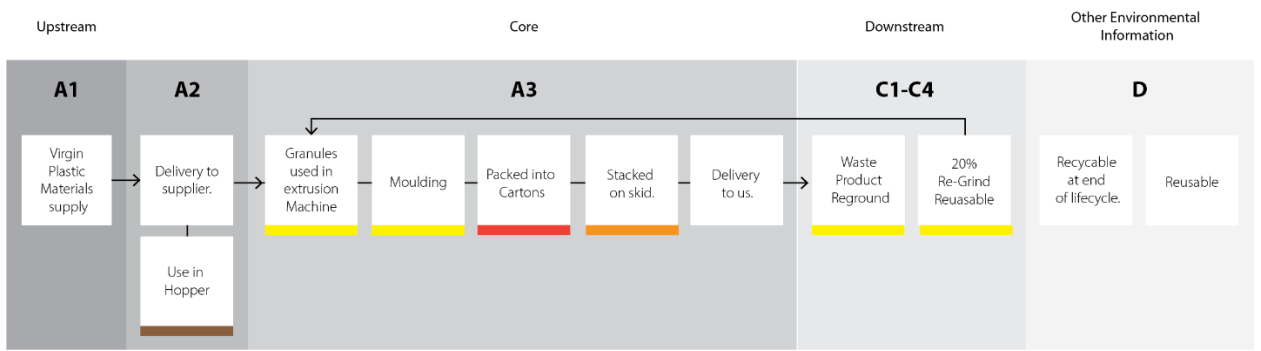
Production Diagram - Danley™ PaveX™ Expanda™ - Stake



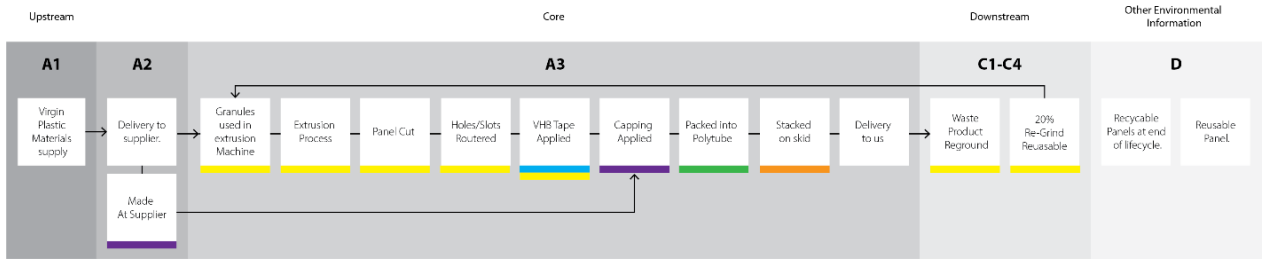
Production Diagram - Danley™ PaveX™ Expanda™ - CFRP Dowel



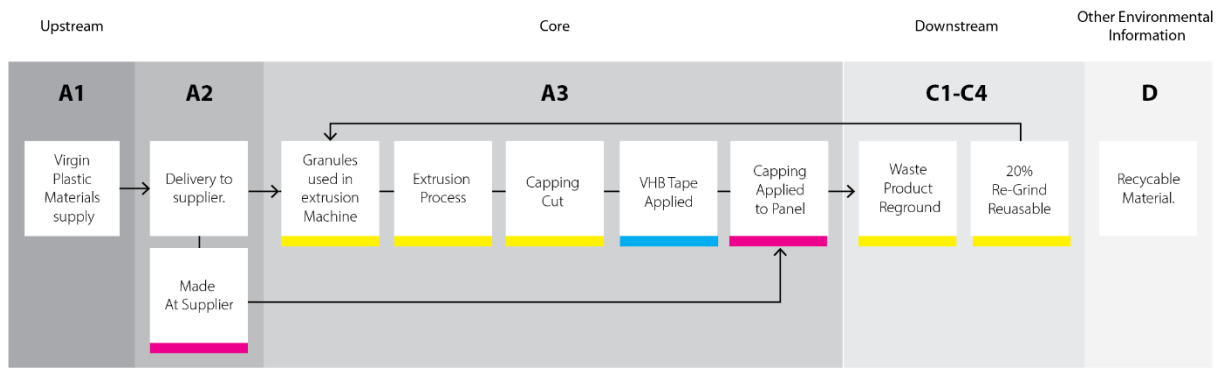
Production Diagram - Danley™ PaveX™ Expanda™ - Joiners/Stake Brackets and Feet



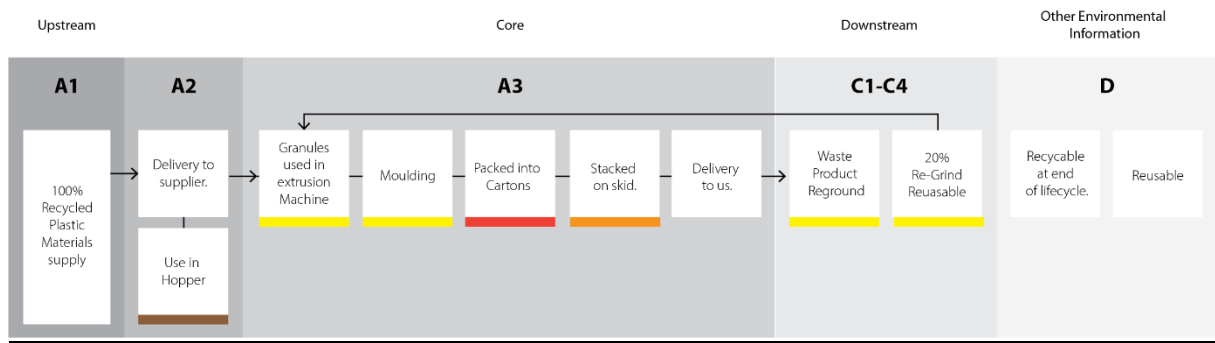
Production Diagram - Danley™ PaveX™ Expanda™ - Form Work Panels



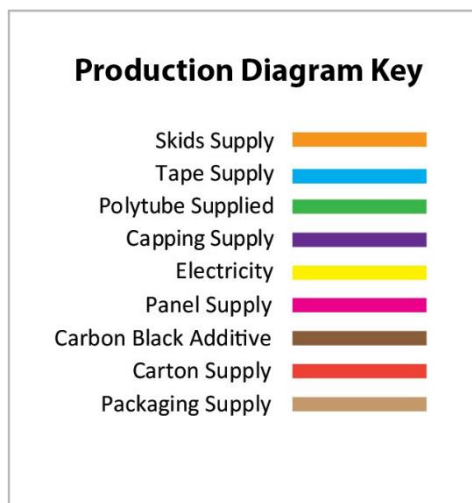
Production Diagram - Danley™ PaveX™ Expanda™ - Capping



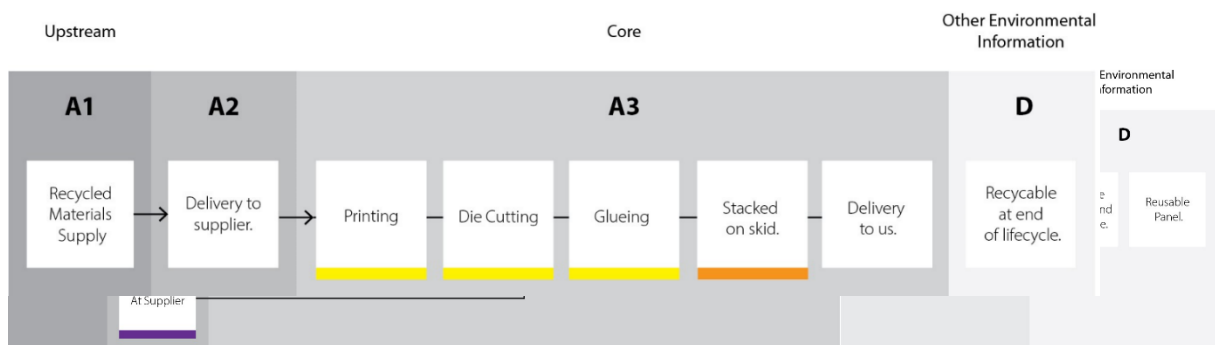
Production Diagram - Danley™ Pavex™ Expanda™ - Dowel Sleeve



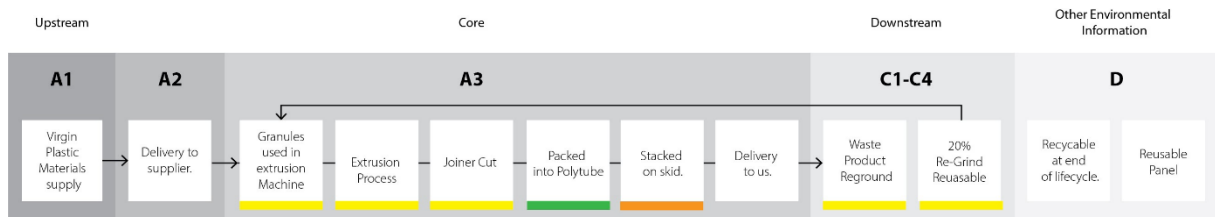
- **Crack A Joint range**



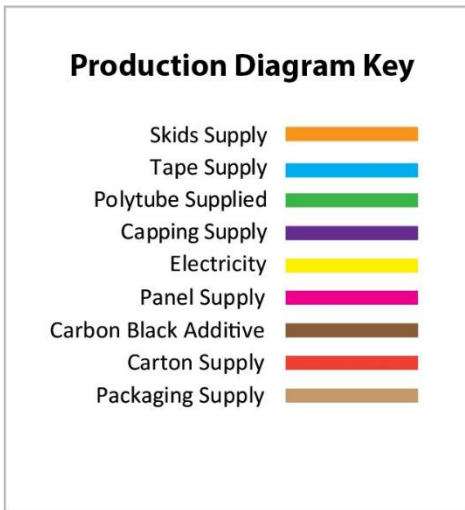
Production Diagram - Danley™ Pavex™ Geared™ - Cartons



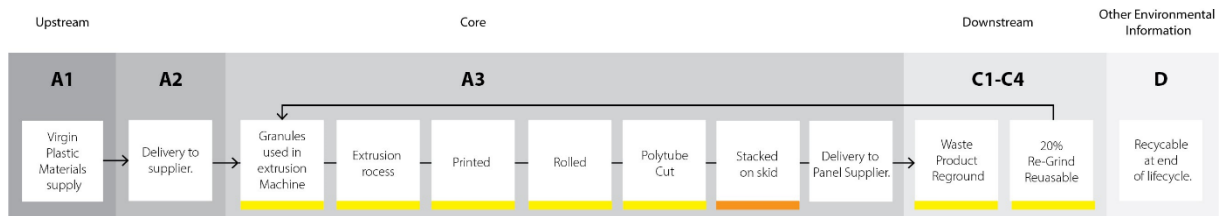
Production Diagram - Danley™ Pavex™ Crack-A-Joint™ - Joiners



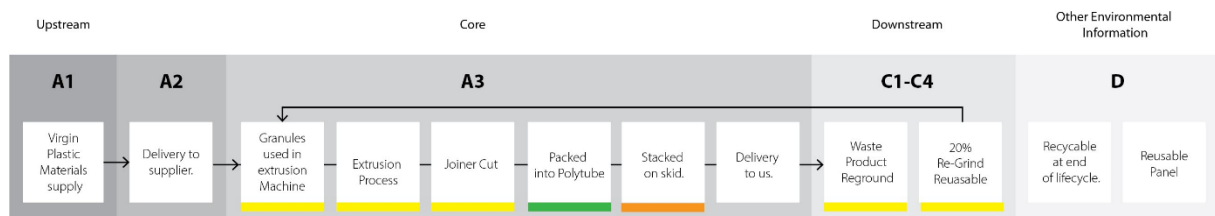
- **Geared range**



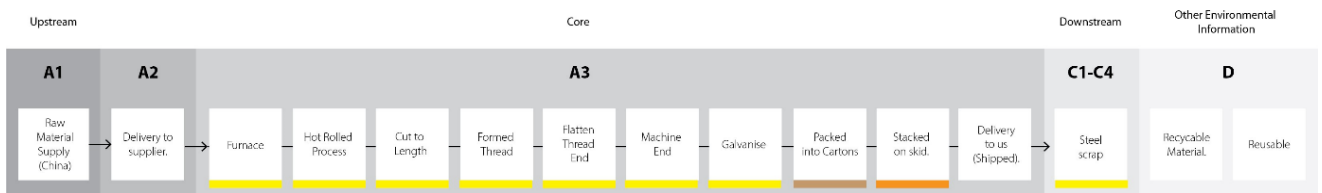
Production Diagram - Danley™ PaveX™ Geared™ - Polytube



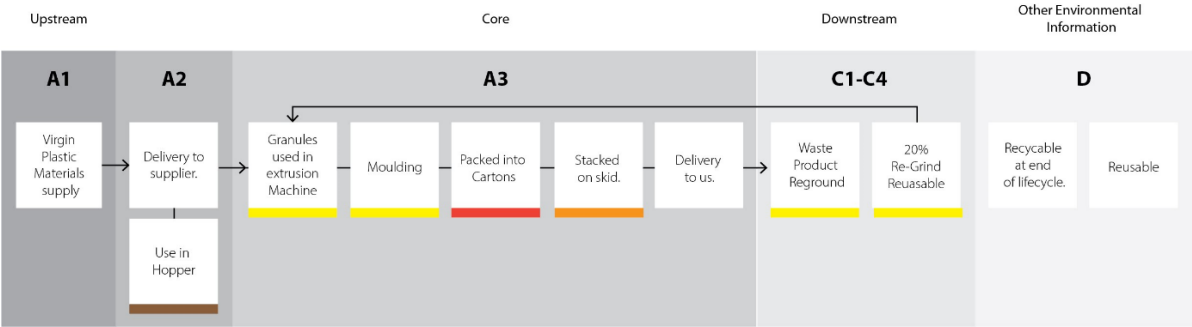
Production Diagram - Danley™ PaveX™ Geared™ - Joiners



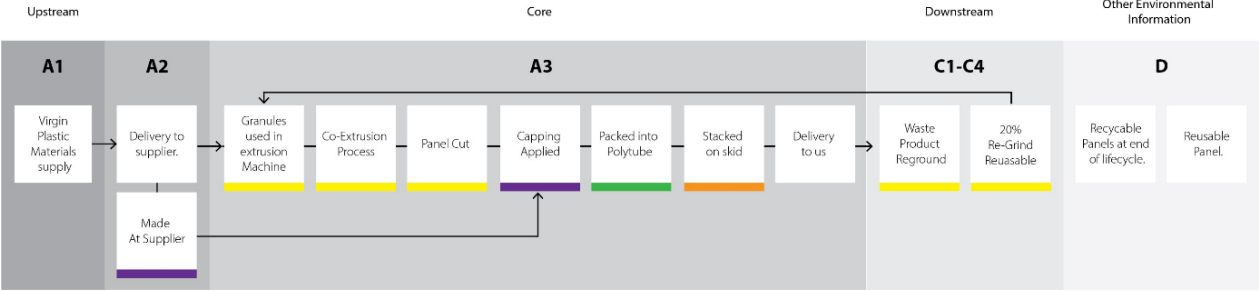
Production Diagram - Danley™ PaveX™ Geared™ - Stake



Production Diagram - Danley™ PaveX™ Geared™ - Stake Brackets



Production Diagram - Danley™ PaveX™ Geared™ - Form Work Panels



Scope of Declaration:

The life cycle of a building product is divided into three process modules according to the General Program Instructions (GPI) and four information modules according to ISO 21930 and EN 15804 and supplemented by a module on potential loads and benefits beyond the building life cycle, as given in Table 1

Table 1 - Life cycle of a building product

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	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
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	AU	AU	AU	AU	AU								AU	AU	AU	AU	
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not applicable					-	-	-	-	-	-	-	-	-	-	-	-

ND = Not Declared

Cutt-off rules and Exclusion of Small Amounts:

It is common practice in LCA/LCI protocols to propose exclusion limits for inputs and outputs that fall below a threshold % of the total, but with the exception that where the input/output has a “significant” impact it should be included. According to the PCR 2019:14, the Life Cycle Inventory data for a minimum of 95% of total inflows (mass and energy) per module to the upstream and core module shall be included, accounted as global warming potential (GWP) or energy consumption. Inflows not included in the LCA shall be documented in the EPD. Data gaps in included stages in the downstream modules shall be reported in the EPD, including an evaluation of their significance. In accordance with the PCR 2019:14 v1.3.2, the following system boundaries are applied to manufacturing equipment and employees:

- Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process are not accounted for in the LCI. Capital equipment and buildings typically account for less than a few percent of nearly all LCIs and this is usually smaller than the error in the inventory data itself. For this project, it is assumed that capital

equipment makes a negligible contribution to the impacts as per Frischknecht et al. (Frischknecht, 2007) with no further investigation.

- Personnel-related impacts, such as transportation to and from work, are also not accounted for in the LCI. The impacts of employees are also excluded from inventory impacts on the basis that if they were not employed for this production or service function, they would be employed for another. It is very hard to decide what proportion of the impacts from their whole lives should count towards their employment. For this project, the impacts of employees are excluded.
- In addition, if less than 100% of the inflows are accounted for, proxy data or extrapolation should be used to achieve 100% completeness.
- Besides these exclusions, no energy or mass flows were excluded.

Allocation:

According to EN 15804+A2:2019, in a process step where more than one type of product is generated, it is necessary to allocate the environmental stressors (inputs and outputs) from the process to the different products (functional outputs) in order to get product-based inventory data instead of process-based data. An allocation problem also occurs for multi-input processes.

In an allocation procedure, the sum of the allocated inputs and outputs to the products shall be equal to the unallocated inputs and outputs of the unit process.

The allocation approach for the background LCA databases utilised in this report is also compliant with the PCR. More specifically, the burden of primary production of materials is always allocated to the primary user of a material, while secondary (recycled) materials bear only the impacts of the recycling processes.

There are no co-products from the production of PaveX's products and therefore allocation issues pertaining to co-products were avoided.

For all PaveX products manufactured at Macro Extrusions, Danley has procured mass and energy data directly from them. Thus, the materials and electricity required for each PaveX product manufactured at Macro Extrusions are calculated on basis of the amount (tonnes) of a particular product manufactured on the site in 2022 and the associated electricity consumption for that particular product line. This data is also recorded as part of the standard quality assurance purpose.

Recycled content in products:

PaveX product range incorporates recycled content in the several components, particularly those made from plastics and steel. Based on the guidelines from PCR 2019:14 and EN 15804 A2, the burden of impact from recycled materials has been excluded, but the impacts from processing of the recycled material have been allocated to PaveX. Essentially, secondary (recycled) materials bear only the impacts of the recycling processes.

Data quality and Validation:

The primary data used for the study (core module) is based on direct utility bills or feedstock quantities from PaveX's component manufacturers and was provided by Danley. The study used contribution analysis to focus on the key pieces of data

contributing to the environmental impact categories. The data was sense checked against relevant benchmark data in ecoinvent. Where sourcing primary data was unavailable (cost and time prohibitive), secondary data from AusLCI v1.39 and Ecoinvent v3.8 was used. Inti considers the data to be of high quality for the core module. According to EN15804 A2, the data quality ranking is as follows: geographical representativeness – very good; technical representativeness – very good and time representativeness – very good.

As per the background data, the quality was considered high when processes chosen were geographically, temporal and technologically relevant. For data that was based on assumptions, quality was considered medium, unless based on official reports.

Compliance with Standards:

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804+A2 and applicable PCRs. The methodology and report format has been modified to comply with:

- ISO 14040:2006 and ISO14044:2006+A1:2018 which describe the principles, framework, requirements and provides guidelines for life cycle assessment (LCA) (ISO 14040, 2006) (ISO 14044, 2006).
- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations -- Principles and procedures, which establishes the principles and specifies the procedures for developing Type III environmental declaration programmes and Type III environmental declarations (ISO 14025, 2006).
- ISO 14020:2000 Environmental labels and declarations — General principles, which describes the guiding principles for the development and use of environmental labels and declarations (ISO 14020, 2000).
- EN 15804+A2:2019: Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products- hereafter referred to as EN15804+A2 (BS EN 15804+A2, 2020).
- EN 15804+A1:2013: Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products- hereafter referred to as EN15804+A1 (EN15804+A1, 2013).
- Product Category Rules (PCR) 2019:14, v1.3.2 – Construction products – hereafter referred to as PCR 2019:14 (PCR 2019:14, 2021).
- General Programme Instructions (GPI) for the International EPD System V4.0 – containing instructions regarding methodology and the content that must be included in EPDs registered under the International EPD System (Environdec, 2021).

Environmental Performance:

These steps are performed to interpret the results into key environmental impacts, and use of resources. The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Most LCA tools have libraries of impact assessment methods that can completely automate the impact assessment. The following potential environmental impacts, use of resources and waste categories have been calculated in the SimaPro (v9.4.0.2) tool. The tables of results outline various environmental indicators corresponding to each product per declared unit and per declared module. The EN 15804 reference package derived from EF 3.1 is utilised.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Table 2 - Life Cycle Impact, Resource and Waste Assessment Categories, Measurements and Methods accordance with EN15804+A2: 2019

Impact Category	Abbreviation	Measurement Unit	Assessment Method and Implementation
Potential environmental impact			
Global warming potential (fossil)	GWP - Fossil	kg CO ₂ equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Global warming potential (biogenic)	GWP - Biogenic	kg CO ₂ equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Land use/ land transformation	GWP - Luluc	kg CO ₂ equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Total global warming potential	GWP - Total	kg CO ₂ equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Acidification potential	AP	mol H ⁺ eq.	Accumulated Exceedance, Seppälä et al. 2006, Posch et al., 2008
Eutrophication – aquatic freshwater	EP - freshwater	kg P equivalent	EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe
Eutrophication – aquatic marine	EP - marine	kg N equivalent	EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe
Eutrophication – terrestrial	EP – terrestrial	mol N equivalent	Accumulated Exceedance, Seppälä et al. 2006, Posch et al.
Photochemical ozone creation potential	POCP	kg NMVOC equivalents	LOTOS-EUROS, Van Zelm et al., 2008, as applied in ReCiPe
Abiotic depletion potential (elements)*	ADPE	kg Sb equivalents	CML (v4.1)
Abiotic depletion potential (fossil fuels)*	ADPF	MJ net calorific value	CML (v4.1)
Ozone depletion potential	ODP	kg CFC 11 equivalents	Steady-state ODPs, WMO 2014

Impact Category	Abbreviation	Measurement Unit	Assessment Method and Implementation
Water Depletion Potential*	WDP	m ³ equivalent deprived	Available WATER REMaining (AWARE) Boulay et al., 2016
Global warming potential, excluding biogenic uptake, emissions and storage**	GWP-GHG	kg CO ₂ equivalents (GWP100)	CML (v4.1)
Resource use			
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ, net calorific value	ecoinvent version 3.6 and expanded by PRé Consultants ¹
Use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value	Manual for direct inputs ²
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ, net calorific value	ecoinvent version 3.6 and expanded by PRé Consultants
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ, net calorific value	Manual for direct inputs ³
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ, net calorific value	ecoinvent version 3.6 and expanded by PRé Consultants
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ, net calorific value	ecoinvent version 3.6 and expanded by PRé Consultants ⁴
Use of secondary material	SM	kg	Manual for direct inputs
Use of renewable secondary fuels	RSF	MJ, net calorific value	Manual for direct inputs
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value	Manual for direct inputs
Use of net fresh water	FW	m ³	ReCiPe 2016
Waste categories			
Hazardous waste disposed	HWD	kg	EDIP 2003 (v1.05)
Non-hazardous waste disposed	NHWD	kg	EDIP 2003 (v1.05) ⁵
Radioactive waste disposed/stored	RWD	kg	EDIP 2003 (v1.05)
Additional environmental impact indicators			
Particulate matter	Potential incidence of	Disease incidence	SETAC-UNEP, Fantke et al. 2016

Impact Category	Abbreviation	Measurement Unit	Assessment Method and Implementation
	disease due to PM emissions (PM)		
Ionising radiation - human health	Potential Human exposure efficiency relative to U235 (IRP)	kBq U-235 eq	Human Health Effect model
Eco-toxicity (freshwater)*	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe	USEtox
Human toxicity potential - cancer effects*	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh	USEtox
Human toxicity potential - non cancer effects*	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh	USEtox
Soil quality*	Potential soil quality index (SQP)	dimensionless	Soil quality index (LANCA®)

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

** This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

¹ Method to calculate Cumulative Energy Demand (CED), based on the method published by Ecoinvent version 2.0 and expanded by PRé Consultants for raw materials available in the SimaPro database.

² Calculated based on the lower hearing value of renewable raw materials.

³ Calculated based on the lower hearing value of non-renewables raw materials.

⁴ Calculated as sum of Non-renewables, fossil, Non-renewable, nuclear and Non-renewable, biomass.

⁵ Calculated as sum of Bulk waste and Slags/ash

Table 3 - Environmental impact indicators in accordance with EN15804+A1:2013

Impact Category	Abbreviation	Measurement Unit (eq. = equivalence)	Assessment Method and Implementation
Global warming potential (GWP100)	GWP	kg CO ₂ eq.	CML (v4.02) based on IPCC AR4
Ozone depletion potential	ODP	kg CFC 11 eq.	CML (v4.02) based on WMO 1999
Acidification potential	AP	kg SO ₂ e eq.	CML (v4.02)
Eutrophication potential	EP	kg PO ₄ ³⁻ eq.	CML (v4.02)
Photochemical ozone creation potential	POCP	kg C ₂ H ₄ eq.	CML (v4.2)
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq.	CML (v4.2)
Abiotic depletion potential for fossil resources	ADPF	MJ net calorific value	CML (v4.2)

Table 4 - Environmental impact indicators in accordance with EN15804+A1:2013

Impact Category	Abbreviation	Measurement Unit (eq. = equivalence)	Assessment Method and Implementation
Human toxicity cancer	HTPc	CTUh	USEtox – cancer effect
Human toxicity noncancer	HTPnc	CTUh	USEtox – noncancer effect
Land use	LU	kg C deficit-eq.	Soil Organic Matter method
Resource depletion - water	RDW	m ³	Water Stress Indicator
Ionising radiation	IR	kBq U-235-eq.	Human Health Effect model
Particulate matter	PM	kg PM2.5-eq.	RiskPoll

Content information

Expanda Range

Product	Part description	Function	Material	Mass (kg/m)	Post consumer %	
PX100 KIT	Rigid void forming profile - uPVC Plastic Extrusion	Component	uPVC	0.36	0%	
	Flexible Capping - PVC Plastic Extrusion		PVC	0.34	0%	
	3M two-sided tape - secure capping to top of profile		Acrylic foam + PE	0.01	0%	
	Stake Bracket - Plastic Injection Moulded		PP	0.03	0%	
	Support Foot - Plastic Injection Moulded		PP	0.04	0%	
	Joiner - Plastic Injection Moulded		PP	0.00	0%	
	Stake - carbon steel electroplated galv - twist and lock thread		Structural Steel (China)	0.57	6%	
	Dowel Sleeve - Plastic Injection Moulded		PP - recycled	0.04	100%	
	Dowel - 14mm dia - 240mm long - Glass Fibre Reinforced Polymer		70% glass fibre reinforced cross linked resin - repurposed waste stream	0.24	70%	
	End Cap - uPVC Plastic Extrusion		uPVC	0.05	0%	
	Total mass - product				1.69	
	Plastic bag	Packaging	LDPE	0.02	0%	
	Cardboard box		Brown cardboard - recycled	0.02	100%	
Total mass - packaging				0.04		
PX125 KIT	Rigid void forming profile - uPVC Plastic Extrusion	Component	uPVC	0.56	0%	
	Flexible Capping - PVC Plastic Extrusion		PVC	0.34	0%	
	3M two-sided tape - secure capping to top of profile		Acrylic foam + PE	0.01	0%	
	Stake Bracket - Plastic Injection Moulded		PP	0.03	0%	
	Support Foot - Plastic Injection Moulded		PP	0.04	0%	
	Joiner - Plastic Injection Moulded		PP	0.00	0%	
	Stake - carbon steel electroplated galv - twist and lock thread		Structural Steel (China)	0.57	6%	
	Dowel Sleeve - Plastic Injection Moulded		PP - recycled	0.04	100%	
	Dowel - 14mm dia - 240mm long - Glass Fibre Reinforced Polymer		70% glass fibre reinforced cross linked resin - repurposed waste stream	0.24	70%	
	End Cap - uPVC Plastic Extrusion		uPVC	0.05	0%	
	Total mass - product				1.89	
	Plastic bag	Packaging	LDPE	0.02	0%	
	Cardboard box		Brown cardboard - recycled	0.02	100%	

Product	Part description	Function	Material	Mass (kg/m)	Post consumer %
	Total mass - packaging			0.04	
PX150HDSET	Rigid void forming profile - uPVC Plastic Extrusion	Component	uPVC	0.57	0%
	Flexible Capping - PVC Plastic Extrusion		PVC	0.34	0%
	3M two-sided tape - secure capping to top of profile		Acrylic foam + PE	0.01	0%
	Stake Bracket - Plastic Injection Moulded		PP	0.03	0%
	Support Foot - Plastic Injection Moulded		PP	0.04	0%
	Joiner - Plastic Injection Moulded		PP	0.00	0%
	Stake - carbon steel electroplated galv - twist and lock thread		Structural Steel (China)	0.57	6%
	Diamond Dowel Sleeve - Plastic Injection Moulded		High impact polystyrene (HIPS)	0.12	100%
	Diamond Dowel - 6mm plate dowel - galv		Mild steel (China)	1.05	70%
	End Cap - uPVC Plastic Extrusion		uPVC	0.06	0%
	Total mass - product			2.80	
Plastic bag	Packaging	LDPE	0.02	0%	
Cardboard box		Brown cardboard - recycled	0.02	100%	
Total mass - packaging			0.04		

Crack A Joint Range

Product	Part description	Function	Material	Mass (kg/m)	Post consumer %
PXCAJ25B/G	Crack Inducer - rigid profile	Component	uPVC	0.20	0%
	Crack Inducer - co-extruded flexible capping with Rip-A-Strip		PVC	0.01	0%
	Joiner - connect CAJ end to end		uPVC	0.01	0%
	Total mass - product			0.22	
Plastic bag	Packaging		0.01	0%	
Total mass - packaging			0.01		
PXCAJ38B/G	Crack Inducer - rigid profile	Component	uPVC	0.26	0%
	Crack Inducer - co-extruded flexible capping with Rip-A-Strip		PVC	0.01	0%
	Joiner - connect CAJ end to end		uPVC	0.01	0%
	Total mass - product			0.27	
Plastic bag	Packaging		0.01	0%	
Total mass - packaging			0.01		

Geared Range

Product	Part description	Function	Material	Mass (kg/m)	Post consumer %
PXG100B/G	Rigid profile - Articulated Joint System - uPVC Plastic Extrusion	Component	uPVC	0.69	0%

Product	Part description	Function	Material	Mass (kg/m)	Post consumer %	
	Flexible Capping - co-extruded with Rip-A-Strip (material 2 of 2)		PVC	0.01	0%	
	Stake Bracket/Foot - Plastic Injection Moulded		PP	0.07	0%	
	Stake - carbon steel electroplated galv - twist and lock thread		Carbon steel (China)	0.57	6%	
	Joiner - connect Geared end to end		uPVC	0.01	0%	
	Total mass - product				1.35	
	Plastic bag	Packaging	LDPE	0.01	0%	
	Cardboard box		Brown cardboard - recycled	0.01	100%	
Total mass - packaging				0.02		
PXG125B/G	Rigid profile - Articulated Joint System - uPVC Plastic Extrusion	Component	uPVC	0.85	0%	
	Flexible Capping - co-extruded with Rip-A-Strip (material 2 of 2)		PVC	0.01	0%	
	Stake Bracket/Foot - Plastic Injection Moulded		PP	0.07	0%	
	Stake - carbon steel electroplated galv - twist and lock thread		Carbon steel (China)	0.57	6%	
	Joiner - connect Geared end to end		uPVC	0.01	0%	
	Total mass - product				1.52	
	Plastic bag	Packaging	LDPE	0.01	0%	
Cardboard box	Brown cardboard - recycled		0.01	100%		
Total mass - packaging				0.02		
PXG150B/G	Rigid profile - Articulated Joint System - uPVC Plastic Extrusion	Component	uPVC	1.01	0%	
	Flexible Capping - co-extruded with Rip-A-Strip (material 2 of 2)		PVC	0.01	0%	
	Stake Bracket/Foot - Plastic Injection Moulded		PP	0.08	0%	
	Stake - carbon steel electroplated galv - twist and lock thread		Carbon steel (China)	0.57	6%	
	Joiner - connect Geared end to end		uPVC	0.01	0%	
	Total mass - product				1.68	
	Plastic bag	Packaging	LDPE	0.01	0%	
Cardboard box	Brown cardboard - recycled		0.01	100%		
Total mass - packaging				0.02		

None of the products contain one or more substances that are listed in the “Candidate List of Substances of Very High Concern for authorisation”. According to the PCR 2019:14, if one or more substances of the “Candidate List of Substances of Very High Concern (SVHC) for authorisation” are present in a product and their total content exceeds 0.1% of the weight of the product, they need to be reported.

Biogenic carbon – calculation methodology, mass balance, and content declaration

There is no biogenic carbon in the products, and the biogenic carbon content in cardboard packaging in Expanda and Geared range is described in Table 5. The Crack A Joint range does not have any cardboard packaging.

Table 5 - Biogenic carbon content in packaging

Product Range	Product	Cardboard packaging weight (kg)	Biogenic carbon - kg C
EXPANDA	PX100KIT	0.0216	0.009
	PX125KIT	0.0216	0.009
	PX150HDSET	0.0223	0.010
GEARED	PXG100B/G	0.0113	0.005
	PXG125B/G	0.0113	0.005
	PXG150B/G	0.0113	0.005

Additional information on release of dangerous substances to indoor air, soil and water

The products are highly inert and are used predominantly in outdoor applications. They do not release any dangerous substances to indoor air, soil, or water.

Distribution (A4)

Weighted average distance from the Morningside warehouse to the 10 sites across Australia was calculated. Weighting factor was project cost for PaveX products. The sites considered are the top ten sales for PaveX in 2022.

Installation (A5)

There are no utilities consumed for installation of PaveX and no additional construction operations (e.g., digging etc.) or power-tools are needed (only a mallet may be used). As such, there is no impact from installation. The only impact considered in A5 will be the disposal of packaging after installation.

End-of-life: Disposal/Reuse/Recycling (C1 – C4)

Table 6 - Life cycle inventory for end-of-life

Module	Item	Value	Comment
Deconstruction (C1)	Electric sledgehammer	0.13 kWh/m	2000W sledgehammer used for 4 min per metre
Waste transport (C2)	Distance to landfill/recycling plant	100 km	Conservative estimate

Module	Item	Value	Comment
Waste reprocessing (C3)	Recycling of installed components bolts at the end of life in accordance with respective material's recycling rate in Australia.	Initial mass of components x recycling rate	Recycling rate for plastics, and steel are 12.6% & 90%, respectively.
Land disposal (C4)	Land disposal of installed components that are not recycled at the end of life	Initial mass of components that is not recycled	

Benefits and loads beyond the system boundary (D)

The recycling process for thermoplastics in modules C3 and A5 involves size reduction, followed by extrusion to convert the plastic into granulate, reaching the end-of-waste state. The benefit of this granulate is then assessed in module D. This benefit essentially arises from the avoidance of producing corresponding virgin thermoplastic, such as PP and PVC, granulate. Recycled plastic cannot directly replace virgin plastic due to degradation in its properties resulting from melt processing.

Key mechanical properties of recycled plastics can be up to 20% lower than those of their virgin counterparts (Gaikwad et al., 2018). By incorporating virgin plastics and additives during compounding, it is possible to bring the performance on par with virgin plastics, and in terms of mass, this generally doesn't exceed 10%. Therefore, a 90% benefit of virgin plastic should have been sufficient for this EPD. However, to be conservative, this EPD assumes an 80% benefit of virgin plastic. Furthermore, it is common practice to use plastic packaging, especially flexible packaging, with 80% recycled content, as observed in AusPost."

The recycling process for steel in module C3 involves the re-melting of scrap steel in an Electric Arc Furnace to produce low-alloyed steel. The benefit in this case is the avoidance of producing steel from iron ore in a blast furnace. Furthermore, a conservative recycling rate of 90% ensures that no recycling benefit is allocated to the burden-free amount of scrap steel (i.e., 6% by mass).

In module A5, the recycling process for cardboard involves converting waste cardboard into recycled corrugated board base paper. The benefit in this case is modelled as the avoidance of producing virgin corrugated board base paper. To account for the loss in properties and material of the wood fibres during paper recycling, only 80% of the benefit of corrugated base paper is considered. This approach aligns with the recycled content of 70% to 90% commonly found in corrugated packaging boxes.

Results of the environmental performance indicators

EXPANDA Range PX100KIT

Table 7 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	4.89E+00	9.91E-02	1.54E-02	1.23E-01	3.05E-02	4.36E-01	1.32E-01	-1.28E+00
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	-3.41E-02	0.00E+00	3.41E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-02
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	2.85E-02	8.23E-07	3.69E-07	1.18E-05	2.53E-07	1.48E-05	3.97E-09	-2.09E-05
Global warming potential - total	GWP - Total	kg CO₂ eq.	4.89E+00	9.91E-02	4.94E-02	1.23E-01	3.05E-02	4.36E-01	1.32E-01	-1.26E+00
Ozone depletion potential	ODP	kg CFC 11 eq.	2.48E-07	1.51E-08	4.98E-10	1.66E-09	4.65E-09	1.43E-08	1.95E-10	-2.17E-08
Acidification potential	AP	mol H ⁺ eq.	4.88E-02	7.83E-04	6.42E-05	5.85E-04	2.41E-04	2.78E-03	5.88E-06	-6.18E-03
Eutrophication – freshwater	EP - F	kg P eq.	1.31E-03	3.44E-06	1.24E-06	2.02E-04	1.06E-06	7.21E-05	1.43E-08	-2.35E-04
Eutrophication – marine	EP - M	kg N eq.	6.53E-03	2.24E-04	6.27E-05	1.34E-04	6.90E-05	5.24E-04	2.02E-03	-1.13E-03
Eutrophication – terrestrial	EP - T	mol N eq.	1.66E-01	2.46E-03	2.59E-04	1.05E-03	7.57E-04	5.68E-03	1.01E-05	-1.27E-02
Photochemical ozone creation potential	POCP	kg NMVOC eq.	2.12E-02	6.07E-04	6.83E-05	2.75E-04	1.87E-04	1.52E-03	3.50E-05	-3.93E-03
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	9.65E-05	3.60E-07	1.88E-08	4.68E-07	1.11E-07	8.63E-07	9.99E-10	-1.69E-05
Abiotic depletion potential - fossil fuels	ADPF	MJ	8.61E+01	1.33E+00	1.75E-01	1.26E+00	4.09E-01	4.42E+00	1.43E-02	-1.28E+01
Water Depletion Potential	WDP	m ³	1.71E+01	1.03E-01	2.99E-01	8.71E-03	3.16E-02	1.71E+01	1.38E-03	-3.60E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 8 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq.	4.75E+00	9.71E-02	3.06E-02	1.22E-01	2.99E-02	4.27E-01	9.42E-02	-1.23E+00
Particulate matter	PM	disease incidence	4.98E-07	5.14E-09	9.43E-10	1.58E-09	4.98E-08	2.98E-11	8.61E-08	-5.17E-07
Ionising radiation	IRP	kBq U235 eq.	1.50E-01	5.35E-05	4.30E-04	1.65E-05	1.17E-03	3.79E-07	3.60E-02	-1.50E-01
Ecotoxicity - freshwater	ETP - fw	CTU _e	1.14E+02	7.58E-01	1.44E+00	2.33E-01	3.01E+00	2.05E-01	2.27E+01	-1.19E+02
Human toxicity potential - cancer effects	HTP - c	CTU _h	1.03E-08	2.58E-11	2.81E-11	7.94E-12	4.74E-09	8.93E-13	5.10E-09	-1.06E-08
Human toxicity potential - non cancer effects	HTP - nc	CTU _h	1.24E-07	9.20E-10	1.32E-09	2.83E-10	1.60E-07	1.08E-10	3.80E-08	-1.31E-07
Soil quality	SQP	Pt	1.75E+01	3.67E-01	9.13E-02	1.13E-01	1.94E+00	3.96E-01	5.07E+00	-1.88E+01

Table 9 - Resource use indicators per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	3.97E+00	1.43E-02	1.02E-02	1.17E-01	4.41E-03	3.30E-01	1.23E-04	-1.28E+00
Use of renewable primary energy resources used as raw materials	PERM	MJ	3.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	4.34E+00	1.43E-02	1.02E-02	1.17E-01	4.41E-03	3.30E-01	1.23E-04	-1.28E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	6.04E+01	1.33E+00	1.75E-01	1.26E+00	4.09E-01	4.42E+00	1.43E-02	-1.28E+01
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ	2.57E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Primary non renewable energy - total	PENRT	MJ	8.61E+01	1.33E+00	1.75E-01	1.26E+00	4.09E-01	4.42E+00	1.43E-02	-1.28E+01
Use of secondary material	SM	kg	9.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	3.99E-01	1.35E-02	5.93E-03	1.63E-04	4.17E-03	4.55E-01	1.26E-04	-6.10E+00

Table 10 - Waste indicators per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	5.60E-04	1.86E-06	7.30E-08	6.31E-07	5.72E-07	3.01E-06	6.55E-09	-8.84E-05
Non-hazardous waste disposed	NHWD	kg	6.89E-01	9.69E-03	8.59E-03	5.20E-03	2.98E-03	9.21E-02	3.63E-05	-4.40E-01
Radioactive waste disposed/stored	RWD	kg	8.16E-05	7.40E-09	1.38E-08	2.54E-07	2.28E-09	4.86E-07	5.18E-11	-5.42E-06

Table 11 - Output flow indicators per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	1.58E-02	0.00E+00	0.00E+00	6.55E-01	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 12 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	4.78E+00	9.73E-02	3.50E-02	1.22E-01	3.00E-02	4.29E-01	1.04E-01	-1.24E+00
Ozone layer depletion	ODP	kg CFC-11 eq	2.20E-07	1.20E-08	4.06E-10	1.35E-09	3.68E-09	1.19E-08	1.54E-10	-1.76E-08
Acidification potential	AP	kg SO ₂ eq	3.16E-02	4.15E-04	4.03E-05	4.90E-04	1.28E-04	1.07E-03	4.11E-06	-4.43E-03
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	9.05E-03	8.59E-05	2.86E-04	6.62E-04	2.64E-05	4.01E-04	1.58E-02	-1.11E-03
Photochemical ozone creation potential	POCP	kg C2H4 eq	2.58E-03	2.79E-05	7.08E-06	1.69E-05	8.59E-06	8.11E-05	1.94E-05	-6.20E-04
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	9.66E-05	3.60E-07	1.96E-08	4.68E-07	1.11E-07	8.64E-07	9.99E-10	-1.69E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	7.52E+01	1.33E+00	1.74E-01	1.26E+00	4.09E-01	4.17E+00	1.43E-02	-1.15E+01

Table 13 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PX100KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	6.13E-10	2.23E-12	7.00E-13	1.46E-12	6.86E-13	9.95E-11	1.29E-14	-1.60E-10
Human Toxicity non-cancer	HTnc	CTUh	5.38E-10	5.01E-13	1.64E-13	5.40E-14	1.54E-13	4.55E-12	2.21E-15	-1.58E-12
Land use	LU	kg C deficit eq.	5.20E+00	2.71E-01	1.73E-02	3.62E-02	8.35E-02	3.34E-01	6.08E-02	-1.34E+00
Ionising radiation	IR	kBq U235 eq	1.51E-01	5.35E-05	6.06E-05	4.50E-04	1.65E-05	1.17E-03	3.79E-07	-3.61E-02
Particulate Matter	PM	kg PM2,5-Equiv.	5.62E-03	9.72E-05	9.29E-06	7.39E-05	2.99E-05	3.51E-04	5.95E-07	-1.74E-03
Resource depletion - water	RDW	m ³	5.57E-01	3.37E-03	9.69E-03	1.83E-04	1.04E-03	5.56E-01	4.51E-05	-1.17E+00

PX125KIT

Table 14 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	5.37E+00	1.11E-01	1.54E-02	1.23E-01	3.41E-02	4.69E-01	1.56E-01	-1.32E+00
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	-3.41E-02	0.00E+00	3.41E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-02
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	2.85E-02	9.23E-07	3.69E-07	1.18E-05	2.83E-07	1.78E-05	3.97E-09	-2.09E-05
Global warming potential - total	GWP - Total	kg CO₂ eq.	5.36E+00	1.11E-01	4.94E-02	1.23E-01	3.41E-02	4.69E-01	1.56E-01	-1.30E+00
Ozone depletion potential	ODP	kg CFC 11 eq.	2.55E-07	1.70E-08	4.98E-10	1.66E-09	5.20E-09	1.54E-08	1.95E-10	-2.17E-08
Acidification potential	AP	mol H ⁺ eq.	5.05E-02	8.79E-04	6.42E-05	5.85E-04	2.70E-04	2.96E-03	6.33E-06	-6.31E-03
Eutrophication – freshwater	EP - F	kg P eq.	1.32E-03	3.86E-06	1.24E-06	2.02E-04	1.18E-06	8.12E-05	1.43E-08	-2.36E-04
Eutrophication – marine	EP - M	kg N eq.	6.93E-03	2.52E-04	6.27E-05	1.34E-04	7.72E-05	5.62E-04	2.38E-03	-1.16E-03
Eutrophication – terrestrial	EP - T	mol N eq.	1.71E-01	2.76E-03	2.59E-04	1.05E-03	8.46E-04	6.07E-03	1.02E-05	-1.30E-02
Photochemical ozone creation potential	POCP	kg NMVOC eq.	2.23E-02	6.81E-04	6.83E-05	2.75E-04	2.09E-04	1.62E-03	4.10E-05	-4.01E-03
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	9.68E-05	4.04E-07	1.88E-08	4.68E-07	1.24E-07	9.08E-07	9.99E-10	-1.69E-05
Abiotic depletion potential - fossil fuels	ADPF	MJ	9.80E+01	1.49E+00	1.75E-01	1.26E+00	4.58E-01	4.90E+00	1.43E-02	-1.40E+01
Water Depletion Potential	WDP	m ³	2.15E+01	1.15E-01	2.99E-01	8.71E-03	3.54E-02	2.10E+01	1.38E-03	-3.64E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 15 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq	5.22E+00	1.09E-01	3.06E-02	1.22E-01	3.34E-02	4.59E-01	1.11E-01	-1.27E+00
Particulate matter	PM	disease incidence	5.17E-07	5.77E-09	3.94E-10	9.43E-10	1.77E-09	5.12E-08	3.01E-11	-8.75E-08
Ionising radiation - human health	IRP	kBq U-235 eq	1.50E-01	6.00E-05	6.04E-05	4.30E-04	1.84E-05	1.39E-03	3.79E-07	-3.61E-02
Ecotoxicity - freshwater	ETP - fw	CTUe	1.19E+02	8.51E-01	8.29E-02	1.44E+00	2.61E-01	3.27E+00	2.41E-01	-2.32E+01
Human toxicity potential - cancer effects	HTP - c	CTUh	1.06E-08	2.89E-11	3.73E-12	2.81E-11	8.88E-12	4.76E-09	1.03E-12	-5.12E-09
Human toxicity potential - non cancer effects	HTP - nc	CTUh	1.31E-07	1.03E-09	1.80E-10	1.32E-09	3.17E-10	1.60E-07	1.26E-10	-3.87E-08
Soil quality	SQP	Pt	1.88E+01	4.12E-01	7.41E-02	9.13E-02	1.26E-01	2.13E+00	4.64E-01	-5.07E+00

Table 16 - Resource use indicators per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	4.29E+00	1.61E-02	1.02E-02	1.17E-01	4.94E-03	3.60E-01	1.23E-04	-1.30E+00
Use of renewable primary energy resources used as raw materials	PERM	MJ	3.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	4.66E+00	1.61E-02	1.02E-02	1.17E-01	4.94E-03	3.60E-01	1.23E-04	-1.30E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	6.81E+01	1.49E+00	1.75E-01	1.26E+00	4.58E-01	4.90E+00	1.43E-02	-1.40E+01
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ	2.99E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	9.80E+01	1.49E+00	1.75E-01	1.26E+00	4.58E-01	4.90E+00	1.43E-02	-1.40E+01
Use of secondary material	SM	kg	9.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	4.91E-01	1.52E-02	5.93E-03	1.63E-04	4.66E-03	5.21E-01	1.26E-04	-6.11E+00

Table 17 - Waste indicators per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	5.61E-04	2.09E-06	7.30E-08	6.31E-07	6.40E-07	3.13E-06	6.55E-09	-8.84E-05
Non-hazardous waste disposed	NHWD	kg	7.06E-01	1.09E-02	8.59E-03	5.20E-03	3.34E-03	9.40E-02	3.63E-05	-4.41E-01
Radioactive waste disposed/stored	RWD	kg	8.11E-05	8.30E-09	1.38E-08	2.54E-07	2.55E-09	5.85E-07	5.18E-11	-5.42E-06

Table 18 - Output flow indicators per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	1.58E-02	0.00E+00	0.00E+00	6.82E-01	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 19 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	5.25E+00	1.09E-01	3.50E-02	1.22E-01	3.35E-02	4.61E-01	1.23E-01	-1.28E+00
Ozone layer depletion	ODP	kg CFC-11 eq	2.25E-07	1.34E-08	4.06E-10	1.35E-09	4.11E-09	1.29E-08	1.54E-10	-1.77E-08
Acidification potential	AP	kg SO ₂ eq	3.28E-02	4.66E-04	4.03E-05	4.90E-04	1.43E-04	1.17E-03	4.51E-06	-4.54E-03
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	9.24E-03	9.64E-05	2.86E-04	6.62E-04	2.96E-05	4.42E-04	1.87E-02	-1.13E-03
Photochemical ozone creation potential	POCP	kg C2H4 eq	2.66E-03	3.13E-05	7.08E-06	1.69E-05	9.61E-06	8.60E-05	2.29E-05	-6.26E-04
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	9.69E-05	4.04E-07	1.96E-08	4.68E-07	1.24E-07	9.09E-07	9.99E-10	-1.69E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	8.46E+01	1.49E+00	1.74E-01	1.26E+00	4.57E-01	4.58E+00	1.43E-02	-1.24E+01

Table 20 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PX125KIT

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	7.19E-10	2.50E-12	7.00E-13	1.46E-12	7.67E-13	1.04E-10	1.29E-14	-1.70E-10
Human Toxicity non-cancer	HTnc	CTUh	5.40E-10	5.62E-13	1.64E-13	5.40E-14	1.72E-13	5.22E-12	2.21E-15	-1.60E-12
Land use	LU	kg C deficit eq.	5.45E+00	3.05E-01	1.73E-02	3.62E-02	9.34E-02	3.61E-01	7.04E-02	-1.34E+00
Ionising radiation	IR	kBq U235 eq	1.50E-01	6.01E-05	6.06E-05	4.50E-04	1.84E-05	1.40E-03	3.79E-07	-3.61E-02
Particulate Matter	PM	kg PM2,5-Equiv.	5.83E-03	1.09E-04	9.29E-06	7.39E-05	3.35E-05	3.71E-04	6.22E-07	-1.75E-03
Resource depletion - water	RDW	m ³	6.97E-01	3.78E-03	9.69E-03	1.83E-04	1.16E-03	6.81E-01	4.51E-05	-1.18E+00

PX150HDSET

Table 21 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	8.32E+00	1.63E-01	1.62E-02	1.23E-01	5.06E-02	1.02E+00	1.40E-01	-3.35E+00
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	-3.51E-02	0.00E+00	3.51E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-02
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	4.49E-03	1.36E-06	3.78E-07	1.18E-05	4.20E-07	1.91E-05	1.13E-08	-2.48E-05
Global warming potential - total	GWP - Total	kg CO₂ eq.	8.29E+00	1.63E-01	5.13E-02	1.23E-01	5.06E-02	1.02E+00	1.40E-01	-3.33E+00
Ozone depletion potential	ODP	kg CFC 11 eq.	4.00E-07	2.49E-08	5.16E-10	1.66E-09	7.71E-09	3.23E-08	5.54E-10	-5.89E-08
Acidification potential	AP	mol H ⁺ eq.	1.08E-01	1.29E-03	6.69E-05	5.85E-04	3.99E-04	6.75E-03	1.24E-05	-1.65E-02
Eutrophication – freshwater	EP - F	kg P eq.	2.63E-03	5.66E-06	1.28E-06	2.02E-04	1.75E-06	1.44E-04	4.05E-08	-6.48E-04
Eutrophication – marine	EP - M	kg N eq.	1.15E-02	3.69E-04	6.39E-05	1.34E-04	1.14E-04	1.24E-03	2.13E-03	-2.95E-03
Eutrophication – terrestrial	EP - T	mol N eq.	4.01E-01	4.05E-03	2.68E-04	1.05E-03	1.25E-03	1.35E-02	2.81E-05	-3.34E-02
Photochemical ozone creation potential	POCP	kg NMVOC eq.	3.43E-02	9.99E-04	7.03E-05	2.75E-04	3.10E-04	3.62E-03	4.14E-05	-1.04E-02
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	2.44E-04	5.93E-07	1.98E-08	4.68E-07	1.84E-07	2.10E-06	2.84E-09	-4.73E-05
Abiotic depletion potential - fossil fuels	ADPF	MJ	1.32E+02	2.19E+00	1.84E-01	1.26E+00	6.78E-01	9.27E+00	4.07E-02	-2.86E+01
Water Depletion Potential	WDP	m ³	2.31E+01	1.69E-01	3.00E-01	8.71E-03	5.24E-02	2.49E+01	3.91E-03	-9.96E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 22 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq	7.99E+00	1.60E-01	3.14E-02	1.22E-01	4.95E-02	1.00E+00	1.00E-01	-3.22E+00
Particulate matter	PM	disease incidence	1.15E-06	8.47E-09	4.15E-10	9.43E-10	2.62E-09	1.32E-07	8.13E-11	-2.32E-07
Ionising radiation - human health	IRP	kBq U-235 eq	2.40E-01	8.81E-05	6.37E-05	4.30E-04	2.73E-05	1.61E-03	1.08E-06	-1.01E-01
Ecotoxicity - freshwater	ETP - fw	CTUe	2.38E+02	1.25E+00	8.76E-02	1.44E+00	3.87E-01	6.78E+00	2.26E-01	-6.13E+01
Human toxicity potential - cancer effects	HTP - c	CTUh	2.55E-08	4.25E-11	3.94E-12	2.81E-11	1.32E-11	1.33E-08	1.20E-12	-1.43E-08
Human toxicity potential - non cancer effects	HTP - nc	CTUh	2.08E-07	1.52E-09	1.88E-10	1.32E-09	4.69E-10	4.51E-07	1.23E-10	-1.03E-07
Soil quality	SQP	Pt	2.67E+01	6.05E-01	7.77E-02	9.13E-02	1.87E-01	4.36E+00	4.61E-01	-1.05E+01

Table 23 - Resource use indicators per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	5.48E+00	2.36E-02	1.09E-02	1.17E-01	7.31E-03	7.48E-01	3.49E-04	-2.97E+00
Use of renewable primary energy resources used as raw materials	PERM	MJ	3.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	5.85E+00	2.36E-02	1.09E-02	1.17E-01	7.31E-03	7.48E-01	3.49E-04	-2.97E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	1.04E+02	2.19E+00	1.84E-01	1.26E+00	6.78E-01	9.27E+00	4.07E-02	-2.86E+01
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ	2.83E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	1.32E+02	2.19E+00	1.84E-01	1.26E+00	6.78E-01	9.27E+00	4.07E-02	-2.86E+01
Use of secondary material	SM	kg	1.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	5.22E-01	2.23E-02	6.06E-03	1.63E-04	6.91E-03	8.77E-01	3.58E-04	-1.72E+01

Table 24 - Waste indicators per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	1.54E-03	3.06E-06	7.69E-08	6.31E-07	9.48E-07	7.68E-06	1.86E-08	-2.50E-04
Non-hazardous waste disposed	NHWD	kg	1.46E+00	1.60E-02	8.63E-03	5.20E-03	4.94E-03	2.48E-01	1.03E-04	-1.23E+00
Radioactive waste disposed/stored	RWD	kg	1.41E-04	1.22E-08	1.42E-08	2.54E-07	3.77E-09	6.06E-07	1.47E-10	-1.47E-05

Table 25 - Output flow indicators per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	1.61E-02	0.00E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 26 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	8.05E+00	1.60E-01	3.58E-02	1.22E-01	4.96E-02	1.01E+00	1.11E-01	-3.23E+00
Ozone layer depletion	ODP	kg CFC-11 eq	3.62E-07	1.97E-08	4.20E-10	1.35E-09	6.10E-09	2.64E-08	4.38E-10	-4.80E-08
Acidification potential	AP	kg SO ₂ eq	6.72E-02	6.83E-04	4.18E-05	4.90E-04	2.12E-04	2.42E-03	7.70E-06	-1.18E-02
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	1.95E-02	1.41E-04	2.86E-04	6.62E-04	4.38E-05	8.63E-04	1.67E-02	-3.01E-03
Photochemical ozone creation potential	POCP	kg C2H4 eq	2.59E-03	4.59E-05	7.19E-06	1.69E-05	1.42E-05	1.96E-04	2.07E-05	-1.71E-03
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	2.44E-04	5.93E-07	2.06E-08	4.68E-07	1.84E-07	2.10E-06	2.84E-09	-4.73E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	1.18E+02	2.19E+00	1.83E-01	1.26E+00	6.78E-01	8.94E+00	4.07E-02	-2.64E+01

Table 27 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PX150HDSET

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	8.33E-10	3.67E-12	7.43E-13	1.46E-12	1.14E-12	2.53E-10	3.67E-14	-3.97E-10
Human Toxicity non-cancer	HTnc	CTUh	4.63E-11	8.24E-13	1.73E-13	5.40E-14	2.55E-13	8.62E-12	6.27E-15	-3.96E-12
Land use	LU	kg C deficit eq.	8.21E+00	4.47E-01	1.81E-02	3.62E-02	1.38E-01	7.61E-01	7.80E-02	-3.51E+00
Ionising radiation	IR	kBq U235 eq	2.40E-01	8.81E-05	6.38E-05	4.50E-04	2.73E-05	1.62E-03	1.08E-06	-1.01E-01
Particulate Matter	PM	kg PM2,5-Equiv.	1.13E-02	1.60E-04	9.62E-06	7.39E-05	4.96E-05	8.63E-04	1.42E-06	-4.77E-03
Resource depletion - water	RDW	m ³	7.53E-01	5.55E-03	9.72E-03	1.83E-04	1.72E-03	8.06E-01	1.28E-04	-3.23E+00

Crack A Joint Range PXCAJ25B/G

Table 28 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	6.27E-01	1.34E-02	4.77E-03	1.23E-01	3.97E-03	3.55E-02	2.70E-02	-4.97E-02
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	3.33E-06	1.11E-07	2.14E-07	1.18E-05	3.30E-08	3.29E-06	0.00E+00	-2.79E-09
Global warming potential - total	GWP - Total	kg CO₂ eq.	6.27E-01	1.34E-02	4.77E-03	1.23E-01	3.97E-03	3.55E-02	2.70E-02	-4.97E-02
Ozone depletion potential	ODP	kg CFC 11 eq.	1.03E-08	2.05E-09	1.47E-10	1.66E-09	6.06E-10	1.20E-09	0.00E+00	-1.52E-10
Acidification potential	AP	mol H ⁺ eq.	2.64E-03	1.06E-04	1.63E-05	5.85E-04	3.14E-05	1.89E-04	5.03E-07	-1.60E-04
Eutrophication – freshwater	EP - F	kg P eq.	1.55E-05	4.65E-07	6.21E-07	2.02E-04	1.38E-07	9.74E-06	0.00E+00	-1.16E-06
Eutrophication – marine	EP - M	kg N eq.	6.04E-04	3.03E-05	2.85E-05	1.34E-04	8.99E-06	4.08E-05	4.15E-04	-3.94E-05
Eutrophication – terrestrial	EP - T	mol N eq.	6.46E-03	3.33E-04	3.83E-05	1.05E-03	9.85E-05	4.24E-04	7.28E-08	-4.13E-04
Photochemical ozone creation potential	POCP	kg NMVOC eq.	1.67E-03	8.21E-05	1.05E-05	2.75E-04	2.43E-05	1.12E-04	6.71E-06	-1.09E-04
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	3.59E-07	4.87E-08	4.24E-09	4.68E-07	1.44E-08	4.87E-08	0.00E+00	-1.56E-09
Abiotic depletion potential - fossil fuels	ADPF	MJ	1.43E+01	1.80E-01	4.89E-02	1.26E+00	5.33E-02	5.13E-01	0.00E+00	-1.37E+00
Water Depletion Potential	WDP	m ³	4.83E+00	1.39E-02	2.63E-01	8.71E-03	4.12E-03	4.19E+00	0.00E+00	-4.48E-01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 29 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq	6.14E-01	1.31E-02	4.25E-03	1.22E-01	3.89E-03	3.47E-02	1.93E-02	-4.86E-02
Particulate matter	PM	disease incidence	2.53E-08	6.96E-10	1.08E-10	9.43E-10	2.06E-10	1.49E-09	3.74E-13	-1.62E-09
Ionising radiation - human health	IRP	kBq U-235 eq	2.65E-04	7.24E-06	1.57E-05	4.30E-04	2.14E-06	2.42E-04	0.00E+00	-9.49E-07
Ecotoxicity - freshwater	ETP - fw	CTUe	5.55E+00	1.03E-01	1.73E-02	1.44E+00	3.04E-02	2.85E-01	4.11E-02	-4.96E-01
Human toxicity potential - cancer effects	HTP - c	CTUh	2.73E-10	3.49E-12	7.42E-13	2.81E-11	1.03E-12	1.55E-11	1.54E-13	-2.29E-11
Human toxicity potential - non cancer effects	HTP - nc	CTUh	8.57E-09	1.25E-10	1.73E-11	1.32E-09	3.69E-11	3.75E-10	2.11E-11	-7.67E-10
Soil quality	SQP	Pt	2.24E+00	4.97E-02	1.98E-02	9.13E-02	1.47E-02	1.96E-01	7.67E-02	-8.86E-03

Table 30 - Resource use indicators per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	5.30E-01	1.94E-03	2.03E-03	1.17E-01	5.75E-04	3.20E-02	0.00E+00	-2.15E-02
Use of renewable primary energy resources used as raw materials	PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	5.30E-01	1.94E-03	2.03E-03	1.17E-01	5.75E-04	3.20E-02	0.00E+00	-2.15E-02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	9.73E+00	1.80E-01	4.89E-02	1.26E+00	5.33E-02	5.13E-01	0.00E+00	-1.37E+00
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ	4.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	1.43E+01	1.80E-01	4.89E-02	1.26E+00	5.33E-02	5.13E-01	0.00E+00	-1.37E+00
Use of secondary material	SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	1.27E-01	1.83E-03	4.59E-03	1.63E-04	5.43E-04	7.21E-02	0.00E+00	-7.59E-03

Table 31 - Waste indicators per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	1.63E-06	2.52E-07	1.50E-08	6.31E-07	7.45E-08	1.26E-07	0.00E+00	-1.32E-08
Non-hazardous waste disposed	NHWD	kg	2.38E-02	1.31E-03	1.76E-04	5.20E-03	3.88E-04	2.06E-03	0.00E+00	-1.02E-03
Radioactive waste disposed/stored	RWD	kg	9.32E-08	1.00E-09	6.85E-09	2.54E-07	2.97E-10	1.06E-07	0.00E+00	-1.23E-10

Table 32 - Output flow indicators per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	1.76E-03	0.00E+00	0.00E+00	2.77E-02	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 33 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	6.16E-01	1.32E-02	4.38E-03	1.22E-01	3.90E-03	3.49E-02	2.13E-02	-4.88E-02
Ozone layer depletion	ODP	kg CFC-11 eq	8.22E-09	1.62E-09	1.25E-10	1.35E-09	4.79E-10	1.09E-09	0.00E+00	-1.21E-10
Acidification potential	AP	kg SO ₂ eq	1.62E-03	5.62E-05	7.65E-06	4.90E-04	1.66E-05	1.06E-04	4.57E-07	-1.20E-04
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	2.59E-04	1.16E-05	1.98E-04	6.62E-04	3.44E-06	4.41E-05	3.26E-03	-1.75E-05
Photochemical ozone creation potential	POCP	kg C2H4 eq	9.99E-05	3.78E-06	7.70E-07	1.69E-05	1.12E-06	5.27E-06	3.98E-06	-7.96E-06
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	3.66E-07	4.87E-08	4.24E-09	4.68E-07	1.44E-08	4.89E-08	0.00E+00	-2.23E-09
Abiotic depletion potential for fossil resources	ADPF	MJ	1.17E+01	1.80E-01	4.86E-02	1.26E+00	5.32E-02	4.42E-01	0.00E+00	-1.11E+00

Table 34 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PXCAJ25B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	3.01E-13	1.74E-13	1.46E-12	8.92E-14	5.17E-12	0.00E+00	-1.09E-11	3.01E-13
Human Toxicity non-cancer	HTnc	CTUh	6.78E-14	5.68E-14	5.40E-14	2.01E-14	7.19E-13	0.00E+00	-6.23E-14	6.78E-14
Land use	LU	kg C deficit eq.	3.67E-02	3.85E-03	3.62E-02	1.09E-02	2.91E-02	1.09E-02	-3.25E-03	3.67E-02

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Ionising radiation	IR	kBq U235 eq	7.24E-06	1.58E-05	4.50E-04	2.15E-06	2.43E-04	0.00E+00	-9.49E-07	7.24E-06
Particulate Matter	PM	kg PM2,5-Equiv.	1.32E-05	1.73E-06	7.39E-05	3.90E-06	2.17E-05	3.14E-08	-1.97E-05	1.32E-05
Resource depletion - water	RDW	m³	4.56E-04	8.50E-03	1.83E-04	1.35E-04	1.36E-01	0.00E+00	-1.45E-02	4.56E-04

PXCAJ38B/G

Table 35 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	7.43E-01	1.65E-02	4.77E-03	1.23E-01	4.95E-03	4.31E-02	3.33E-02	-5.91E-02
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	4.06E-06	1.37E-07	2.14E-07	1.18E-05	4.11E-08	3.99E-06	0.00E+00	-2.88E-09
Global warming potential - total	GWP - Total	kg CO₂ eq.	7.43E-01	1.65E-02	4.77E-03	1.23E-01	4.95E-03	4.31E-02	3.33E-02	-5.91E-02
Ozone depletion potential	ODP	kg CFC 11 eq.	1.25E-08	2.52E-09	1.47E-10	1.66E-09	7.54E-10	1.45E-09	0.00E+00	-1.55E-10
Acidification potential	AP	mol H ⁺ eq.	3.07E-03	1.31E-04	1.63E-05	5.85E-04	3.91E-05	2.30E-04	6.18E-07	-1.90E-04
Eutrophication – freshwater	EP - F	kg P eq.	1.87E-05	5.73E-07	6.21E-07	2.02E-04	1.72E-07	1.18E-05	0.00E+00	-1.40E-06
Eutrophication – marine	EP - M	kg N eq.	7.07E-04	3.74E-05	2.85E-05	1.34E-04	1.12E-05	4.96E-05	5.11E-04	-4.69E-05
Eutrophication – terrestrial	EP - T	mol N eq.	7.56E-03	4.10E-04	3.83E-05	1.05E-03	1.23E-04	5.15E-04	8.95E-08	-4.91E-04
Photochemical ozone creation potential	POCP	kg NMVOC eq.	1.96E-03	1.01E-04	1.05E-05	2.75E-04	3.03E-05	1.36E-04	8.26E-06	-1.30E-04
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	4.25E-07	6.00E-08	4.24E-09	4.68E-07	1.80E-08	5.92E-08	0.00E+00	-1.70E-09
Abiotic depletion potential - fossil fuels	ADPF	MJ	1.74E+01	2.22E-01	4.89E-02	1.26E+00	6.63E-02	6.23E-01	0.00E+00	-1.64E+00
Water Depletion Potential	WDP	m ³	5.96E+00	1.71E-02	2.63E-01	8.71E-03	5.13E-03	5.09E+00	0.00E+00	-5.43E-01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 36 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq	7.27E-01	1.62E-02	4.25E-03	1.22E-01	4.85E-03	4.22E-02	2.37E-02	-5.77E-02
Particulate matter	PM	disease incidence	2.98E-08	8.57E-10	1.08E-10	9.43E-10	2.57E-10	1.81E-09	4.60E-13	-1.94E-09
Ionising radiation - human health	IRP	kBq U-235 eq	3.18E-04	8.92E-06	1.57E-05	4.30E-04	2.67E-06	2.94E-04	0.00E+00	-1.10E-06
Ecotoxicity - freshwater	ETP - fw	CTUe	6.84E+00	1.26E-01	1.73E-02	1.44E+00	3.79E-02	3.46E-01	5.05E-02	-6.00E-01
Human toxicity potential - cancer effects	HTP - c	CTUh	3.35E-10	4.30E-12	7.42E-13	2.81E-11	1.29E-12	1.88E-11	1.89E-13	-2.77E-11
Human toxicity potential - non cancer effects	HTP - nc	CTUh	1.05E-08	1.53E-10	1.73E-11	1.32E-09	4.59E-11	4.56E-10	2.60E-11	-9.30E-10
Soil quality	SQP	Pt	2.55E+00	6.12E-02	1.98E-02	9.13E-02	1.83E-02	2.38E-01	9.43E-02	-9.11E-03

Table 37 - Resource use indicators per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	6.11E-01	2.39E-03	2.03E-03	1.17E-01	7.16E-04	3.89E-02	0.00E+00	-2.59E-02
Use of renewable primary energy resources used as raw materials	PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	6.11E-01	2.39E-03	2.03E-03	1.17E-01	7.16E-04	3.89E-02	0.00E+00	-2.59E-02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	1.18E+01	2.22E-01	4.89E-02	1.26E+00	6.63E-02	6.23E-01	0.00E+00	-1.64E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ	5.66E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	1.74E+01	2.22E-01	4.89E-02	1.26E+00	6.63E-02	6.23E-01	0.00E+00	-1.64E+00
Use of secondary material	SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	1.50E-01	2.26E-03	4.59E-03	1.63E-04	6.76E-04	8.75E-02	0.00E+00	-9.18E-03

Table 38 - Waste indicators per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	1.87E-06	3.10E-07	1.50E-08	6.31E-07	9.27E-08	1.53E-07	0.00E+00	-1.40E-08
Non-hazardous waste disposed	NHWD	kg	2.77E-02	1.62E-03	1.76E-04	5.20E-03	4.84E-04	2.51E-03	0.00E+00	-1.21E-03
Radioactive waste disposed/stored	RWD	kg	1.15E-07	1.23E-09	6.85E-09	2.54E-07	3.69E-10	1.29E-07	0.00E+00	-1.42E-10

Table 39 - Output flow indicators per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	1.76E-03	0.00E+00	0.00E+00	3.45E-02	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 40 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	7.30E-01	1.62E-02	4.38E-03	1.22E-01	4.86E-03	4.24E-02	2.62E-02	-5.80E-02
Ozone layer depletion	ODP	kg CFC-11 eq	9.89E-09	1.99E-09	1.25E-10	1.35E-09	5.97E-10	1.32E-09	0.00E+00	-1.23E-10
Acidification potential	AP	kg SO ₂ eq	1.95E-03	6.92E-05	7.65E-06	4.90E-04	2.07E-05	1.29E-04	5.63E-07	-1.44E-04
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	3.06E-04	1.43E-05	1.98E-04	6.62E-04	4.29E-06	5.36E-05	4.01E-03	-2.09E-05
Photochemical ozone creation potential	POCP	kg C2H4 eq	1.21E-04	4.65E-06	7.70E-07	1.69E-05	1.39E-06	6.40E-06	4.89E-06	-9.44E-06
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	4.34E-07	6.00E-08	4.24E-09	4.68E-07	1.80E-08	5.94E-08	0.00E+00	-2.51E-09
Abiotic depletion potential for fossil resources	ADPF	MJ	1.42E+01	2.21E-01	4.86E-02	1.26E+00	6.63E-02	5.36E-01	0.00E+00	-1.31E+00

Table 41 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PXCAJ38B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	1.44E-10	3.71E-13	1.74E-13	1.46E-12	1.11E-13	6.28E-12	0.00E+00	-1.33E-11
Human Toxicity non-cancer	HTnc	CTUh	2.93E-12	8.34E-14	5.68E-14	5.40E-14	2.50E-14	8.73E-13	0.00E+00	-6.64E-14
Land use	LU	kg C deficit eq.	4.33E-01	4.52E-02	3.85E-03	3.62E-02	1.35E-02	3.54E-02	1.34E-02	-3.34E-03
Ionising radiation	IR	kBq U235 eq	3.18E-04	8.92E-06	1.58E-05	4.50E-04	2.67E-06	2.95E-04	0.00E+00	-1.10E-06
Particulate Matter	PM	kg PM2,5-Equiv.	3.59E-04	1.62E-05	1.73E-06	7.39E-05	4.85E-06	2.64E-05	3.86E-08	-2.36E-05
Resource depletion - water	RDW	m ³	1.93E-01	5.62E-04	8.50E-03	1.83E-04	1.68E-04	1.65E-01	0.00E+00	-1.76E-02

GEARED Range PXG100B/G

Table 42 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	3.71E+00	7.85E-02	8.47E-03	1.23E-01	2.47E-02	4.22E-01	9.13E-02	-1.26E+00
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	-1.78E-02	0.00E+00	1.78E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.83E-03
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	1.61E-03	6.52E-07	1.89E-07	1.18E-05	2.05E-07	1.23E-05	3.97E-09	-4.62E-06
Global warming potential - total	GWP - Total	kg CO₂ eq.	3.69E+00	7.85E-02	2.62E-02	1.23E-01	2.47E-02	4.22E-01	9.13E-02	-1.25E+00
Ozone depletion potential	ODP	kg CFC 11 eq.	1.49E-07	1.20E-08	2.57E-10	1.66E-09	3.77E-09	1.35E-08	1.95E-10	-2.12E-08
Acidification potential	AP	mol H ⁺ eq.	4.15E-02	6.20E-04	3.29E-05	5.85E-04	1.95E-04	2.70E-03	5.13E-06	-6.03E-03
Eutrophication – freshwater	EP - F	kg P eq.	9.61E-04	2.72E-06	6.42E-07	2.02E-04	8.58E-07	6.70E-05	1.43E-08	-2.29E-04
Eutrophication – marine	EP - M	kg N eq.	4.88E-03	1.78E-04	3.42E-05	1.34E-04	5.60E-05	5.09E-04	1.39E-03	-1.10E-03
Eutrophication – terrestrial	EP - T	mol N eq.	1.50E-01	1.95E-03	1.26E-04	1.05E-03	6.13E-04	5.51E-03	1.00E-05	-1.24E-02
Photochemical ozone creation potential	POCP	kg NMVOC eq.	1.43E-02	4.81E-04	3.26E-05	2.75E-04	1.51E-04	1.47E-03	2.50E-05	-3.82E-03
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	8.66E-05	2.85E-07	1.00E-08	4.68E-07	8.98E-08	8.25E-07	9.99E-10	-1.67E-05
Abiotic depletion potential - fossil fuels	ADPF	MJ	6.71E+01	1.05E+00	9.25E-02	1.26E+00	3.32E-01	4.17E+00	1.43E-02	-1.22E+01
Water Depletion Potential	WDP	m ³	1.57E+01	8.14E-02	1.51E-01	8.71E-03	2.56E-02	1.58E+01	1.38E-03	-3.59E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 43 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq	3.58E+00	7.70E-02	1.44E-02	1.22E-01	2.42E-02	4.14E-01	6.53E-02	-1.21E+00
Particulate matter	PM	disease incidence	4.33E-07	4.07E-09	2.11E-10	9.43E-10	1.28E-09	4.92E-08	2.92E-11	-8.36E-08
Ionising radiation - human health	IRP	kBq U-235 eq	8.42E-02	4.24E-05	3.19E-05	4.30E-04	1.33E-05	9.77E-04	3.79E-07	-3.54E-02
Ecotoxicity - freshwater	ETP - fw	CTUe	9.23E+01	6.01E-01	4.43E-02	1.44E+00	1.89E-01	2.87E+00	1.43E-01	-2.23E+01
Human toxicity potential - cancer effects	HTP - c	CTUh	9.40E-09	2.04E-11	1.96E-12	2.81E-11	6.44E-12	4.73E-09	6.63E-13	-5.08E-09
Human toxicity potential - non cancer effects	HTP - nc	CTUh	8.66E-08	7.29E-10	8.79E-11	1.32E-09	2.30E-10	1.60E-07	7.60E-11	-3.75E-08
Soil quality	SQP	Pt	1.14E+01	2.91E-01	3.91E-02	9.13E-02	9.16E-02	1.88E+00	2.81E-01	3.07E+00

Table 44 - Resource use indicators per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	2.52E+00	1.14E-02	5.60E-03	1.17E-01	3.58E-03	3.19E-01	1.23E-04	-9.92E-01
Use of renewable primary energy resources used as raw materials	PERM	MJ	1.92E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	2.71E+00	1.14E-02	5.60E-03	1.17E-01	3.58E-03	3.19E-01	1.23E-04	-9.92E-01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	5.00E+01	1.05E+00	9.25E-02	1.26E+00	3.32E-01	4.17E+00	1.43E-02	-1.22E+01
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ	1.72E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	6.71E+01	1.05E+00	9.25E-02	1.26E+00	3.32E-01	4.17E+00	1.43E-02	-1.22E+01
Use of secondary material	SM	kg	4.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	3.46E-01	1.07E-02	3.12E-03	1.63E-04	3.38E-03	4.31E-01	1.26E-04	-6.10E+00

Table 45 - Waste indicators per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	5.42E-04	1.47E-06	3.90E-08	6.31E-07	4.64E-07	2.94E-06	6.55E-09	-8.82E-05
Non-hazardous waste disposed	NHWD	kg	5.13E-01	7.68E-03	3.53E-03	5.20E-03	2.42E-03	9.13E-02	3.63E-05	-4.37E-01
Radioactive waste disposed/stored	RWD	kg	4.71E-05	5.86E-09	7.11E-09	2.54E-07	1.85E-09	3.92E-07	5.18E-11	-5.12E-06

Table 46 - Output flow indicators per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	8.25E-03	0.00E+00	0.00E+00	6.06E-01	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 47 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	3.60E+00	7.71E-02	1.62E-02	1.22E-01	2.43E-02	4.15E-01	7.19E-02	-1.21E+00
Ozone layer depletion	ODP	kg CFC-11 eq	1.34E-07	9.47E-09	2.09E-10	1.35E-09	2.98E-09	1.12E-08	1.54E-10	-1.72E-08
Acidification potential	AP	kg SO ₂ eq	2.60E-02	3.29E-04	1.99E-05	4.90E-04	1.04E-04	1.03E-03	3.42E-06	-4.30E-03
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	7.24E-03	6.81E-05	1.67E-04	6.62E-04	2.14E-05	3.79E-04	1.09E-02	-1.08E-03
Photochemical ozone creation potential	POCP	kg C2H4 eq	1.04E-03	2.21E-05	3.17E-06	1.69E-05	6.96E-06	7.81E-05	1.35E-05	-6.14E-04
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	8.66E-05	2.85E-07	1.04E-08	4.68E-07	8.98E-08	8.26E-07	9.99E-10	-1.67E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	5.77E+01	1.05E+00	9.21E-02	1.26E+00	3.32E-01	3.93E+00	1.43E-02	-1.10E+01

Table 48 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PXG100B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	4.75E-10	1.76E-12	3.77E-13	1.46E-12	5.56E-13	9.78E-11	1.29E-14	-1.57E-10
Human Toxicity non-cancer	HTnc	CTUh	1.99E-11	3.97E-13	8.73E-14	5.40E-14	1.25E-13	4.30E-12	2.21E-15	-1.57E-12
Land use	LU	kg C deficit eq.	3.27E+00	2.15E-01	9.07E-03	3.62E-02	6.77E-02	3.20E-01	4.44E-02	-1.21E+00
Ionising radiation	IR	kBq U235 eq	8.43E-02	4.24E-05	3.19E-05	4.50E-04	1.34E-05	9.81E-04	3.79E-07	-3.54E-02
Particulate Matter	PM	kg PM2,5-Equiv.	4.38E-03	7.70E-05	4.57E-06	7.39E-05	2.43E-05	3.41E-04	5.48E-07	-1.71E-03
Resource depletion - water	RDW	m ³	5.12E-01	2.67E-03	4.88E-03	1.83E-04	8.41E-04	5.12E-01	4.51E-05	-1.16E+00

PXG125B/G

Table 49 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	4.12E+00	8.83E-02	8.47E-03	1.23E-01	2.78E-02	4.50E-01	1.11E-01	-1.29E+00
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	-1.78E-02	0.00E+00	1.78E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.83E-03
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	1.62E-03	7.33E-07	1.89E-07	1.18E-05	2.31E-07	1.48E-05	3.97E-09	-4.62E-06
Global warming potential - total	GWP - Total	kg CO₂ eq.	4.11E+00	8.83E-02	2.62E-02	1.23E-01	2.78E-02	4.50E-01	1.11E-01	-1.28E+00
Ozone depletion potential	ODP	kg CFC 11 eq.	1.56E-07	1.35E-08	2.57E-10	1.66E-09	4.24E-09	1.45E-08	1.95E-10	-2.12E-08
Acidification potential	AP	mol H ⁺ eq.	4.32E-02	6.97E-04	3.29E-05	5.85E-04	2.20E-04	2.85E-03	5.50E-06	-6.14E-03
Eutrophication – freshwater	EP - F	kg P eq.	9.73E-04	3.06E-06	6.42E-07	2.02E-04	9.65E-07	7.47E-05	1.43E-08	-2.30E-04
Eutrophication – marine	EP - M	kg N eq.	5.30E-03	2.00E-04	3.42E-05	1.34E-04	6.29E-05	5.41E-04	1.70E-03	-1.13E-03
Eutrophication – terrestrial	EP - T	mol N eq.	1.54E-01	2.19E-03	1.26E-04	1.05E-03	6.89E-04	5.85E-03	1.01E-05	-1.27E-02
Photochemical ozone creation potential	POCP	kg NMVOC eq.	1.54E-02	5.41E-04	3.26E-05	2.75E-04	1.70E-04	1.56E-03	2.99E-05	-3.90E-03
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	8.69E-05	3.21E-07	1.00E-08	4.68E-07	1.01E-07	8.63E-07	9.99E-10	-1.67E-05
Abiotic depletion potential - fossil fuels	ADPF	MJ	7.68E+01	1.18E+00	9.25E-02	1.26E+00	3.73E-01	4.58E+00	1.43E-02	-1.32E+01
Water Depletion Potential	WDP	m ³	1.91E+01	9.15E-02	1.51E-01	8.71E-03	2.88E-02	1.91E+01	1.38E-03	-3.62E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 50 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq	3.98E+00	8.65E-02	1.44E-02	1.22E-01	2.72E-02	4.41E-01	7.93E-02	-1.24E+00
Particulate matter	PM	disease incidence	4.49E-07	4.58E-09	2.11E-10	9.43E-10	1.44E-09	5.04E-08	2.95E-11	-8.48E-08
Ionising radiation - human health	IRP	kBq U-235 eq	8.47E-02	4.76E-05	3.19E-05	4.30E-04	1.50E-05	1.17E-03	3.79E-07	-3.54E-02
Ecotoxicity - freshwater	ETP - fw	CTUe	9.64E+01	6.76E-01	4.43E-02	1.44E+00	2.13E-01	3.10E+00	1.73E-01	-2.27E+01
Human toxicity potential - cancer effects	HTP - c	CTUh	9.60E-09	2.30E-11	1.96E-12	2.81E-11	7.24E-12	4.75E-09	7.75E-13	-5.10E-09
Human toxicity potential - non cancer effects	HTP - nc	CTUh	9.28E-08	8.20E-10	8.79E-11	1.32E-09	2.58E-10	1.60E-07	9.14E-11	-3.81E-08
Soil quality	SQP	Pt	1.26E+01	3.27E-01	3.91E-02	9.13E-02	1.03E-01	2.03E+00	3.37E-01	-3.08E+00

Table 51 - Resource use indicators per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	2.78E+00	1.28E-02	5.60E-03	1.17E-01	4.02E-03	3.44E-01	1.23E-04	-1.01E+00
Use of renewable primary energy resources used as raw materials	PERM	MJ	1.92E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	2.97E+00	1.28E-02	5.60E-03	1.17E-01	4.02E-03	3.44E-01	1.23E-04	-1.01E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	5.61E+01	1.18E+00	9.25E-02	1.26E+00	3.73E-01	4.58E+00	1.43E-02	-1.32E+01
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ	2.08E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	7.68E+01	1.18E+00	9.25E-02	1.26E+00	3.73E-01	4.58E+00	1.43E-02	-1.32E+01
Use of secondary material	SM	kg	4.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	4.20E-01	1.21E-02	3.12E-03	1.63E-04	3.80E-03	4.87E-01	1.26E-04	-6.10E+00

Table 52 - Waste indicators per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	1.66E-06	3.90E-08	6.31E-07	5.21E-07	3.04E-06	6.55E-09	-8.82E-05	1.66E-06
Non-hazardous waste disposed	NHWD	kg	8.63E-03	3.53E-03	5.20E-03	2.72E-03	9.29E-02	3.63E-05	-4.38E-01	8.63E-03
Radioactive waste disposed/stored	RWD	kg	6.59E-09	7.11E-09	2.54E-07	2.08E-09	4.76E-07	5.18E-11	-5.12E-06	6.59E-09

Table 53 - Output flow indicators per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	8.25E-03	0.00E+00	0.00E+00	6.26E-01	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 54 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	4.01E+00	8.67E-02	1.62E-02	1.22E-01	2.73E-02	4.43E-01	8.74E-02	-1.25E+00
Ozone layer depletion	ODP	kg CFC-11 eq	1.40E-07	1.06E-08	2.09E-10	1.35E-09	3.35E-09	1.21E-08	1.54E-10	-1.73E-08
Acidification potential	AP	kg SO ₂ eq	2.71E-02	3.70E-04	1.99E-05	4.90E-04	1.16E-04	1.11E-03	3.75E-06	-4.39E-03
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	7.43E-03	7.65E-05	1.67E-04	6.62E-04	2.41E-05	4.14E-04	1.33E-02	-1.09E-03
Photochemical ozone creation potential	POCP	kg C2H4 eq	1.11E-03	2.49E-05	3.17E-06	1.69E-05	7.83E-06	8.24E-05	1.64E-05	-6.20E-04
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	8.69E-05	3.21E-07	1.04E-08	4.68E-07	1.01E-07	8.64E-07	9.99E-10	-1.67E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	6.55E+01	1.18E+00	9.21E-02	1.26E+00	3.73E-01	4.29E+00	1.43E-02	-1.18E+01

Table 55 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PXG125B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	5.61E-10	1.98E-12	3.77E-13	1.46E-12	6.25E-13	1.02E-10	1.29E-14	-1.65E-10
Human Toxicity non-cancer	HTnc	CTUh	2.24E-11	4.46E-13	8.73E-14	5.40E-14	1.40E-13	4.87E-12	2.21E-15	-1.61E-12
Land use	LU	kg C deficit eq.	3.50E+00	2.42E-01	9.07E-03	3.62E-02	7.61E-02	3.44E-01	5.24E-02	-1.21E+00
Ionising radiation	IR	kBq U235 eq	8.49E-02	4.77E-05	3.19E-05	4.50E-04	1.50E-05	1.17E-03	3.79E-07	-3.54E-02
Particulate Matter	PM	kg PM2,5-Equiv.	4.59E-03	8.66E-05	4.57E-06	7.39E-05	2.73E-05	3.58E-04	5.71E-07	-1.72E-03
Resource depletion - water	RDW	m ³	6.22E-01	3.00E-03	4.88E-03	1.83E-04	9.45E-04	6.19E-01	4.51E-05	-1.17E+00

PXG150B/G

Table 56 – Potential environmental impact – mandatory indicators according to EN 15804+A2: 2019 per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential - fossil	GWP - Fossil	kg CO ₂ eq.	4.49E+00	9.79E-02	8.47E-03	1.23E-01	3.07E-02	4.76E-01	1.30E-01	-1.32E+00
Global warming potential - biogenic	GWP - Biogenic	kg CO ₂ eq.	-1.78E-02	0.00E+00	1.78E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.83E-03
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO ₂ eq.	1.63E-03	8.12E-07	1.89E-07	1.18E-05	2.55E-07	1.72E-05	3.97E-09	-4.62E-06
Global warming potential - total	GWP - Total	kg CO₂ eq.	4.48E+00	9.79E-02	2.62E-02	1.23E-01	3.07E-02	4.76E-01	1.30E-01	-1.32E+00
Ozone depletion potential	ODP	kg CFC 11 eq.	1.63E-07	1.49E-08	2.57E-10	1.66E-09	4.68E-09	1.54E-08	1.95E-10	-2.13E-08
Acidification potential	AP	mol H ⁺ eq.	4.47E-02	7.73E-04	3.29E-05	5.85E-04	2.42E-04	2.99E-03	5.85E-06	-6.25E-03
Eutrophication – freshwater	EP - F	kg P eq.	9.84E-04	3.39E-06	6.42E-07	2.02E-04	1.06E-06	8.16E-05	1.43E-08	-2.31E-04
Eutrophication – marine	EP - M	kg N eq.	5.65E-03	2.21E-04	3.42E-05	1.34E-04	6.94E-05	5.70E-04	1.99E-03	-1.15E-03
Eutrophication – terrestrial	EP - T	mol N eq.	1.58E-01	2.43E-03	1.26E-04	1.05E-03	7.61E-04	6.15E-03	1.01E-05	-1.30E-02
Photochemical ozone creation potential	POCP	kg NMVOC eq.	1.64E-02	5.99E-04	3.26E-05	2.75E-04	1.88E-04	1.64E-03	3.47E-05	-3.97E-03
Abiotic depletion potential - minerals and metals	ADP	kg Sb eq.	8.72E-05	3.55E-07	1.00E-08	4.68E-07	1.11E-07	8.98E-07	9.99E-10	-1.67E-05
Abiotic depletion potential - fossil fuels	ADPF	MJ	8.65E+01	1.31E+00	9.25E-02	1.26E+00	4.12E-01	4.95E+00	1.43E-02	-1.41E+01
Water Depletion Potential	WDP	m ³	2.25E+01	1.01E-01	1.51E-01	8.71E-03	3.18E-02	2.21E+01	1.38E-03	-3.65E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 57 - Additional mandatory impact indicators according to EN 15804+A2: 2019 per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO ₂ eq.	4.34E+00	9.59E-02	1.44E-02	1.22E-01	3.01E-02	4.67E-01	9.30E-02	-1.28E+00
Particulate matter	PM	disease incidence	4.64E-07	5.08E-09	2.11E-10	9.43E-10	1.59E-09	5.14E-08	2.97E-11	-8.58E-08
Ionising radiation - human health	IRP	kBq U-235 eq.	8.53E-02	5.28E-05	3.19E-05	4.30E-04	1.66E-05	1.34E-03	3.79E-07	-3.54E-02
Ecotoxicity - freshwater	ETP - fw	CTUe	1.00E+02	7.49E-01	4.43E-02	1.44E+00	2.35E-01	3.30E+00	2.02E-01	-2.30E+01
Human toxicity potential - cancer effects	HTP - c	CTUh	9.79E-09	2.55E-11	1.96E-12	2.81E-11	7.99E-12	4.76E-09	8.84E-13	-5.12E-09
Human toxicity potential - non cancer effects	HTP - nc	CTUh	9.87E-08	9.08E-10	8.79E-11	1.32E-09	2.85E-10	1.60E-07	1.06E-10	-3.86E-08
Soil quality	SQP	Pt	1.36E+01	3.62E-01	3.91E-02	9.13E-02	1.14E-01	2.17E+00	3.92E-01	-3.08E+00

Table 58 - Resource use indicators per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ	3.03E+00	1.42E-02	5.60E-03	1.17E-01	4.44E-03	3.67E-01	1.23E-04	-1.02E+00
Use of renewable primary energy resources used as raw materials	PERM	MJ	1.92E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary renewable energy - total	PERT	MJ	3.23E+00	1.42E-02	5.60E-03	1.17E-01	4.44E-03	3.67E-01	1.23E-04	-1.02E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ	6.22E+01	1.31E+00	9.25E-02	1.26E+00	4.12E-01	4.95E+00	1.43E-02	-1.41E+01
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ	2.43E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Primary non renewable energy - total	PENRT	MJ	8.65E+01	1.31E+00	9.25E-02	1.26E+00	4.12E-01	4.95E+00	1.43E-02	-1.41E+01
Use of secondary material	SM	kg	4.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	FW	m ³	4.90E-01	1.34E-02	3.12E-03	1.63E-04	4.19E-03	5.39E-01	1.26E-04	-6.11E+00

Table 59 - Waste indicators per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	5.44E-04	1.83E-06	3.90E-08	6.31E-07	5.75E-07	3.13E-06	6.55E-09	-8.82E-05
Non-hazardous waste disposed	NHWD	kg	5.43E-01	9.57E-03	3.53E-03	5.20E-03	3.00E-03	9.44E-02	3.63E-05	-4.38E-01
Radioactive waste disposed/stored	RWD	kg	4.78E-05	7.31E-09	7.11E-09	2.54E-07	2.29E-09	5.51E-07	5.18E-11	-5.12E-06

Table 60 - Output flow indicators per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	0.00E+00	0.00E+00	8.25E-03	0.00E+00	0.00E+00	6.46E-01	0.00E+00	0.00E+00
Materials for energy recovery	MFRE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	EE - e	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EE - t	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 61 - Additional voluntary impact indicators according to EN 15804+A1: 2013 per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global warming potential (GWP100)	GWP	kg CO ₂ eq	4.37E+00	9.61E-02	1.62E-02	1.22E-01	3.01E-02	4.68E-01	1.03E-01	-1.28E+00
Ozone layer depletion	ODP	kg CFC-11 eq	1.45E-07	1.18E-08	2.09E-10	1.35E-09	3.70E-09	1.29E-08	1.54E-10	-1.74E-08
Acidification potential	AP	kg SO ₂ eq	2.82E-02	4.10E-04	1.99E-05	4.90E-04	1.29E-04	1.19E-03	4.08E-06	-4.47E-03
Eutrophication potential	EP	kg PO ₄ ³⁻ eq	7.59E-03	8.48E-05	1.67E-04	6.62E-04	2.66E-05	4.46E-04	1.56E-02	-1.11E-03
Photochemical ozone creation potential	POCP	kg C2H4 eq	1.18E-03	2.75E-05	3.17E-06	1.69E-05	8.64E-06	8.62E-05	1.92E-05	-6.25E-04
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb eq	8.72E-05	3.55E-07	1.04E-08	4.68E-07	1.11E-07	8.99E-07	9.99E-10	-1.67E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	7.33E+01	1.31E+00	9.21E-02	1.26E+00	4.11E-01	4.62E+00	1.43E-02	-1.25E+01

Table 62 - Additional voluntary impact indicators in accordance with Green Star v1.3 per linear metre of PXG150B/G

Indicator	ABR	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human Toxicity cancer	HTc	CTUh	6.42E-10	2.20E-12	3.77E-13	1.46E-12	6.90E-13	1.05E-10	1.29E-14	-1.73E-10
Human Toxicity non-cancer	HTnc	CTUh	2.30E-11	4.94E-13	8.73E-14	5.40E-14	1.55E-13	5.39E-12	2.21E-15	-1.64E-12
Land use	LU	kg C deficit eq.	3.72E+00	2.68E-01	9.07E-03	3.62E-02	8.40E-02	3.65E-01	6.02E-02	-1.21E+00
Ionising radiation	IR	kBq U235 eq	8.55E-02	5.28E-05	3.19E-05	4.50E-04	1.66E-05	1.35E-03	3.79E-07	-3.54E-02
Particulate Matter	PM	kg PM2,5-Equiv.	4.78E-03	9.60E-05	4.57E-06	7.39E-05	3.01E-05	3.74E-04	5.93E-07	-1.74E-03
Resource depletion - water	RDW	m ³	7.31E-01	3.33E-03	4.88E-03	1.83E-04	1.04E-03	7.15E-01	4.51E-05	-1.18E+00

Conclusions and Recommendations

The LCA of Danley's PaveX products in this report establishes the basis for development of Environmental Product Declarations compliant with PCR 2019:14 (Construction Products) and the overarching EN15804 A1, EN15804 A2 standard. These EPDs can be used to gain material credits in Green Star projects, contribute to whole building LCAs (following the EN 15978 standard) and to present environmental credentials of Danley to customers and other stakeholders.

Key findings of LCA

Overall, for the PaveX products assessed in this LCA:

- The product stage (A1-A3) is the most impactful stage for almost all indicators (49%-100%) – environmental, resource use, and waste production & output flows.
- This is driven by the materials used to manufacture PaveX components, mainly PVC and steel. The manufacturing processes for the components such as injection molding, extrusion are comparatively less intensive than the materials themselves.
- Transport to construction sites is a minor contributor to most indicators, <7-8% in most cases.
- Impacts in module A5 i.e., installation are driven by recycling and disposal of packaging. The overall impact of this module is very low, <3% in most cases.
- In the end-of-life (EoL) stage module C2 (deconstruction) & C3 (waste processing) are the most significant contributors. For most products C3 has a larger impact than C2 and this is driven by the processes to recycle steel and PVC.
- C3 is often a significant contributor to water depletion potential indicator (WDP)
- The benefit of avoided production of virgin materials is considered in module D (benefits beyond the system boundary). Responsible waste processing practices can provide positive impacts equivalent to 3% to 70% of the products' environmental, resource use, and waste production & output flows indicators.

Recommendations

Based on the results of this LCA, we recommend that Danley:

- Consider procuring products from manufacturers who use renewable electricity for manufacturing materials (plastics, steel, etc.) and also for injection moulding & extrusion. This can significantly reduce the product stage impacts as it is the largest contributor to the products' GWP (carbon) impact.
- Explore the use of electric vehicles for transport of the processing site and manufacturing plant. This can help in reducing the transport impacts on ozone depletion and GWP (carbon footprint). EVs can be up to 30% less carbon intensive than their internal combustion counterparts.
- Dematerialisation and material substitution for high impact materials e.g., steel. The steel dowels are one of the major contributors to the product's impact.

Benefits of using this EPD

This EPD contributes to the achievement of credits under the Green Star and IS rating schemes

- Compliant with ISO 14025
- Compliant with EN 15804
- Independently verified
- Cradle to gate plus options, including modules A1-A3, A4-A5, C1-C4, and D
- Product specific
- Additional Green Star indicators
- This EPD may help your project achieve IS v2.1 Rso-7 or IS v1.2 Mat-2

References

General Programme Instructions of the International EPD® System. Version 4.0. PCR 2019:14.

(ALCAS), A. L. (2021). Australian Life Cycle Inventory (AusLCI) – v1.36.

Australia Post, Choose sustainable packaging, <https://auspost.com.au/about-us/corporate-responsibility/our-environment/sustainable-parcel-packaging>, Accessed: September 2023

BS EN 15804+A2. (2020). *BS EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*.

BS EN15804+A1. (2013). *EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*.

Dakri cartons, Recyclable and sustainable: Benefits of Corrugated Packaging, <https://www.linkedin.com/pulse/recyclable-sustainable-benefits-corrugated-packaging-dakri-cartons/>, Accessed: September 2023

Envirodec. (2021). General Programme Instructions for the International EPD® System, version 4.0.

European Commission. (2004). *Life Cycle Assessment of PVC and principle*.

Frischknecht, R. (2007). The Environmental Relevance of Capital Goods in Life Cycle Assessments of Products and Services. *Int. J LCA*.

Gaikwad et al., Transformation of E-Waste Plastics into Sustainable Filaments for 3D Printing, *ACS Sustainable Chem. Eng.* 2018, 6, 11, 14432–14440

Heathcote, M. (2015). Personal correspondence 13th May.

ISO 14020. (2000). *ISO 14020:2000, Environmental labels and declarations — General principles*. Geneva: International Organization for Standardization.

ISO 14025. (2006). *ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures*. Geneva: International Organization for Standardization (ISO).

ISO 14040. (2006). *ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework*. Geneva: International Organization for Standardization.

ISO 14044. (2006). *ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines*. Geneva: International Organization for Standardization.

Myerton packaging, Sustainable paper, <https://myertonpackaging.com.au/sustainable-paper/>, Accessed: September 2023

Moreno, R. F. (2021). Documentation of changes implemented in the ecoinvent database v3.8 (2021.09.21).

PCR 2019:14. (2019). PCR 2019:14 Product Category Rules- Construc Products Version 1.3.2.

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., & Weidema, B. (2019). The ecoinvent database version 3.6.

Packhelp, Recycled content, <https://packhelp.com/eco-properties/recyclability/recycled-materials/>, Accessed: September 2023

