Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

T-Foil Basic / Standard / Robust

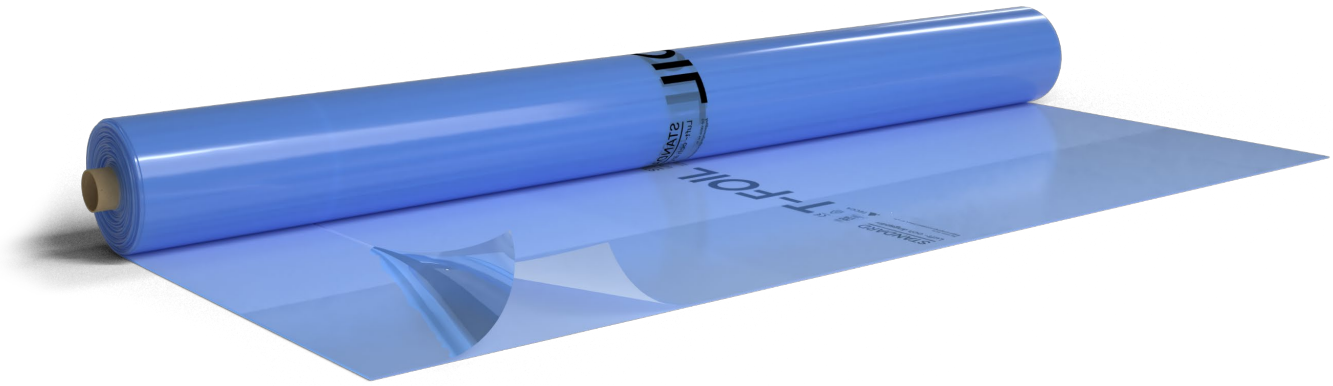
from

TECCA

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-03683
Publication date:	2021-10-11
Revision date:	2022-12-22
Valid until:	2026-10-11

Differences Versus Previous Versions
2021-10-11 Version 1
2022-12-22 Version 1.1 ***Editorial change****: Name change. New image added to cover page.*

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



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): *Construction products, 2019:14, VERSION 1.11*
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com. Members of the Technical Committee were requested to state any potential conflict of interest with the PCR moderator or PCR committee and if so were excused from the review.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: *Martin Erlandsson, IVL Swedish Environmental Research Institute* Approved by: The International EPD® System
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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: TECCA AB

Contact: Marilyn Lindh

Description of the organisation: TECCA AB is a Nordic market leader developing premium solutions for building material retailers and prefabricated housing industry with focus on climate shell and protective products. Product solutions are developed from the perspective of high standards within extensive quality assurance and testing processes. The total offer also contains customized supply chain and logistics solutions. TECCA AB is owned by Volati – a Swedish industrial group formed in 2003.

Product-related or management system-related certifications: TECCA AB maintains ISO 9001 and 14001 certificates.

Name and location of production site(s): For additional information about TECCA, please visit the company web site at
https://www.teccaworld.com/

Contact information: TECCA AB, Nydalavägen 14, 574 35 Vetlanda; Sweden;
Telephone: +46 (0) 383-599 00

Product information

Product name: T-Foil Basic / Standard / Robust

Product identification: Technically defined by EN 13984:2013 (Flexible sheets for waterproofing. Plastic and rubber vapour control layers).

Product description: T-Foil Standard/Robust is a plastic sheet or film for damp proofing. The product is available in different versions, Basic, Standard and Robust, and is used for vapor control layers in building constructions. It can be applied to ground, floors, walls and roofs to prevent moisture from passing into buildings. All T-Foil products are produced with durability in specified constructions for at least 50 years (60 years is the estimated service life).

UN CPC code: 30102015 - Plastic foil

LCA information

Declared unit: One square meter (1 m^2)

Reference service life: When properly installed, the service lifetime of the T-Foil plastic film is equal to the lifetime of the building, and hence 60 years as a default. Therefore, the reference service life of the product assessed in this study is 60 years.

Time representativeness: 2021-2026

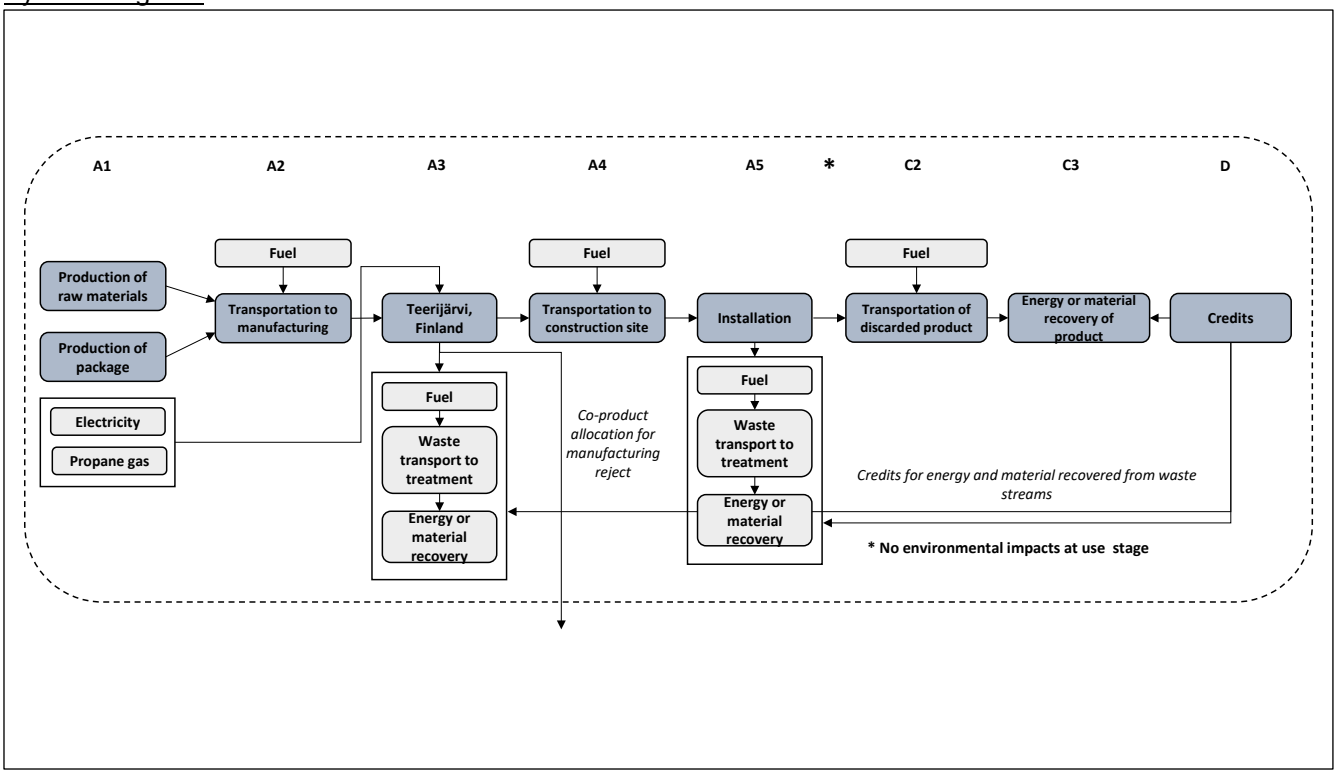
Database(s) and LCA software used: GaBI LCA software (version 10.5), and Gabi Professional and Ecoinvent databases

Description of system boundaries:

b) Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules).

In this EPD, all relevant life cycle phases from cradle to grave are included (type b EPD). EPD covers the product stage (A1–A3), the construction process (A4–A5), end-of-life stage (C1–C4) and benefits beyond the system boundary due to energy and material recovery at EoL stage (D). The use stage (B1-B7) is not relevant for the product in question since no environmental impacts are generated in that phase (e.g. no replacement or refurbishment of the product is needed).

System diagram:



More information:

Product description can be found from:

- T-Foil Standard: T-Foil Standard - TECCA (teccaworld.com)
- T-Foil Robust: T-Foil Robust - TECCA (teccaworld.com)
- T-Foil Basic: T-Foil Basic - TECCA (teccaworld.com)

Name and contact information of LCA practitioner: Miia Liikanen, LCA Consulting. Contact details: miia.liikanen@lca-consulting.fi

Information presented in this EPD is based on an LCA study (LCA Consulting, 2021). Environmental impacts are calculated separately for each product versions (Standard, Robust and Basic).

Name and address of the manufacturer: Ab Rani Plast Oy, address: Tehtaantie 6, 68700 Teerijärvi, Finland

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	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	EU	EU	FI	FI, SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Specific data used	Share of specific data used GWP-GHG indicator: <10%					-	-	-	-	-	-	-	-	-	-	-	-

Use stage is not relevant for the product. No environmental impacts are generated in that stage.

Content information

T-Foil Basic

Product components	Weight, g	Post-consumer material, weight-%	Renewable material, weight-%
LDPE granulates	101.80	99.8%	0%
The carrier resin of color (LDPE/LLDPE)	0.07	0.07%	0%
The pigment of color and UV substance	0.13	0.13%	0%
TOTAL	102		
Packaging materials	**Weight, g**	**Weight-% (versus the product)**	
Core	12.30		
Wood pallet	4.31		
Packaging film	0.78		
TOTAL	17.39		

T-Foil Standard

Product components	Weight, g	Post-consumer material, weight-%	Renewable material, weight-%
LDPE granulates	147.70	99.8%	0%
The carrier resin of color (LDPE/LLDPE)	0.11	0.07%	0%
The pigment of color and UV substance	0.19	0.13%	0%
TOTAL	148		
Packaging materials	**Weight, g**	**Weight-% (versus the product)**	
Core	17.85		
Wood pallet	6.26		
Packaging film	1.13		
TOTAL	25.24		

T-Foil Robust

Product components	Weight, g	Post-consumer material, weight-%	Renewable material, weight-%
LDPE granulates	184.63	99.8%	0%
The carrier resin of color (LDPE/LLDPE)	0.13	0.07%	0%
The pigment of color and UV substance	0.24	0.13%	0%
TOTAL	185		
Packaging materials	**Weight, g**	**Weight-% (versus the product)**	
Core	22.31		
Wood pallet	7.82		
Packaging film	1.42		
TOTAL	31.55		

Environmental Information

T-Foil Basic

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	2.16E-01	8.67E-03	2.34E-06	2.25E-01	1.44E-02	1.20E-02	ND	0.00E+00	5.64E-04	2.56E-01	0.00E+00	-1.58E-01
GWP-biogenic	kg CO_2 eq.	-1.13E-02	-1.45E-05	1.72E-07	-1.13E-02	-1.71E-05	-1.00E-04	ND	0.00E+00	-9.44E-07	6.36E-05	0.00E+00	1.16E-02
GWP-luluc	kg CO_2 eq.	4.33E-04	7.00E-05	1.24E-09	5.03E-04	9.72E-05	3.52E-05	ND	0.00E+00	4.55E-06	6.44E-06	0.00E+00	-6.56E-05
GWP-total	kg CO_2 eq.	2.05E-01	8.73E-03	2.51E-06	2.14E-01	1.44E-02	1.19E-02	ND	0.00E+00	5.67E-04	2.56E-01	0.00E+00	-1.46E-01
ODP	kg CFC 11 eq.	1.02E-09	1.59E-18	6.57E-15	1.02E-09	2.43E-18	1.55E-13	ND	0.00E+00	1.03E-19	9.11E-17	0.00E+00	-7.78E-14
AP	mol H^+ eq.	4.20E-04	1.03E-05	2.20E-09	4.30E-04	4.71E-05	1.17E-05	ND	0.00E+00	1.71E-06	3.46E-05	0.00E+00	-1.16E-04
EP-freshwater	kg P eq.	8.04E-06	2.63E-08	4.03E-11	8.06E-06	3.71E-08	1.81E-07	ND	0.00E+00	1.71E-09	5.56E-08	0.00E+00	-4.80E-07
EP-marine	kg N eq.	1.10E-04	3.22E-06	5.82E-10	1.14E-04	2.05E-05	5.07E-06	ND	0.00E+00	7.58E-07	7.87E-06	0.00E+00	-3.97E-05
EP-terrestrial	mol N eq.	1.08E-03	3.80E-05	6.42E-09	1.12E-03	2.28E-04	4.76E-05	ND	0.00E+00	8.49E-06	1.43E-04	0.00E+00	-3.93E-04
POCP	kg NMVOC eq.	3.05E-04	8.73E-06	1.60E-09	3.13E-04	5.41E-05	1.04E-05	ND	0.00E+00	1.51E-06	2.25E-05	0.00E+00	-1.10E-04
ADP-minerals&metals*	kg Sb eq.	2.15E-07	7.00E-10	4.77E-13	2.15E-07	1.03E-09	2.68E-09	ND	0.00E+00	4.55E-11	1.36E-09	0.00E+00	-2.05E-08
ADP-fossil*	MJ	7.79E+00	1.16E-01	1.74E-05	7.90E+00	1.89E-01	9.84E-02	ND	0.00E+00	7.50E-03	1.26E-01	0.00E+00	-3.90E+00
WDP	m^3	2.03E-02	8.44E-05	3.02E-07	2.04E-02	1.21E-04	2.51E-03	ND	0.00E+00	5.48E-06	2.40E-02	0.00E+00	-1.24E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption												

** 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.*

T-Foil Standard

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	3.14E-01	1.26E-02	3.39E-06	3.26E-01	2.08E-02	1.74E-02	ND	0.00E+00	8.18E-04	3.72E-01	0.00E+00	-2.29E-01
GWP-biogenic	kg CO_2 eq.	-1.64E-02	-2.10E-05	2.50E-07	-1.64E-02	-2.48E-05	-1.46E-04	ND	0.00E+00	-1.37E-06	9.23E-05	0.00E+00	1.68E-02
GWP-luluc	kg CO_2 eq.	6.28E-04	1.02E-04	1.80E-09	7.29E-04	1.41E-04	5.10E-05	ND	0.00E+00	6.60E-06	9.34E-06	0.00E+00	-9.52E-05
GWP-total	kg CO_2 eq.	2.98E-01	1.27E-02	3.64E-06	3.11E-01	2.10E-02	1.73E-02	ND	0.00E+00	8.23E-04	3.72E-01	0.00E+00	-2.12E-01
ODP	kg CFC 11 eq.	1.48E-09	2.31E-18	9.53E-15	1.48E-09	3.52E-18	2.25E-13	ND	0.00E+00	1.50E-19	1.32E-16	0.00E+00	-1.13E-13
AP	mol H^+ eq.	6.09E-04	1.50E-05	3.19E-09	6.24E-04	6.84E-05	1.70E-05	ND	0.00E+00	2.49E-06	5.02E-05	0.00E+00	-1.68E-04
EP-freshwater	kg P eq.	1.17E-05	3.82E-08	5.85E-11	1.17E-05	5.38E-08	2.63E-07	ND	0.00E+00	2.49E-09	8.06E-08	0.00E+00	-6.96E-07
EP-marine	kg N eq.	1.60E-04	4.67E-06	8.45E-10	1.65E-04	2.97E-05	7.36E-06	ND	0.00E+00	1.10E-06	1.14E-05	0.00E+00	-5.76E-05
EP-terrestrial	mol N eq.	1.57E-03	5.52E-05	9.32E-09	1.62E-03	3.31E-04	6.90E-05	ND	0.00E+00	1.23E-05	2.08E-04	0.00E+00	-5.71E-04
POCP	kg NMVOC eq.	4.42E-04	1.27E-05	2.32E-09	4.55E-04	7.84E-05	1.51E-05	ND	0.00E+00	2.19E-06	3.27E-05	0.00E+00	-1.60E-04
ADP-minerals&metals*	kg Sb eq.	3.11E-07	1.02E-09	6.92E-13	3.12E-07	1.50E-09	3.89E-09	ND	0.00E+00	6.60E-11	1.97E-09	0.00E+00	-2.97E-08
ADP-fossil*	MJ	1.13E+01	1.68E-01	2.53E-05	1.15E+01	2.74E-01	1.43E-01	ND	0.00E+00	1.09E-02	1.82E-01	0.00E+00	-5.65E+00
WDP	m^3	2.94E-02	1.22E-04	4.38E-07	2.96E-02	1.76E-04	3.64E-03	ND	0.00E+00	7.96E-06	3.48E-02	0.00E+00	-1.80E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption												

** 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.*

T-Foil Robust

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	3.92E-01	1.57E-02	4.24E-06	4.08E-01	2.60E-02	2.17E-02	ND	0.00E+00	1.02E-03	4.65E-01	0.00E+00	-2.86E-01
GWP-biogenic	kg CO_2 eq.	-2.05E-02	-2.62E-05	3.13E-07	-2.05E-02	-3.10E-05	-1.82E-04	ND	0.00E+00	-1.71E-06	1.15E-04	0.00E+00	2.10E-02
GWP-luluc	kg CO_2 eq.	7.85E-04	1.27E-04	2.25E-09	9.12E-04	1.76E-04	6.38E-05	ND	0.00E+00	8.26E-06	1.17E-05	0.00E+00	-1.19E-04
GWP-total	kg CO_2 eq.	3.73E-01	1.58E-02	4.55E-06	3.88E-01	2.62E-02	2.16E-02	ND	0.00E+00	1.03E-03	4.65E-01	0.00E+00	-2.65E-01
ODP	kg CFC 11 eq.	1.85E-09	2.88E-18	1.19E-14	1.85E-09	4.40E-18	2.82E-13	ND	0.00E+00	1.87E-19	1.65E-16	0.00E+00	-1.41E-13
AP	mol H^+ eq.	7.61E-04	1.87E-05	3.99E-09	7.80E-04	8.55E-05	2.13E-05	ND	0.00E+00	3.11E-06	6.28E-05	0.00E+00	-2.10E-04
EP-freshwater	kg P eq.	1.46E-05	4.78E-08	7.32E-11	1.46E-05	6.73E-08	3.29E-07	ND	0.00E+00	3.11E-09	1.01E-07	0.00E+00	-8.70E-07
EP-marine	kg N eq.	2.00E-04	5.83E-06	1.06E-09	2.06E-04	3.71E-05	9.20E-06	ND	0.00E+00	1.38E-06	1.43E-05	0.00E+00	-7.20E-05
EP-terrestrial	mol N eq.	1.96E-03	6.90E-05	1.16E-08	2.03E-03	4.14E-04	8.63E-05	ND	0.00E+00	1.54E-05	2.60E-04	0.00E+00	-7.13E-04
POCP	kg NMVOC eq.	5.53E-04	1.58E-05	2.90E-09	5.68E-04	9.81E-05	1.89E-05	ND	0.00E+00	2.74E-06	4.09E-05	0.00E+00	-2.00E-04
ADP-minerals&metals*	kg Sb eq.	3.89E-07	1.27E-09	8.65E-13	3.90E-07	1.87E-09	4.86E-09	ND	0.00E+00	8.25E-11	2.46E-09	0.00E+00	-3.71E-08
ADP-fossil*	MJ	1.41E+01	2.10E-01	3.16E-05	1.43E+01	3.42E-01	1.78E-01	ND	0.00E+00	1.36E-02	2.28E-01	0.00E+00	-7.07E+00
WDP	m^3	3.68E-02	1.53E-04	5.47E-07	3.70E-02	2.20E-04	4.55E-03	ND	0.00E+00	9.95E-06	4.35E-02	0.00E+00	-2.25E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption												

** 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.*

T-Foil Basic

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidence	3.36E-09	7.04E-11	1.95E-14	3.43E-09	4.00E-10	9.08E-11	ND	0.00E+00	1.01E-11	2.36E-10	0.00E+00	-9.26E-10
IRP	kBq U235 eq.	7.89E-03	3.16E-05	2.41E-07	7.92E-03	4.83E-05	3.30E-04	ND	0.00E+00	2.05E-06	1.71E-03	0.00E+00	-5.96E-02
ETP-fw	CTUe	4.17E+00	8.66E-02	8.13E-06	4.26E+00	1.40E-01	1.32E-02	ND	0.00E+00	5.61E-03	4.69E-02	0.00E+00	-9.28E-01
HTP-c	CTUh	9.84E-11	1.79E-12	2.82E-16	1.00E-10	2.86E-12	1.29E-12	ND	0.00E+00	1.16E-13	2.80E-12	0.00E+00	-3.81E-11
HTP-nc	CTUh	4.40E-09	9.11E-11	1.57E-14	4.50E-09	1.47E-10	6.57E-11	ND	0.00E+00	6.62E-12	1.16E-10	0.00E+00	-8.66E-10
SQP	Pt	1.31E+00	4.05E-02	4.34E-06	1.35E+00	5.63E-02	1.04E-01	ND	0.00E+00	2.63E-03	2.76E-02	0.00E+00	-2.15E+00
Acronyms	PM = Potential incidence of disease due to PM emissions; IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems, Freshwater; HTP-c = Potential comparative toxic unit for humans, Cancer effects; HTP-nc = Potential comparative toxic unit for humans, Non-cancered effects; Potential soil quality index												

Use of resources

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4.11E-01	6.67E-03	4.62E-06	4.17E-01	9.36E-03	1.88E-02	ND	0.00E+00	4.34E-04	3.16E-02	0.00E+00	-1.34E+00
PERM	MJ	2.18E-01	0.00E+00	0.00E+00	2.18E-01	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	6.29E-01	6.67E-03	4.62E-06	6.35E-01	9.36E-03	1.88E-02	ND	0.00E+00	4.34E-04	3.16E-02	0.00E+00	-1.34E+00
PENRE	MJ	3.06E+00	1.16E-01	1.74E-05	3.18E+00	1.89E-01	9.84E-02	ND	0.00E+00	7.53E-03	1.26E-01	0.00E+00	-3.90E+00
PENRM	MJ	4.73E+00	0.00E+00	0.00E+00	4.73E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	7.79E+00	1.16E-01	1.74E-05	7.90E+00	1.89E-01	9.84E-02	ND	0.00E+00	7.53E-03	1.26E-01	0.00E+00	-3.90E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.44E-03	7.77E-06	9.74E-09	1.44E-03	1.10E-05	1.08E-04	ND	0.00E+00	5.06E-07	5.75E-04	0.00E+00	-2.07E-03

Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

T-Foil Standard

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidence	4.88E-09	1.02E-10	2.83E-14	4.98E-09	5.80E-10	1.32E-10	ND	0.00E+00	1.47E-11	3.42E-10	0.00E+00	-1.34E-09
IRP	kBq U235 eq.	1.14E-02	4.58E-05	3.49E-07	1.15E-02	7.01E-05	4.79E-04	ND	0.00E+00	2.97E-06	2.48E-03	0.00E+00	-8.64E-02
ETP-fw	CTUe	6.06E+00	1.26E-01	1.18E-05	6.18E+00	2.03E-01	1.91E-02	ND	0.00E+00	8.15E-03	6.81E-02	0.00E+00	-1.35E+00
HTP-c	CTUh	1.43E-10	2.60E-12	4.09E-16	1.45E-10	4.14E-12	1.87E-12	ND	0.00E+00	1.68E-13	4.06E-12	0.00E+00	-5.53E-11
HTP-nc	CTUh	6.39E-09	1.32E-10	2.27E-14	6.52E-09	2.14E-10	9.54E-11	ND	0.00E+00	9.61E-12	1.68E-10	0.00E+00	-1.26E-09
SQP	Pt	1.90E+00	5.87E-02	6.29E-06	1.96E+00	8.17E-02	1.51E-01	ND	0.00E+00	3.82E-03	4.00E-02	0.00E+00	-3.12E+00
Acronyms	PM = Potential incidence of disease due to PM emissions; IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems, Freshwater; HTP-c = Potential comparative toxic unit for humans, Cancer effects; HTP-nc = Potential comparative toxic unit for humans, Non-cancered effects; Potential soil quality index												

Use of resources

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	5.96E-01	9.68E-03	6.70E-06	6.06E-01	1.36E-02	2.72E-02	ND	0.00E+00	6.29E-04	4.59E-02	0.00E+00	-1.95E+00
PERM	MJ	3.16E-01	0.00E+00	0.00E+00	3.16E-01	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	9.12E-01	9.68E-03	6.70E-06	9.22E-01	1.36E-02	2.72E-02	ND	0.00E+00	6.29E-04	4.59E-02	0.00E+00	-1.95E+00
PENRE	MJ	4.44E+00	1.69E-01	2.53E-05	4.61E+00	2.75E-01	1.43E-01	ND	0.00E+00	1.09E-02	1.82E-01	0.00E+00	-5.65E+00
PENRM	MJ	6.86E+00	0.00E+00	0.00E+00	6.86E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.13E+01	1.69E-01	2.53E-05	1.15E+01	2.75E-01	1.43E-01	ND	0.00E+00	1.09E-02	1.82E-01	0.00E+00	-5.65E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.08E-03	1.13E-05	1.41E-08	2.10E-03	1.59E-05	1.56E-04	ND	0.00E+00	7.34E-07	8.34E-04	0.00E+00	-3.00E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water												

T-Foil Robust

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidence	6.10E-09	1.28E-10	3.54E-14	6.22E-09	7.25E-10	1.65E-10	ND	0.00E+00	1.84E-11	4.28E-10	0.00E+00	-1.68E-09
IRP	kBq U235 eq.	1.43E-02	5.72E-05	4.36E-07	1.44E-02	8.76E-05	5.98E-04	ND	0.00E+00	3.72E-06	3.10E-03	0.00E+00	-1.08E-01
ETP-fw	CTUe	7.57E+00	1.57E-01	1.47E-05	7.73E+00	2.54E-01	2.39E-02	ND	0.00E+00	1.02E-02	8.51E-02	0.00E+00	-1.68E+00
HTP-c	CTUh	1.79E-10	3.25E-12	5.11E-16	1.82E-10	5.18E-12	2.33E-12	ND	0.00E+00	2.10E-13	5.07E-12	0.00E+00	-6.91E-11
HTP-nc	CTUh	7.99E-09	1.65E-10	2.84E-14	8.15E-09	2.67E-10	1.19E-10	ND	0.00E+00	1.20E-11	2.11E-10	0.00E+00	-1.57E-09
SQP	Pt	2.38E+00	7.34E-02	7.87E-06	2.45E+00	1.02E-01	1.89E-01	ND	0.00E+00	4.78E-03	5.00E-02	0.00E+00	-3.90E+00
Acronyms	PM = Potential incidence of disease due to PM emissions; IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems, Freshwater; HTP-c = Potential comparative toxic unit for humans, Cancer effects; HTP-nc = Potential comparative toxic unit for humans, Non-cancered effects; Potential soil quality index												

Use of resources

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	7.45E-01	1.21E-02	8.37E-06	7.57E-01	1.70E-02	3.40E-02	ND	0.00E+00	7.87E-04	5.73E-02	0.00E+00	-2.44E+00
PERM	MJ	3.95E-01	0.00E+00	0.00E+00	3.95E-01	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.14E+00	1.21E-02	8.37E-06	1.15E+00	1.70E-02	3.40E-02	ND	0.00E+00	7.87E-04	5.73E-02	0.00E+00	-2.44E+00
PENRE	MJ	5.55E+00	2.11E-01	3.16E-05	5.76E+00	3.43E-01	1.79E-01	ND	0.00E+00	1.37E-02	2.28E-01	0.00E+00	-7.07E+00
PENRM	MJ	8.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.41E+01	2.11E-01	3.16E-05	1.43E+01	3.43E-01	1.79E-01	ND	0.00E+00	1.37E-02	2.28E-01	0.00E+00	-7.07E+00

SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.61E-03	1.41E-05	1.77E-08	2.62E-03	1.99E-05	1.95E-04	ND	0.00E+00	9.17E-07	1.04E-03	0.00E+00	-3.75E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water												

Waste production and output flows

T-Foil Basic

Waste production

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2.49E-09	5.35E-09	3.32E-08	4.10E-08	7.44E-09	3.58E-09	ND	0.00E+00	3.48E-10	7.10E-11	0.00E+00	-3.68E-09
Non-hazardous waste disposed	kg	1.73E-03	1.84E-05	2.77E-07	1.75E-03	2.84E-05	3.17E-04	ND	0.00E+00	1.19E-06	2.03E-03	0.00E+00	-2.47E-03
Radioactive waste disposed	kg	6.54E-05	2.14E-07	1.50E-09	6.56E-05	3.28E-07	2.03E-06	ND	0.00E+00	1.39E-08	1.05E-05	0.00E+00	-5.14E-04

Output flows

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E-02	ND	0.00E+00	0.00E+00	2.35E-02	0	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.69E-03	ND	0.00E+00	0.00E+00	7.78E-02	0	0.00E+00
Exported energy. electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00

Exported energy. thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00

T-Foil Standard

Waste production

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	3.61E-09	7.77E-09	4.81E-08	5.95E-08	1.08E-08	5.20E-09	ND	0.00E+00	5.05E-10	1.03E-10	0.00E+00	-5.34E-09
Non-hazardous waste disposed	kg	2.51E-03	2.67E-05	4.02E-07	2.53E-03	4.12E-05	4.60E-04	ND	0.00E+00	1.73E-06	2.94E-03	0.00E+00	-3.58E-03
Radioactive waste disposed	kg	9.49E-05	3.10E-07	2.17E-09	9.52E-05	4.76E-07	2.94E-06	ND	0.00E+00	2.01E-08	1.52E-05	0.00E+00	-7.46E-04

Output flows

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-02	ND	0.00E+00	0.00E+00	3.41E-02	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.26E-03	ND	0.00E+00	0.00E+00	1.13E-01	0.00E+00	0.00E+00
Exported energy. electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy. thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

T-Foil Robust

Waste production

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4.51E-09	9.71E-09	6.01E-08	7.44E-08	1.35E-08	6.49E-09	ND	0.00E+00	6.32E-10	1.29E-10	0.00E+00	-6.68E-09
Non-hazardous waste disposed	kg	3.13E-03	3.34E-05	5.02E-07	3.17E-03	5.15E-05	5.75E-04	ND	0.00E+00	2.17E-06	3.68E-03	0.00E+00	-4.48E-03
Radioactive waste disposed	kg	1.19E-04	3.88E-07	2.72E-09	1.19E-04	5.95E-07	3.68E-06	ND	0.00E+00	2.52E-08	1.90E-05	0.00E+00	-9.33E-04

Output flows

Results per declared unit													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-02	ND	0.00E+00	0.00E+00	4.26E-02	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	ND	0.00E+00	0.00E+00	1.41E-01	0.00E+00	0.00E+00
Exported energy. electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy. thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Information on biogenic carbon content

T-Foil Basic

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	g C	0
Biogenic carbon content in packaging	g C	7.2

T-Foil Standard

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	g C	0
Biogenic carbon content in packaging	g C	10.4

T-Foil Robust

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	g C	0
Biogenic carbon content in packaging	g C	13.0

References

General Programme Instructions of the International EPD® System. Version 3.01.

LCA Consulting, 2021. Life cycle assessment study of T-Foil plastic films for environmental product declarations. Confidential LCA report.

PCR 2019:14. Construction products. Version 1.11

EPD®

www.environdec.com