epddanmark

ECO PLATFORM EPD VERIFIED

Owner: Tarpaper Recycling ApS
No.: MD-25061-EN
Issued: 30-06-2025
Valid to: 30-06-2030

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
Tarpaper Recycling ApS
Miljøvej 2, 7400 Herning
VAT no.: DK-29632472
www.tarpaper.dk

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

☒ Product specific
☐ Average
☐ Worst Case

Declared product(s)
1 ton of BitumenMix

Number of declared datasets/product variations: 1

Production site
Miljøvej 2, 7400 Herning, Denmark

Use of Guarantees of Origin
☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
1 ton

Year of production site data (A3)
2024

EPD version
EPD version no. 1

Issued:
30-06-2025

Valid to:
30-06-2030

Basis of calculation
This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☒Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

Kim Christiansen

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

Product information

Product description

The main product components for production of BitumenMix are shown in the table below.

Material	Weight-% of declared product
Roofing felt waste	100

Product packaging:

The BitumenMix is transported from Tarpaper Recycling to customers by open load trucks, and therefore, there is no packaging associated with the product.

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 ton of BitumenMix on the production site located in Herning, Denmark. Product specific data are based on average values collected in the period 2024 and 2025. Background data are based on the Ecoinvent 3.9.1 database and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are new.

Energy usage is based on representative tests instead of a full year of production. As such, the EPD also has a shorter validity. Once a full production year has been obtained with the present production setup, the energy consumption will be revisited, checking that the results of the test-data represent a full year accurately. If not, the EPD will be updated with data from the full production year.

Hazardous substances

The declared product does not contain substances listed on the" Candidate List of Substances of Very High Concern for authorisation"

(http://echa.europa.eu/candidate-list-table)

Product(s) use

The refining process of Tarpaper Recycling converts the bitumen-rich roofing felt waste to a raw material "BitumenMix". This product can be used as a binder in the production of new asphalt as it contains bitumen, the most valuable raw material in asphalt.

Essential characteristics

The product is declared with the following properties:

- Softening point - Ring and Ball ≤ 102 ^{0} C
- Penetration of the binder ≥ 8 (1/10mm)
- Bitumen (binder) content ≥ 50 %
- Foreign matter 2 % (max)
- Particle size after bitumen extraction 0-16 mm
- Sieve 0.063 mm 40 % ± 20 %

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

https://tarpaper.dk/

Reference Service Life (RSL)

The RSL is not declared for this product.

Picture of product(s)

Figure 1 - Roofing felt from municipal waste collection or demolition companies

Figure 2 - Roofing felt with defects, delivered as waste directly from manufacturers

Figure 3 - BitumenMix

LCA background

Declared unit

The LCI and LCIA results in this EPD relate to the environmental impacts caused by the production and end-of-life treatment of 1 ton of BitumenMix.

Name	Value	Unit
Declared unit	1	Ton
Density	700	kg/m^3
Conversion factor to 1 kg	0.001	-

Functional unit

Not defined

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804. The c-PCR for bituminous mixtures by TII (2024) acts as guidance for inclusion of modules and the RSL.

Energy modelling principles

Foreground system:

The product is produced using electricity from Danish residual mix. Remaining energy processes include diesel consumption, modelled as diesel consumed in heavy machinery.

Information about the energy mix in the foreground system:

Energy mix	EF	Unit
Danish residual mix	0,63	kg CO_2e/kWh

Background system:

Upstream and downstream processes are modelled using geographically representative market processes.

Flowdiagram

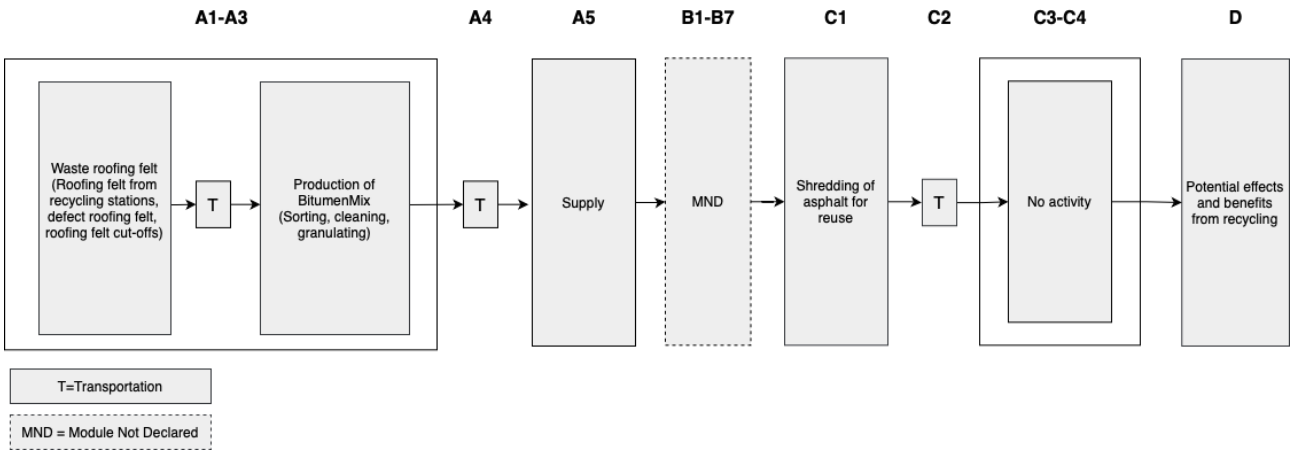

Figure 4 - Flowdiagram

System boundary

This EPD is based on a cradle-to-gate LCA with options, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site. The material input includes some foreign matter that is removed manually. This is excluded from the system boundary, and thus there is no energy consumption or transportation related to this material, as it is removed before production starts. Consequently, it is assumed that 100 % input material results in 100 % output material.

Included in module A1 are capital goods, comprising of buildings and machinery. The input of raw materials is roofing felt waste. This is waste that Tarpaper Recycling receives free of charge and thus, there are no emissions associated with material input.

In module A2, transportation of roofing felt waste to Tarpaper Recycling's production site is based on weighted averages. Some roofing felt waste is collected by Tarpaper Recycling's own vehicles, while some is delivered by suppliers directly to Tarpaper Recycling in Herning.

In module A3, electricity is used to power heating, lighting, the conveyor belt and other electrical machines. Diesel is used to fuel machines and the crushing station.

The LCA results are declared in aggregated form for the product stage, meaning the sub-modules A1, A2 and A3 are declared as one module A1-A3.

Construction process stage (A4-A5) includes:

In module A4, impacts associated with transportation by truck of the BitumenMix to customers throughout Europe are included. This is based on a weighted average from July to December 2024, resulting in an average distance of 543 km.

In module A5, the installation of the BitumenMix in asphalt pavement requires energy. Diesel fuels the pavement process.

Use stage (B1-B7) includes:

Modules are not declared.

End of Life (C1-C4) includes:

Modules C1-C4 include deconstruction, transportation, waste processing and disposal. In module C1, the asphalt is removed and crushed, and it is assumed that no further waste is generated as asphalt can be directly reused without further processing or waste treatment. In module C2, the waste is transported by truck to a different site to be used in the next product system. As such, the product reaches end of waste and there is no activity associated with modules C3 and C4.

Re-use, recovery and recycling potential (D) includes:

There are no potential benefits associated with module D, as the product reaches end of waste in module C1.

LCA results

ENVIRONMENTAL IMPACTS PER TON BITUMENMIX									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	1.01E+02	1.00E+02	2.88E+00	2.88E+00	1.85E+01	0.00E+00	0.00E+00	0.00E+00
GWP-fossil	[kg CO_2 eq.]	1.01E+02	1.00E+02	2.87E+00	2.87E+00	1.85E+01	0.00E+00	0.00E+00	0.00E+00
GWP-biogenic	[kg CO_2 eq.]	-1.06E-01	8.89E-02	4.60E-04	4.60E-04	1.64E-02	0.00E+00	0.00E+00	0.00E+00
GWP-luluc	[kg CO_2 eq.]	3.90E-02	4.95E-02	1.02E-03	1.02E-03	9.12E-03	0.00E+00	0.00E+00	0.00E+00
ODP	[kg CFC 11 eq.]	1.85E-06	2.18E-06	4.42E-08	4.42E-08	4.02E-07	0.00E+00	0.00E+00	0.00E+00
AP	[mol H^+ eq.]	5.25E-01	2.19E-01	2.42E-02	2.42E-02	4.04E-02	0.00E+00	0.00E+00	0.00E+00
EP-freshwater	[kg P eq.]	1.46E-02	7.13E-03	1.99E-04	1.99E-04	1.31E-03	0.00E+00	0.00E+00	0.00E+00
EP-marine	[kg N eq.]	1.86E-01	5.53E-02	1.05E-02	1.05E-02	1.02E-02	0.00E+00	0.00E+00	0.00E+00
EP-terrestrial	[mol N eq.]	2.08E+00	5.62E-01	1.14E-01	1.14E-01	1.04E-01	0.00E+00	0.00E+00	0.00E+00
POCP	[kg NMVOC eq.]	6.45E-01	3.40E-01	3.32E-02	3.32E-02	6.27E-02	0.00E+00	0.00E+00	0.00E+00
ADPm[1]	[kg Sb eq.]	4.05E-04	3.36E-04	1.24E-05	1.24E-05	6.18E-05	0.00E+00	0.00E+00	0.00E+00
ADPf[1]	[MJ]	1.43E+03	1.44E+03	3.79E+01	3.79E+01	2.64E+02	0.00E+00	0.00E+00	0.00E+00
WDP[1]	[m^3 world eq. deprived]	7.75E+00	7.13E+00	1.33E-01	1.33E-01	1.31E+00	0.00E+00	0.00E+00	0.00E+00
Caption	GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
	The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: $1.95*10^2$ or 195, while 1.12E-11 is the same as $1.12*10^{-11}$ or 0.0000000000112.								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER TON BITUMENMIX									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	4.38E-06	7.48E-06	6.06E-08	6.06E-08	1.38E-06	0.00E+00	0.00E+00	0.00E+00
IRP[2]	[kBq U235 eq.]	6.29E+00	1.93E+00	2.82E-02	2.82E-02	3.55E-01	0.00E+00	0.00E+00	0.00E+00
ETP-fw[1]	[CTUe]	5.91E+02	7.04E+02	1.91E+01	1.91E+01	1.30E+02	0.00E+00	0.00E+00	0.00E+00
HTP-c[1]	[CTUh]	4.27E-08	4.59E-08	1.01E-09	1.01E-09	8.45E-09	0.00E+00	0.00E+00	0.00E+00
HTP-nc[1]	[CTUh]	1.76E-06	1.02E-06	8.25E-08	8.25E-08	1.88E-07	0.00E+00	0.00E+00	0.00E+00
SQP[1]	-	4.84E+02	8.61E+02	3.21E+00	3.21E+00	1.59E+02	0.00E+00	0.00E+00	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
	The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: $1.95*10^2$ or 195, while 1.12E-11 is the same as $1.12*10^{-11}$ or 0.0000000000112.								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

RESOURCE USE PER TON BITUMENMIX									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	4.03E+01	2.24E+01	4.22E-01	4.22E-01	4.12E+00	0.00E+00	0.00E+00	0.00E+00
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
PERT	[MJ]	4.03E+01	2.24E+01	4.22E-01	4.22E-01	4.12E+00	0.00E+00	0.00E+00	0.00E+00
PENRE	[MJ]	1.33E+03	1.31E+03	3.46E+01	3.46E+01	2.41E+02	0.00E+00	0.00E+00	0.00E+00
PENRM	[MJ]	3.02E+04	1.24E+02	3.33E+00	3.33E+00	-3.00E+04	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.15E+04	1.44E+03	3.79E+01	3.79E+01	-2.98E+04	0.00E+00	0.00E+00	0.00E+00
SM	[kg]	1.00E+03	1.57E+00	2.67E-02	2.67E-02	2.90E-01	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	3.62E-01	4.24E-01	3.82E-03	3.82E-03	7.82E-02	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	7.13E+00	3.46E-01	-1.33E-03	-1.33E-03	6.38E-02	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.74E-01	1.73E-01	3.33E-03	3.33E-03	3.19E-02	0.00E+00	0.00E+00	0.00E+00
Caption	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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								
	The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: $1.95*10^2$ or 195, while 1.12E-11 is the same as $1.12*10^{-11}$ or 0.0000000000112.								

WASTE CATEGORIES AND OUTPUT FLOWS PER TON BITUMENMIX									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1.49E+00	1.35E+00	3.84E-02	3.84E-02	2.48E-01	0.00E+00	0.00E+00	0.00E+00
NHWD	[kg]	2.94E+01	6.95E+01	2.73E-02	2.73E-02	1.28E+01	0.00E+00	0.00E+00	0.00E+00
RWD	[kg]	1.58E-03	4.68E-04	6.66E-06	6.66E-06	8.63E-05	0.00E+00	0.00E+00	0.00E+00
CRU	[kg]	4.57E-20	-4.49E-21	1.67E-34	1.67E-34	-8.26E-22	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.20E+00	1.43E+00	2.14E-02	2.14E-02	1.00E+03	0.00E+00	0.00E+00	0.00E+00
MER	[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
EEE	[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
EET	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: $1.95*10^2$ or 195, while 1.12E-11 is the same as $1.12*10^{-11}$ or 0.0000000000112.								

BIOGENIC CARBON CONTENT PER TON BITUMENMIX		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

LCA interpretation

The results clearly indicate that transportation of the BitumenMix to the installation site, where the product is used in asphalt paving, generally has the highest contribution to the environmental impacts. This is due to the use of fossil fuels, when transporting products by truck. Furthermore, as the input of roofing felt waste is available burden free, transportation will have a high contribution in comparison.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	EURO6 lorry 16-32 ton	-
Transport distance	543	km
Capacity utilization (including empty runs)	37	%

Installation of the product in the building (A5)

Scenario information	Value	Unit
Diesel consumed in heavy machinery	0.75	l

Reference service life

RSL information		Unit
Reference service Life	Not declared	Years
Declared product properties	Information regarding installation, maintenance, or product properties can be acquired at the producer's website: https://tarpaper.dk/	
Design application parameters		
Assumed quality of work		
Outdoor environment		
Indoor environment		
Usage conditions		
Maintenance		

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

Publisher	www.epddanmark.dk Template version 2024.2
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Tomas Sander Poulsen & Marie Ahl Provice ApS Havnevej 45A 4000 Roskilde www.provice.dk
LCA software /background data	OpenLCA 2.4.1 Ecoinvent 3.9.1 EN 15804 reference package 3.1
3rd party verifier	Kim Christiansen kimconsult.dk Marienborg Alle 91C 2860 Søborg Verified according to Verification Checklist 1 v. 2.8

General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

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

EN 15804
DS/EN 15804:2012+A2/AC:2021 – Update for DS/EN 15804 + A2:2019

EN 15942
DS/EN 15942:2011 – ” Sustainability of construction works – Environmental product declarations – Communication format business-to-business”

ISO 14025
DS/EN ISO 14025:2010 – ” Environmental labels and declarations – Type III environmental declarations – Principles and procedures”

ISO 14040
DS/EN ISO 14040:2008 – ” Environmental management – Life cycle assessment – Principles and framework”

ISO 14044
DS/EN ISO 14044:2008 – ” Environmental management – Life cycle assessment – Requirements and guidelines”

Transport Infrastructure Ireland (TII), 2024
Complementary Product Category Rules for Bituminous Mixtures (c-PCR Bituminous Mixtures). DN-PAV-03077. May, 2024. TII Publications.