



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

UAB GILMERA

ASPHALT MIXTURE





GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	UAB "Gilmera"
Address	Fortų g. 2A, Alytus
Contact details	+370 622 03179
Website	www.gilmera.lt

PRODUCT IDENTIFICATION

Product name	Asphalt mixture
Additional label(s)	Mastic Asphalt, Hot Mix Asphalt, Asphalt Concrete
Place(s) of production	Lithuania
CPC code	15330

The Building Information Foundation RTS sr

EPDs within the same product category but from different programmes may not be comparable.

Jukka Seppänen
RTS EPD Committee Secretary

Laura Apilo
Managing Director

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The Building Information Foundation RTS sr
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 26.8.2020) is used.
EPD author	Silvija Serapinaitė, UAB Vesta Consulting,
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Verification date	1.8.2023
EPD verifier	Mari Kirss, Rangi Maja OÜ
EPD number	RTS_247_23
Publishing date	18.8.2023
EPD valid until	18.8.2028

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Asphalt is a surface material that is often used to cover road, street or square surfaces. Asphalt is a mixture made of mineral matter (small pebbles from dolomite/granite), bitumen and micro fill. It is heated and mixed in special asphalt production plant, and then placed on the surface and compacted to form a strong and durable surface. Asphalt is used in all countries.

PRODUCT APPLICATION

Asphalt is used for:

Roads - Main roads, highways, streets, and district roads

Squares - Playgrounds

Airports

Asphalt has many grades and is classified according to the project and its intended use.

PRODUCT STANDARDS

LST EN 13108-1:2006 ir LST EN 13108-1:2006/AC:2008, EN13108-3:2006, EN 13108-3:2006/AC:2008, EN 13108-5:2006, EN 13108-5:2006/AC:2008

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at

<https://eseimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.335943>

PRODUCT RAW MATERIAL COMPOSITION

Product	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Gravel	331,45	0	0	LT
Dolomite	574,08	0	0	LT
Micro fill	44,79	0	0	LT
Bitumen	49,69	0	0	LT

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	95,03	EU
Fossil materials	4,97	EU
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C 0

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

A1: This module considers the extraction and processing of raw materials.

A2: The raw materials are transported to the manufacturing plant. In this case the model includes road transportation of each raw material.

A3: This module includes the manufacture of products. It has considered all the energy consumption and waste generated in the production plant.

MANUFACTURING PROCESS

Preparation of raw materials: bituminous material, mineral raw materials (sand, gravel) and additives are prepared and meet the technical requirements. The mineral raw materials are then heated to the required temperature and sieved into specific pebble sizes. The sifted hot raw materials are weighed and poured into a mixer where bitumen and micro fill are dosed, the materials are mixed here, and asphalt is created.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the transport and installation stage.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

PRODUCT END OF LIFE (C1-C4, D)

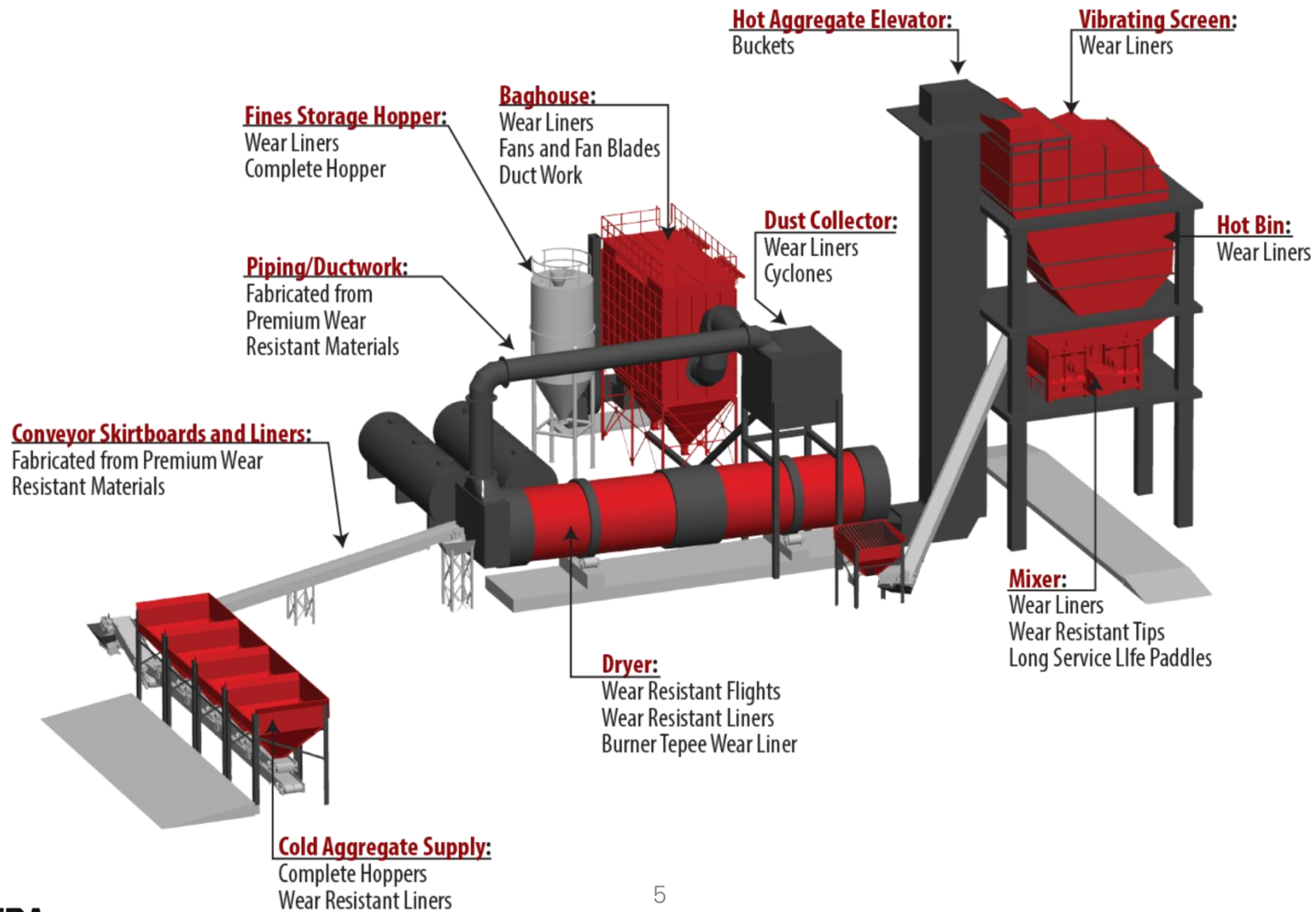
Pavement milling of asphalt is assumed. Consumption of fuel in milling process of asphalt is calculated according to mass. Energy consumption for demolition is 10 kWh/1000 kg = 0,01 kWh/kg. The source of energy is diesel fuel used by work machines. It is assumed that asphalt mixtures are recyclable. It is further transported to the waste processing where it is crushed and sieved. Transportation distance to the closest recycling facility is estimated as 50 km and the transportation method is lorry which is the most common. Crushing of demolished asphalt is accounted in C3 stage.

Benefits and loads beyond the system boundary (D):

Benefits are assigned to module D for materials and fuels (that have left the system in modules C) that can substitute primary material or fuels that do not need to be produced.

Benefits accounted for aggregates which are replaced by recycled asphalt.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2022 May - 2023 May
EPD type	Average asphalt mixture is evaluated. Mixtures of asphalt are within $\pm 6\%$ of the average.

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 tonne
Mass per declared unit	1000 kg

SYSTEM BOUNDARY

This EPD covers the cradle to gate with options scope with following modules: A1 (Raw material supply), A2 (Transport), and A3 (Manufacturing) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

Product stage			Assembly stage			Use stage						End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 -standard.

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	3,06E1	9,49E0	2,31E1	6,32E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,3E0	4,55E0	3,23E-1	0E0	-8,7E0
GWP – fossil	kg CO ₂ e	3,05E1	9,45E0	2,31E1	6,3E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,3E0	4,54E0	3,13E-1	0E0	-8,57E0
GWP – biogenic	kg CO ₂ e	8,98E-2	3,73E-2	2,36E-2	1,51E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,17E-4	3,3E-3	9,33E-3	0E0	-1,11E-1
GWP – LULUC	kg CO ₂ e	1,13E-2	8,37E-3	5,79E-3	2,55E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,79E-4	1,37E-3	7,05E-4	0E0	-1,14E-2
Ozone depletion pot.	kg CFC-11e	3,88E-5	1,62E-6	4,66E-6	4,51E-5	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,12E-7	1,07E-6	2,63E-8	0E0	-7,76E-7
Acidification potential	mol H ⁺ e	3,83E-1	6,61E-2	5,98E-2	5,09E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,45E-2	1,91E-2	1,73E-3	0E0	-5,58E-2
EP-freshwater	kg Pe	4,72E-4	2,9E-4	9,22E-5	8,54E-4	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,33E-5	3,7E-5	3,28E-5	0E0	-5,63E-4
EP-marine	kg Ne	6,87E-2	2,25E-2	1,23E-2	1,04E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,52E-2	5,75E-3	2,31E-4	0E0	-1,16E-2
EP-terrestrial	mol Ne	8,39E-1	2,49E-1	1,36E-1	1,22E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,67E-1	6,35E-2	2,82E-3	0E0	-1,53E-1
POCP (“smog”)	kg NMVOCe	3,27E-1	7E-2	4,44E-2	4,42E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,59E-2	2,04E-2	7,48E-4	0E0	-3,87E-2
ADP-minerals & metals	kg Sbe	4,57E-4	1,06E-4	5,33E-5	6,17E-4	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,03E-6	7,75E-5	1,08E-6	0E0	-9,13E-4
ADP-fossil resources	MJ	2,44E3	1,42E2	3,03E2	2,88E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E1	7,07E1	6,36E0	0E0	-1,25E2
Water use	m ³ e depr.	5,35E0	1,17E0	6,54E-1	7,17E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,46E-2	2,63E-1	7,53E-2	0E0	-1,48E1

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

Reading example: $9.00E-03 = 9.0 \cdot 10^{-3} = 0.009$

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	2,71E1	8,38E0	1,37E1	4,92E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E-1	8,9E-1	1,06E0	0E0	-1,12E1
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	2,71E1	8,38E0	1,37E1	4,92E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E-1	8,9E-1	1,06E0	0E0	-1,12E1
Non-re. PER as energy	MJ	7,96E2	1,42E2	3,03E2	1,24E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E1	7,07E1	6,36E0	0E0	-1,25E2
Non-re. PER as material	MJ	1,64E3	0E0	0E0	1,64E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1,64E3	0E0	0E0
Total use of non-re. PER	MJ	2,44E3	1,42E2	3,03E2	2,88E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E1	7,07E1	1,65E3	0E0	-1,25E2
Secondary materials	kg	2,5E-1	0E0	0E0	2,5E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,0E3
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	5,64E-1	4,22E-2	2,55E-2	6,31E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,01E-3	1,47E-2	1,89E-3	0E0	-1,18E0

PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7,65E-1	4,43E-1	1,62E-1	1,37E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,88E-2	6,87E-2	0E0	0E0	-6,4E-1
Non-hazardous waste	kg	1,52E1	1,8E1	3,65E0	3,69E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,22E-1	7,6E0	0E0	0E0	-2,67E1
Radioactive waste	kg	1,7E-2	8,86E-4	2,07E-3	2E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,18E-4	4,85E-4	0E0	0E0	-5,86E-4

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1E3	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	3,06E-02	9,49E-03	2,31E-02	6,32E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,30E-03	4,55E-03	3,23E-04	0,00E+00	8,70E-03
ADP-minerals & metals	kg Sbe	4,57E-07	1,06E-07	5,33E-08	6,17E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,03E-09	7,75E-08	1,08E-09	0,00E+00	9,13E-07
ADP-fossil	MJ	2,44E+00	1,42E-01	3,03E-01	2,88E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E-02	7,07E-02	6,36E-03	0,00E+00	1,25E-05
Water use	m ³ e depr.	5,35E-03	1,17E-03	6,54E-04	7,17E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,46E-05	2,63E-04	7,53E-05	0,00E+00	1,48E-04
Secondary materials	kg	2,50E-04	0,00E+00	0,00E+00	2,50E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,00E+0
Biog. C in product	kg C	N/A	N/A	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	N/A	N/A	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Biog. C in product = Biogenic carbon content in product.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Data source: ecoinvent 3.6 Country: World Electricity production, photovoltaic, 570kwp open ground installation, multi-si (Reference product: electricity, low voltage)
Electricity CO _{2e} / kWh	0.0784
Electricity data source and quality	Data source: ecoinvent 3.6 Country: Lithuania Market for electricity, medium voltage (Reference product: electricity, medium voltage)
Electricity CO _{2e} / kWh	0.34

End of life scenario documentation

Scenario parameter	Value
Collection process – kg collected separately	1000
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	1000
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	0
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with average lorry

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

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

RTS PCR (English version, 26.8.2020)

Bozdağ, Ö & Seçer, M (2007) and the Level(s) project

Asphalt LCA background report 17.07.2023

ABOUT THE MANUFACTURER

UAB "Gilmera" company started its activities in the construction and road construction sector in 2015. The company is certified and has the right to perform work on national and local roads, streets, railways, airports, water ports and other transport structures (bridges, overpasses, tunnels, pedestrian paths, squares, etc.), build residential and non-residential structures, lay engineering networks, build hydrotechnical structures and other engineering structures, and work in cultural heritage objects. In the summer of 2022, the asphalt production line began to operate, which allows the work to be performed to a higher standard, more efficiently and effectively. Quality management system EN ISO 9001:2015, environmental management system EN ISO 14001:2015, employee health and safety management system EN ISO 45001:2018 have been implemented and continuously improved.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	UAB Gilmera
EPD author	Silvija Serapinaitė
EPD verifier	Mari Kirss, Rangi Maja OÜ
EPD program operator	The Building Information Foundation RTS sr
Background data	This EPD is based on Asphalt LCA background report, Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA tool



ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	2,95E1	9,32E0	2,29E1	6,17E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	3,27E0	4,5E0	3,08E-1	0E0	-8,39E0
Ozone depletion Pot.	kg CFC-11e	3,07E-5	1,35E-6	3,7E-6	3,57E-5	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	5,63E-7	8,49E-7	3,09E-8	0E0	-7,14E-7
Acidification	kg SO ₂ e	2,49E-1	4,56E-2	4,42E-2	3,39E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	4,87E-3	9,25E-3	1,49E-3	0E0	-3,47E-2
Eutrophication	kg PO ₄ ³ e	3,72E-2	1,54E-2	6,89E-3	5,95E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	8,57E-4	1,87E-3	1,03E-3	0E0	-1,89E-2
POCP ("smog")	kg C ₂ H ₄ e	1,13E-2	1,84E-3	2,43E-3	1,56E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	5,01E-4	5,86E-4	6,25E-5	0E0	-2,78E-3
ADP-elements	kg Sbe	4,57E-4	1,06E-4	5,33E-5	6,17E-4	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	5,03E-6	7,75E-5	1,08E-6	0E0	-9,13E-4
ADP-fossil	MJ	2,44E3	1,42E2	3,03E2	2,88E3	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	4,54E1	7,07E1	6,36E0	0E0	-1,25E2