ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Asphalt mixture

AB Kauno tiltai

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	AB Kauno tiltai
Address	Ateities road 46 52502 Kaunas, Lithuania
Contact details	kaunotiltai@kaunotiltai.lt
Website	https://kaunotiltai.lt/en/

PRODUCT IDENTIFICATION

Product name	Asphalt mixture
Product number / reference	Asphalt: AC P, AC A, AC V, SMA, MA, AC PD, SA
Place(s) of production	Kaunas branch: Ateities pl. 46 52502 Kaunas Pagrybis branch: Aušrinės g. 2, Iždonų k., Šilalės r. Vievis branch: Statybininkų g. 14, Vievis
CPC code	15330

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes 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.

EPD INFORMATION

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: ☐ Internal certification ☒ External verification
Verification date	12.04.2024
EPD verifier	Mari Kirss, Rangi Maja OÜ
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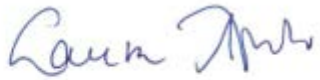
Jukka Seppänen
RTS EPD Committee Secretary



Laura Apilo
Managing Director

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Asphalt mix is a bituminous mixture consisting of micro aggregate, fine and coarse minerals and a binder - bitumen. Additives may be added where necessary. The product is used for surfacing roads, streets or squares.
The asphalt mix produced is certified and complies with all quality requirements. The product is subject to strict laboratory control.

PRODUCT APPLICATION

Asphalt is used for roads - main roads, highways, streets, and district roads, squares – playgrounds and airports. Asphalt has many grades and is classified according to the project and its intended use.

TECHNICAL SPECIFICATIONS

The requirements for asphalt mixtures used for pavement construction on national roads are set out in the Technical Requirements for Asphalt Mixtures for Motorways TRA ASFALTAS 08.

PRODUCT STANDARDS

The following quality standards apply to mineral and asphalt mixtures:

- LST EN 13108-1:2006 and LST EN 13108-1:2006/AC:2008,
- EN 13108-3:2006,
- EN 13108-3:2006/AC:2008,
- EN 13108-5:2006,
- EN 13108-5:2006/AC:2008,
- EN 13108-6:2006/AC:2008.

The Company also installs the engineering networks, constructs landfills, produces and sells construction materials (asphalt, aggregates, bridge bearing elements and expansion joints).

The company has implemented quality management in accordance with the standard requirements of LST EN ISO 9001: 2015, occupational health and safety management in accordance with the requirements of LST EN ISO 45001:2018 and environmental management standards in accordance with the requirements of LST EN ISO 14001: 2015

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at https://kaunotiltai.lt/en/.

PRODUCT RAW MATERIAL COMPOSITION

Material	Weight, kg	Post-consumer material, %	Country / Region of origin
Granite and dolomite	558-840	0	EU
Reclaimed asphalt	0-193	100	LT
Sand	0-173	0	LT
Mineral powders	39-93	0	LT
Bitumen	37-67	0	EU
Total	1000		

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	93.3-96.3	EU
Fossil materials	3.7-6.7	EU
Bio-based materials	0	-

SUBSTANCES, REACH - VERY HIGH CONCERN-

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

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2023
EPD type	Worst case scenario is evaluated, as A1-A3 GWP value differs more than 10% (the highest compared to the lowest)

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.

The allocations in the Ecoinvent 3.8 datasets used in this study follow the Ecoinvent system model ‘Allocation, cut-off, EN15804’.

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0

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

Asphalt mixers have primary dosing plants, drying drums, burners, screening and mixing equipment, air-pollution treatment plants, chimneys, mineral powder and bitumen supply systems, conveying equipment, control centres.
The actual production capacity depends on the number of orders, volumes and characteristics, the type of asphalt concrete produced, the environmental conditions, the moisture content of the inert materials, etc. The production uses various inert materials such as sand, granite and dolomite crushed stone in various fractions, mineral powder brought in, and process dust collected after the mixer's sleeve filters. Bitumen and various additives are also dosed into the mixers during production.
The mixing process produces asphalt concrete. The dried materials are sieved and fed into the mixer, which is fed with hot bitumen. The asphalt concrete produced is discharged through the lower openings of the asphalt concrete hoppers into trucks and transported for final use.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the transport and installation stage. The GWP (global warming potential) of A4 stage is less than 20% of the GWP of modules A1–A3 and less than 1000 km, so it is not mandatory to declare.

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. It is assumed that 90% of asphalt is collected during end of life, as parts of the asphalt is worn during use, in the form of asphalt particles, some of which are small and remain in the air for extended periods and some particles are deposited in areas near the road and are not collected. Consumption of fuel in milling process of asphalt is calculated according to mass. Energy consumption for demolition is 9 kWh/900 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, while worn asphalt is accounted in C4 stage. Study evaluates end of life scenarios for EU location.

Benefits and loads beyond the system boundary (D):

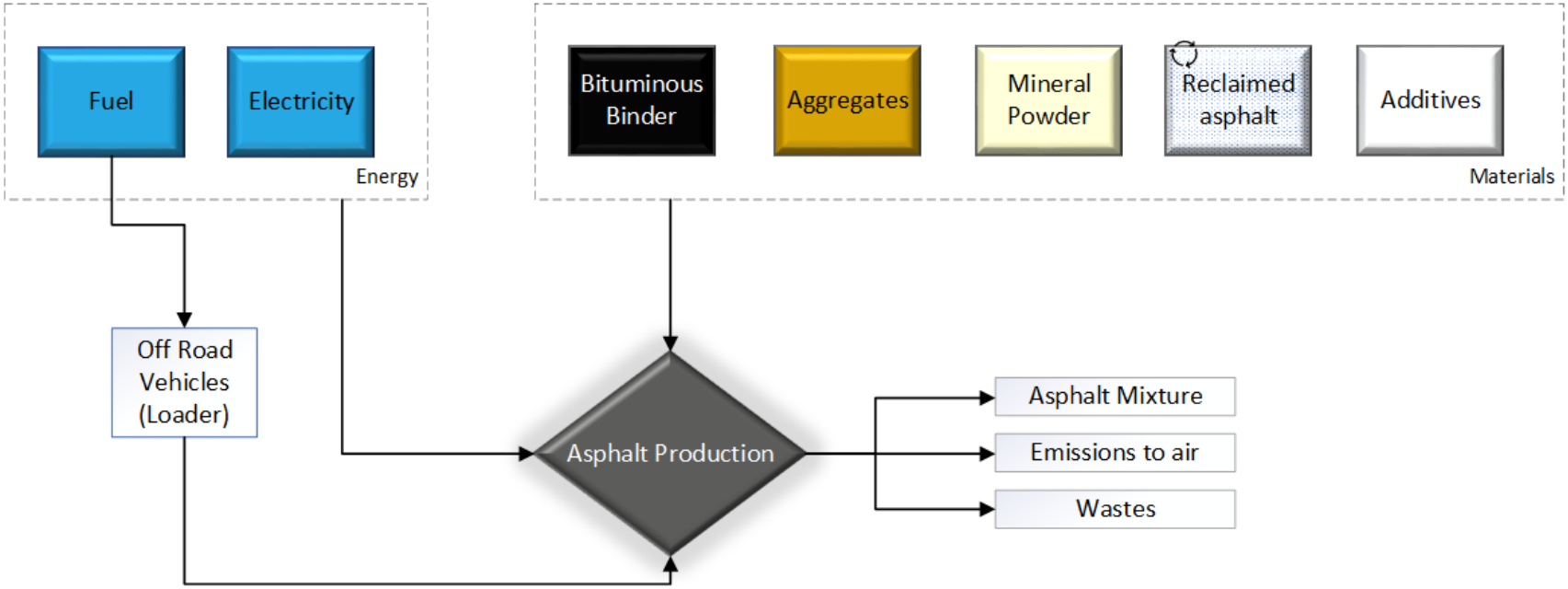
No loads have been added as material is prepared for use after the crushing at the end of life stages.

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.

Study evaluates beyond the system boundaries scenarios for EU location.

MANUFACTURING PROCESS



ENVIRONMENTAL IMPACT DATA

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

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	8,42E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,98E+00	4,22E+00	2,65E-01	0,00E+00	-7,50E+00
GWP – fossil	kg CO_2e	8,41E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,98E+00	4,22E+00	2,65E-01	0,00E+00	-7,49E+00
GWP – biogenic	kg CO_2e	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	3,74E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,97E-04	1,56E-03	5,99E-04	0,00E+00	-1,05E-02
Ozone depletion pot.	kg CFC_{-11}e	6,15E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	6,37E-07	9,71E-07	1,35E-08	0,00E+00	-6,03E-07
Acidification potential	mol H^+e	7,37E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,09E-02	1,79E-02	1,42E-03	0,00E+00	-4,83E-02
EP-freshwater[2)]	kg Pe	7,09E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,87E-06	3,46E-05	2,73E-05	0,00E+00	-4,38E-04
EP-marine	kg Ne	1,52E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,37E-02	5,31E-03	1,98E-04	0,00E+00	-1,03E-02
EP-terrestrial	mol Ne	1,68E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,50E-01	5,86E-02	2,25E-03	0,00E+00	-1,34E-01
POCP ("smog")[3)]	kg NMVOCe	5,32E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,13E-02	1,88E-02	6,43E-04	0,00E+00	-3,46E-02
ADP-minerals & metals[4)]	kg Sbe	1,26E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,51E-06	9,90E-06	7,18E-07	0,00E+00	-7,11E-05
ADP-fossil resources	MJ	3,92E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,01E+01	6,34E+01	5,54E+00	0,00E+00	-1,10E+02
Water use[5)]	m^3e depr.	7,37E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,08E-01	2,84E-01	1,46E-01	0,00E+00	-1,40E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	5,98E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,29E-01	7,15E-01	9,53E-01	0,00E+00	-1,03E+01
Renew. PER as material	MJ	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	5,98E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,29E-01	7,15E-01	9,53E-01	0,00E+00	-1,03E+01
Non-re. PER as energy	MJ	2,05E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,01E+01	6,34E+01	5,53E+00	0,00E+00	-1,10E+02
Non-re. PER as material	MJ	1,88E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,88E+03	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	3,92E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,01E+01	6,34E+01	-1,87E+03	0,00E+00	-1,10E+02
Secondary materials	kg	3,61E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,57E-02	1,76E-02	3,02E-03	0,00E+00	-1,18E-01
Renew. secondary fuels	MJ	2,25E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,13E-05	1,78E-04	3,34E-06	0,00E+00	-8,26E-04
Non-ren. secondary fuels	MJ	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,92E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,43E-03	8,22E-03	4,60E-03	0,00E+00	-3,37E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,61E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,36E-02	8,41E-02	2,13E-02	0,00E+00	-6,33E-01
Non-hazardous waste	kg	2,88E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,77E-01	1,38E+00	1,24E+00	0,00E+00	-1,93E+01
Radioactive waste	kg	2,53E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,82E-04	4,24E-04	3,97E-05	0,00E+00	-5,61E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,00E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO_2e	8,42E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,98E-03	4,23E-03	2,67E-04	0,00E+00	-7,53E-03
ADP-minerals & metals	kg Sbe	1,26E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,49E-09	9,59E-09	7,16E-10	0,00E+00	-7,04E-08
ADP-fossil	MJ	3,92E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,01E-02	6,34E-02	5,53E-03	0,00E+00	-1,10E-01
Water use	m^3e depr.	7,37E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,08E-04	2,84E-04	1,46E-04	0,00E+00	-1,40E-02
Secondary materials	kg	3,61E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,57E-05	1,76E-05	3,02E-06	0,00E+00	0,90E+00
Biog. C in product[9)]	kg C	0,00E+00	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	0,00E+00	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

9) 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 3.8 Country: World Electricity production, photovoltaic, 570kwp open ground installation, multi-si
Electricity CO_2e / kWh	0.0789
Electricity data source and quality	Data source: ecoinvent 3.8 Country: Lithuania Electricity, medium voltage
Electricity CO_2e / kWh	0.480

End of life scenario documentation

Scenario parameter	Value
Collection process – kg collected separately	900
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	900
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	100
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with average lorry

ABOUT THE MANUFACTURER

Kauno tiltai is the largest transport infrastructure company in the Baltic states. The Company mainly operates in road, bridge, overpass, tunnel, railway, port and airport construction and reconstruction, energy construction activity and high voltage construction field.

The Company also installs the engineering networks, constructs landfills, produces and sells construction materials (asphalt, aggregates, bridge bearing elements and expansion joints).

The company has implemented quality management in accordance with the standard requirements of LST EN ISO 9001: 2015, occupational health and safety management in accordance with the requirements of LST EN ISO 45001:2018 and environmental.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	AB Kauno tiltai
EPD author	Silvija Serapinaitė, UAB Vesta Consulting
EPD verifier	Mari Kirss, Rangi Maja OÜ
EPD program operator	The Building Information Foundation RTS sr
Background data	This EPD is based on Ecoinvent 3.8 (Allocation, cut-off, EN15804) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA tool

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 v3.8 (2021) 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)

Asphalt mixture LCA background report 25.03.2024