

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Skanska Industrial Solutions AB
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2820-1517-EN
Registration number:	NEPD-2820-1517-EN
ECO Platform reference number:	-
Issue date:	31.05.2021
Valid to:	31.05.2026

ABT Skanska Grön AsfaltBio Zero. Gällivare, Luleå, Umeå, Sundsvall, Borlänge och Södertälje asfaltverk.

Skanska Industrial Solutions AB

SKANSKA

www.epd-norge.no



General information

Product:

ABT Skanska Grön AsfaltBio Zero. Gällivare, Luleå, Umeå, Sundsvall, Borlänge och Södertälje asfaltverk.

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-2820-1517-EN

ECO Platform reference number:

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 025:2017 Part B for Asphalt

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 tonne ABT Skanska Grön AsfaltBio Zero. Gällivare, Luleå, Umeå, Sundsvall, Borlänge och Södertälje asfaltverk.

Declared unit with option:

A1,A2,A3,A4

Functional unit:

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Erik Svanes, Norsus AS

(no signature required)

Owner of the declaration:

Skanska Industrial Solutions AB
Contact person: Henrik Sjöholm
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e-mail: Henrik.Sjoholm@Skanska.se

Manufacturer:

Skanska Industrial Solutions AB

Place of production:

Skanska Industrial Solutions AB
Warfvinges väg 25 112 74 Stockholm
Sweden

Management system:

ISO 14001, ISO 9001

Organisation no:

556793-1638

Issue date:

31.05.2021

Valid to:

31.05.2026

Year of study:

2020

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Development and verification of EPD:

The declaration has been developed and verified using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Henrik Sjöholm

Reviewer of company-specific input data and EPD:

Nicklas Magnusson

Approved:

Sign



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Asphalt Wearing course for road construction.

Product specification

ABT 160/220, 100/150

Materials	kg	%
Aggregate	749,00	74,90
Bitumen	42,90	4,29
Amin, CAS Nr. 68910-93-0	0,10	0,01
Bitumen from reclaimed asphalt	10,00	1,00
Aggregates from reclaimed asphalt	190,00	19,00
Biobased binder	8,00	0,80
Total:	1000,00	

Technical data:

ABT wearing course according to Swedish road administration specification TDOK 2013:0529.

Market:

Sweden

Reference service life, product

Depending on traffic, road design and climate conditions.

Reference service life, construction works

Depending on traffic, road design and climate conditions.

LCA: Calculation rules

Declared unit:

1 tonne ABT Skanska Grön AsphaltBio Zero. Gällivare, Luleå, Umeå, Sundsvall, Borlänge och Södertälje asfaltverk.

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Data quality:

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases,ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Specific environmental data from EPDs (Skanska EPD), in accordance with EN 15804, have been used for aggregates. Similarly, specific data have been used for transport distances from supplier to asphalt plant and for energy use at factory. Other data (e.g. waste) are estimated. Specific data from the supplier have also been used for bio-based binder. For all other data, generic data available in EPD tool v4.0 have been used. Transport of reclaimed asphalt from the road to asphalt factory includes a return distance.

For bitumen, generic data from Eurobitume is used because specific data cannot be determined from the mix of bitumen suppliers according to EU standards etc. used by Skanska.

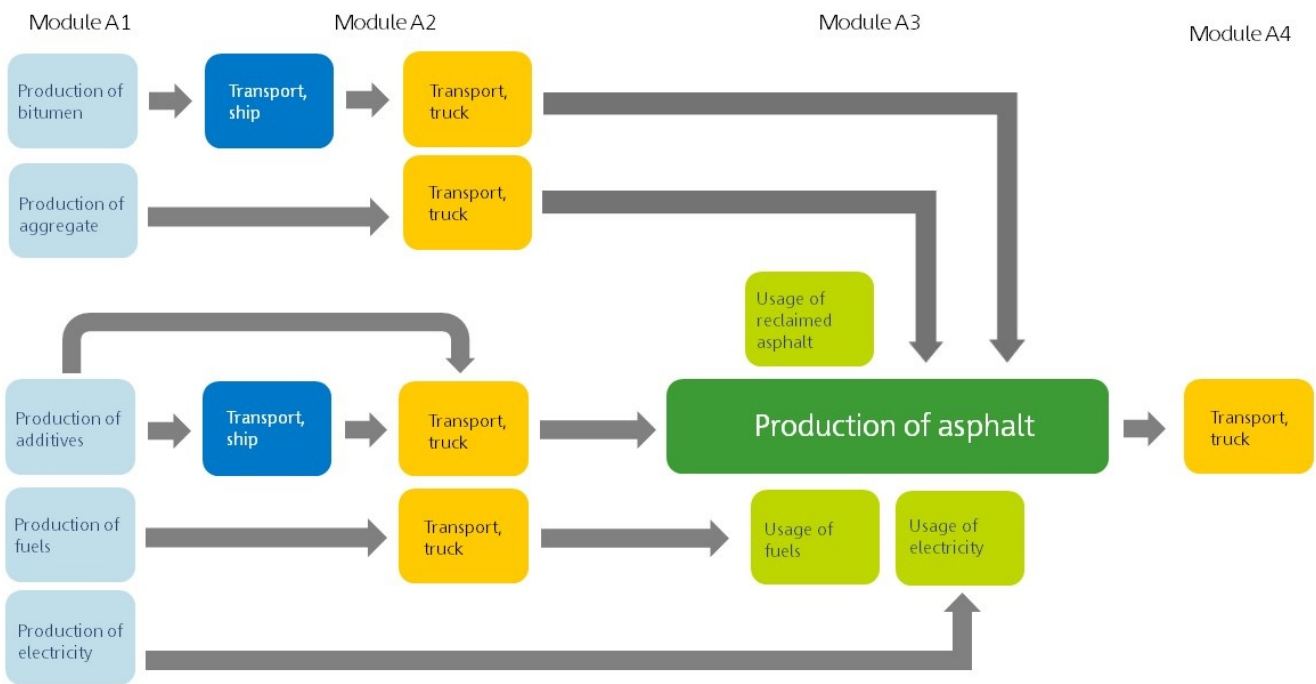
Environmental impact for reclaimed asphalt falls to previous product systems until arrival at the asphalt plant. The asphalt plant uses electricity marked "Good Environmental Choice".

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to the analysis in this EPD. For bitumen production, crude oil extraction and transport are allocated by mass, while the final products from oil refineries are allocated by economic factors.

Materials	Source	Data quality	Year
Aggregate	NEPD-1257-403	EPD	2016
Aggregates from reclaimed asphalt	Østfoldforskning	Database	2017
Bitumen from reclaimed asphalt	Østfoldforskning	Database	2017
Bitumen	Eurobitume	LCI report	2019
Amin, CAS Nr. 68910-93-0	Supplier	Eco footprint	2020
Biobased binder	Supplier	LCA Report	2020

System boundary:



Additional technical information:

Bio-based binder contains biogenic carbon equivalent to 23 kg CO₂-e per tonne asphalt. At the end-of-life stage, the asphalt material is milled and recycled into new asphalt mixes. Hence, the biogenic carbon serve as a long-term carbon sink. If considering the long term biogenic sink as negative to GHG-emissions from A1-A3, the net sum is 0,7 kg CO₂-e per tonne asphalt.

20% reclaimed asphalt is included.

100 % renewable fuel is used in production (A3).

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	50,0 %	Asfaltbil med henger, EURO 6	50	0,023668	l/tkm	1,18
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

	Unit	Value
Auxiliary	kg	
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials for waste treatment	kg	
Dust in the air	kg	
VOC emissions	kg	

Use (B1)

	Unit	Value

Maintenance (B2)/Repair (B3)

	Unit	Value
Maintenance cycle*		
Auxiliary		
Other resources		
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

Replacement (B4)/Refurbishment (B5)

	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts		

* Described above if relevant

Operational energy (B6) and water consumption (B7)

	Unit	Value
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

End of Life (C1, C2)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling		
Energy recovery		
To landfill	kg	

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck					l/tkm	
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Scenarios after A1-A4 are not included

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage				Construction installation stage		User stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	

Environmental impact

Parameter	Unit	A1-A3	A4
GWP	kg CO ₂ -eq	2,37E+01	4,34E+00
ODP	kg CFC11 -eq	2,18E-06	9,00E-07
POCP	kg C ₂ H ₄ -eq	1,32E-02	6,83E-04
AP	kg SO ₂ -eq	2,08E-01	1,13E-02
EP	kg PO ₄ ³⁻ -eq	6,71E-02	1,55E-03
ADPM	kg Sb -eq	3,56E-05	1,08E-05
ADPE	MJ	2,14E+03	7,13E+01

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

Remarks to environmental impacts

The results for GWP exclude biogenic CO₂ (IPCC 2007).

Bio-based binder contains biogenic carbon equivalent to 23 kg CO₂-e per tonne asphalt. At the end-of-life stage, the asphalt material is milled and recycled into new asphalt mixes. Hence, the biogenic carbon serve as a long-term carbon sink. If considering the long term biogenic sink as negative to GHG-emissions from A1-A3, the net sum is 0,7 kg CO₂-e per tonne asphalt.

Resource use

Parameter	Unit	A1-A3	A4
RPEE	MJ	5,19E+01	1,30E+00
RPEM	MJ	2,13E+00	0,00E+00
TPE	MJ	5,40E+01	1,30E+00
NRPE	MJ	5,18E+02	7,35E+01
NRPM	MJ	2,17E+03	0,00E+00
TRPE	MJ	2,24E+03	7,35E+01
SM	kg	2,00E+02	0,00E+00
RSF	MJ	2,57E+02	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00
W	m ³	6,73E+00	1,74E-02

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A1-A3	A4
HW	kg	2,53E-03	3,97E-05
NHW	kg	5,26E+00	6,71E+00
RW	kg	INA*	INA*

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A1-A3	A4
CR	kg	0,00E+00	0,00E+00
MR	kg	3,00E-02	0,00E+00
MER	kg	2,20E-01	0,00E+00
EEE	MJ	INA*	INA*
ETE	MJ	INA*	INA*

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

Additional Norwegian requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
El-mix, Sweden (kWh)	ecoinvent 3.4 Alloc Rec	42,67	g CO2-ekv/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

Indoor environment

Bibliography

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

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

EN 15804:2012+A1:2013 Environmental product declaration - Core rules for the product category of construction products.

ISO 21930:2017 Sustainability in buildings and civil engineering works, Core rules for environmental product declarations of construction products.

ecoinvent v3, Alloc Rec, Swiss Centre of Life Cycle Inventories.

Iversen et al., (2018) eEPD v3.0 – Background information for EPD generator system, LCA.no report number 04.18.





Iversen et al., (2017) EPDgenerator for Asphalt, Bakgrunnsrapport for applikasjon og datagrunnlag, OR 11.17, Østfoldforskning.

NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.

NPCR Part B for Asphalt. NPCR 025 Ver. 1.1. December 2017, EPD-Norge.

Inventory report, LCA-inventeringsrapport EPD-Asfalt ABT-, AG- og ABb BioZero från Södertälje, Borlänge, Umeå, Luleå, Gällivare och Sundsvall asfaltverk.

Inventory report, LCA- inventeringsrapport EPD asfalt ABT 16 Vällsta 2020.

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