SELENIZZA®
NATURAL BITUMEN

Environmental Product Declaration (EPD) for SELENIZZA® COL AS03

COMPANY INFORMATION

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PRODUCT DESCRIPTION

The Environmental Product Declaration (EPD) presented herein aims to comprehensively outline the potential environmental impacts associated with Natural Asphalt (SELENIZZA® COL AS03). Sourced from an underground mine situated in Colombia, this unique material, also recognized as gilsonite, asphaltite, or asphaltum, represents a naturally occurring soluble solid hydrocarbon. Noteworthy for its relatively high melting temperature, Natural Asphalt stands out as a non-hazardous and non-toxic mineral boasting diverse applications.

Primarily utilized as an asphalt binder or aggregates modifier, Natural Asphalt (SELENIZZA® COL AS03) contributes significantly to enhancing pavement performance. In the realm of roofing, it earns distinction as the optimal substance for blending with bitumen, forming composite roof insulation sheets known for their superior quality. Meanwhile, within the foundry industry, Natural Asphalt (SELENIZZA® COL AS03) finds purpose as a carbonate additive, demonstrating its versatility across various industrial domains.

This EPD endeavors to provide a detailed account of the environmental implications associated with the extraction, production, and application of Natural Asphalt (SELENIZZA® COL AS03). By presenting additional environmental information, we aim to foster a comprehensive understanding of the ecological footprint associated with this resource, empowering stakeholders to make informed decisions and encouraging sustainable practices within the industries it serves.

SCOPE

The life cycle assessment of Natural Asphalt (SELENIZZA® COL AS03) encompasses critical stages from extraction to grinding. Specifically, the following stages have been included, each contributing to a comprehensive understanding of the environmental impact:

1. Extraction in the Mine:

This initial stage involves the extraction of the ore from the underground mine in Colombia. It accounts for the environmental impacts associated with mining operations, including energy consumption, land disturbance, and potential ecosystem effects.

2. Transport to the Milling Plant:

Transportation from the extraction site to the milling plant is included to assess the environmental implications of the logistical activities involved in this stage of the life cycle.

3. Grinding Process:

The grinding process is a pivotal step in the commercialization of Natural Asphalt (SELENIZZA® COL AS03). This stage encompasses the energy consumption, emissions, and other environmental impacts associated with the mechanical processing of the material.

The justification for the inclusion and exclusion of these stages is grounded in the scope of the services provided by the company. By focusing on the aforementioned stages, the company aims to offer a transparent and targeted assessment that aligns with its operations and the overall life cycle of Natural Asphalt (SELENIZZA® COL AS03).

PRODUCT INGREDIENTS

Regarding the presentation of product ingredients, the decision to express the chemical composition in terms of percentages of carbon, hydrogen, nitrogen, sulfur, and oxygen is apt for a mineral in its natural state. This approach accurately reflects the elemental makeup of natural asphalt, providing stakeholders with essential information without requiring a breakdown of specific compounds. This transparency contributes to a more comprehensive understanding of the product's characteristics within the context of environmental considerations.

Table 1. Chemical composition of Natural Asphalt

Component	%
C	84.36
H	9.15
N	3.25
S	0.97
O	1.36
Organic Matter	99,09
Inorganic Matter	0,91

REGULATED HAZARDOUS SUBSTANCES

According to the safety data sheet (SDS) the unique ingredient of Natural Asphalt (SELENIZZA® COL AS03) is hydrocarbon black solid CAS Nº 012002-43-6 and EC No: 310-127-6 which is not a regulated hazardous chemical.

Table 2. Environmental Impact Summary Table

IMPACT CATEGORY	POTENTIAL IMPACT PER METRIC TONNE
Global warning potential (GWP-100)	24.6222 kg CO_2 e
Ozone depletion potential (ODP)	0
Eutrophication potential (EP)	41.00 eq PO_4/g
Acidification potential (AP)	0,0067 g eq H+/g
Photochemical ozone creation potential (POCP)	0.2610 kg O_3 eq

METHODOLOGICAL FRAMEWORK

Declared Unit

The declared unit is one metric ton of natural asphalt ore.

Life Cycle Stages and Information Modules

The provided information outlines the scope, methodology, and limitations of the Environmental Product Declaration (EPD) for natural asphalt ore, focusing on the cradle-to-gate life cycle stages (A1-A3). Here's a breakdown and summary of key points:

1. Materials (A1):
    - Includes natural asphalt ore extraction from the mine.
2. Transport (A2):
    - Encompasses the transport of the mineral to the grinding plant, considering actual transportation distances.
3. Grinding (A3):
    - Comprises plant operation involved in the grinding of the mineral.

Life Cycle Inventory

Data Source:

- The EPD is created using producer-specific data for natural asphalt extraction, transport, and grinding.

Allocation Procedures

- Impacts are subdivided based on quantities of ore extracted and transported (tons).
- Waste materials generated are not included, and no allocation to waste or by-products is performed.

Cut-Off Procedures

- Extraction and transport to the milling plant are included in modules A1 and A2, respectively.
- Grinding is included in module A3.

Limitations

Scope:

- Limited to a cradle-to-gate assessment for natural asphalt ore.
- Excludes stages beyond the gate (e.g., asphalt manufacturing, construction, use, maintenance, rehabilitation, end-of-life).

Use as Data Entry:

- The EPD can serve as data entry for complete LCAs to compare, for example, environmental impacts of different asphalt road design alternatives.

Comparability

Comparisons:

- Can be compared to DAPs for ground natural asphalt ore that has not been chemically modified.
- Comparability may be limited by data gaps, and caution is advised when comparing DAPs with data gaps.

Life Cycle Assessment

This EPD alone only provides the environmental impacts of natural asphalt ore and does not make any statements that the product covered by the EPD is better or worse than any other product.

Life Cycle Impact Assessment Impact

The life cycle impact assessment results are relative expressions and do not predict actual impacts on category endpoints, the exceeding of thresholds, safety margins, or risks. Calculations are based on the TRACI v2.1 impact assessment methodology.

Life Cycle Impact Indicator

Table 3. Life Cycle Impact Indicators (According to EN 15804+A1)

Indicator	Unit	Quantity per Metric Tonne Natural Asphalt			
		Extraction (A1)	Transport (A2)	Production (A3)	Total (A1-A3)
Global Warming Potential (GWP)	kg CO2 Eq.	4.0184	19.5085	1.0953	24.6222
Ozone Depletion Potential (ODP)	kg CFC-11 Eq.	0.0000	0.0000	0.0000	0.0000
Eutrophication Potential (EP)	kg N Eq.	0.0137	0.0137	0.0137	0.0410
Acidification Potential (AP)	kg SO2 Eq.	0.0058	0.0009	0.0000	0.0067
Photochemical Ozone Creation Potential (POCP)	kg O3 Eq.	0.2257	0.0354	0.0000	0.2610

Table 4 Life Cycle Impact Indicators (According to EN 15804+A2)

Indicator	Unit	Quantity per Metric Tonne Asphalt Mixture (per short ton Asphalt Mixture)			
		Extraction (A1)	Transport (A2)	Production (A3)	Total (A1-A3)
Global Warming Potential – Fossil (GWP_{fossil})	Kg CO2 Eq.	4.0184	19.5085	1.0953	24.6222
Global Warming Potential – Biogenic (GWP_{bio})	Kg CO2 Eq.	N/A	N/A	N/A	N/A
Global Warming Potential – Land Use and Land Use Change (LULUC)	Kg CO2 Eq.	N/A	N/A	N/A	N/A
Ozone Depletion Potential (ODP)	Kg CFC-11 Eq.	0	0	0	0
Eutrophication Potential – Terrestrial (EP_T)	Mol N Eq.	0.979	0.979	0.979	2.936

Indicator	Unit	Quantity per Metric Tonne Asphalt Mixture (per short ton Asphalt Mixture)			
		Extraction (A1)	Transport (A2)	Production (A3)	Total (A1-A3)
Eutrophication Potential - Marine	Kg N Eq.	N/A	N/A	N/A	N/A
Eutrophication Potential - Freshwater	Kg PO4 Ep.	N/A	N/A	N/A	N/A
Photochemical Ozone Creation Potential -	kg NMVOCnt	1.402	0.344	1.012	2.757
Acidification Potential	Mol H^+ Eq.	1.037	0.254	0.749	2.041

PRODUCT OWNER CERTIFICATION

I have personally examined the conditions and the individuals performing this analysis and to the best of my knowledge, these representations are true and accurate.

Name	German Munoz
Date	05/15/2025
Signature	German Munoz

DISCLAIMER

The analyses presented here were performed with all due care, but the user should realize that they represent the average results measured under standardized conditions and the actual environmental performance will vary depending on the particular application, the climate, the traffic type and intensity and other factors beyond the control of Aventura Services, Inc.