



ButaPhalt®

Environmental Product Declaration

An Innovative Crosslinking Additive





Environmental Product Declaration

Under PCR CR:P-3100 "GENERAL CONSTRUCTION PRODUCTS" (EN 15804:2012+A2:2019)
Product Group Classification: UN CPC 3455
In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

ButaPhalt®: An Innovative Crosslinking Additive **SRIPATH TECHNOLOGIES, LLC**

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Geographical Scope:	Global
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INTRODUCTION

This report summarizes the environmental performance of the manufacturing process for the innovative crosslinking additive, ButaPhalt®, marketed by SRIPATH TECHNOLOGIES, LLC. or its affiliates. This Environmental Product Declaration (EPD) has been developed using the Life Cycle Assessment (LCA) methodology. The environmental impact values are calculated and reported on a one kilogram of ButaPhalt® basis.

The assessed life cycle includes all phases in the manufacturing process of the crosslinking additive ButaPhalt®, adopting a “cradle to gate” scope. This LCA covers production of all raw materials, mixing, and all other manufacturing processes up to the distribution of the final product to the customer.

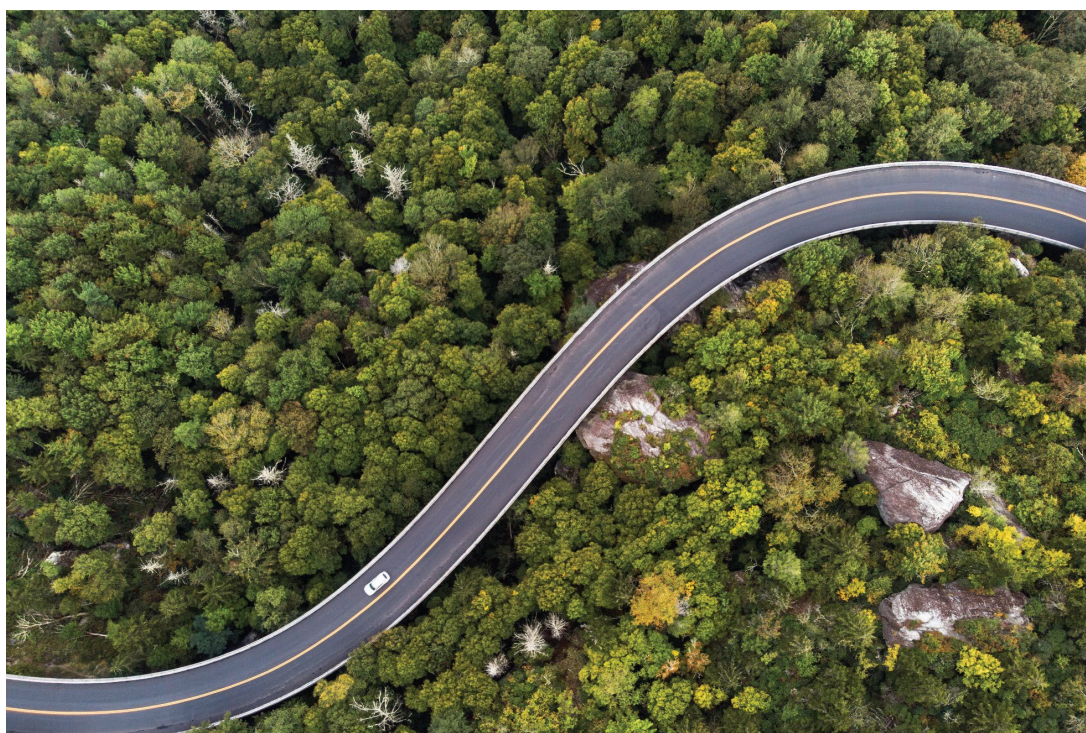
This EPD has been conducted according to the Environmental Footprint Institute regulations and it has been certified and registered with The Environmental Footprint Institute. The EPD regulation is a system for the international use of Type III Environmental Declarations, according to ISO 14025:2010. Both the system, and its applications, are described in the Programmer’s General Indications (PGI). This report conforms to the specifications given in the European standard EN 15804:2012+A2:2019 and is applicable to a wide range of countries around the world.

The direct and indirect emissions and the corresponding environmental impacts calculated in the life cycle assessments and reported in this EPD include, amongst others, the calculation of the carbon footprint, the water footprint and other environmental impacts to air, land, and water, according to the selected Product Category Rules.

This EPD represents a complete and objective vision of the environmental performance of the manufacturing process of the crosslinking additive ButaPhalt® manufactured by SRIPATH TECHNOLOGIES, LLC.

EPD Version

EPD Version	Date Issued	Changes From Last Version
1.0	July 01, 2026	Original EPD
1.1	October 03, 2026	Minor changes to product branding



GENERAL INFORMATION

About Sripath Technologies, LLC

SRIPATH® thrives on the challenge of confronting long-standing issues facing the bitumen and asphalt industries, and then engineering additive solutions through research, innovation, and testing. SRIPATH® has been developing, manufacturing, and marketing a wide range of innovative additives, such as: polymeric-additives, bitumen softeners, rejuvenators, and crosslinking additives to enhance the performance of bitumen, asphalt, and polymer modified bitumen (PMB) for paving and roofing applications.

Since 2006, SRIPATH's engineered portfolio of additives has been tested, evaluated, and vetted by leading experts in academia, industry, and transportation agencies from around the world. These products are trusted and used on asphalt roadways across the globe. SRIPATH® has been active in the asphalt marketplace for over two decades and can utilize this industry insight to provide customers with cost-effective and innovative solutions.

SRIPATH's ButaPhalt® is the tested, proven, and trusted leading crosslinking additive on the market. ButaPhalt® is an innovative crosslinking additive specially engineered to improve performance of PMBs by allowing sulfur to more effectively bridge between the polymer and the binder, resulting in better PMB stability and effortlessly delivering desired PMB grade and performance. It helps lower the hydrogen sulfide (H₂S) emissions, creating better working conditions and a safer approach to crosslinking technology. This crosslinking additive improves productivity, and provides better thermal stability. It is highly dosage efficient, production friendly, and helps reduce operational costs.

SRIPATH®: A Strong Global Presence

Sripath Technologies, LLC has a strong global presence with affiliates companies around the world, including: Bitpath Pvt. Ltd, Mumbai, India; Sripath Innovations Ltd., London, UK; and Sripath Asia-Pac Pty. Ltd., Melbourne, Australia; all subsidiaries of Jay Holdings Inc. Further, SRIPATH® has agents and advisors with offices in Canada, Hong Kong, Brazil, South Africa, and the Middle East.

The SRIPATH® group of companies benefits from their collective insight into the global bitumen and asphalt industries and from their focus on research and innovation. This allows SRIPATH® businesses to embrace the concepts of Circular Economy, deliver sustainable products and solutions, and provide outstanding customer service and excellent technical support.

 SRIPATH TECHNOLOGIES, LLC 115 Franklin Turnpike, #250 Mahwah, New Jersey 07430 USA  Sripath.com	<u>Sripath® Group of Companies</u>    
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SRIPATH® Sustainable Practices

SRIPATH® is committed to adopting and promoting sustainable and environmentally friendly practices throughout its entire value chain. The company has embraced the concepts of the Circular Economy and endeavors to develop

and market products which help minimize the carbon footprint, reduce greenhouse gas emissions, and minimize impact on climate change, both during the manufacture of the product and its use by customers.

Sustainability is an integral part of the Sripath's corporate DNA and it has elected to embrace the concept of transparency as a key aspect of its business strategy. The company provides easy access to all their EPDs and Sustainability Reports on its website.

SRIPATH's ButaPhalt® helps mitigate H₂S gas emissions, improves speed of crosslinking reaction, improves the stability of PMB binder, is highly dosage efficient, and prevents fouling of PMB production equipment.

Analyzed Product

The assessed system in this Environmental Product Declaration (EPD) comprises the full life cycle of the crosslinking additive ButaPhalt® manufactured by SRIPATH®.

ButaPhalt® is available in two forms:

- (a) ButaPhalt® Solid: a free-flowing dust-free powder; and
- (b) ButaPhalt® Liquid: a pumpable stable liquid suspension.

ButaPhalt® is a proprietary blend of two or more of the following key ingredients: sulfur, crosslinking accelerators, specialty scavengers, absorbing agents, surfactants, specialty oils and proprietary ingredients.

Declared Unit

The Declared Unit of the Life Cycle Assessments is one kilogram (1 kg) of ButaPhalt® product at the gate of the customer. All direct and indirect environmental impacts, as well as the use of resources, are all reported in reference to this unit.

System Boundaries

This EPD covers all product stages, from A₁ to A₄, in the life cycle, from raw materials used (A₁), transport of raw materials (A₂), manufacture of product (A₃), and distribution of product (A₄). Use and final disposal are not included in this LCA.

The procedures that are not controlled by SRIPATH®, but are included in this environmental study, are:

- Raw materials production.
- Electricity generation processes and natural gas production.

All related direct and indirect environmental impacts related to these elements have been calculated and were included in the LCAs in this EPD. Following the LCA methodology, the indirect environmental impacts related to the machinery and buildings construction have been amortized over the life period of the asset.

The scope of this EPD is "cradle to gate with options".

Possible scopes of the LCA defined in the European standard EN 15804:2012+A2:2019 are:

Modules from A₅ to D are not included (X refers to considered stage, NR refers to not relevant stage and ND to not declared stage) because ButaPhalt® meets the three conditions described in new EN 15804:2012+A2:2020 for excluding the assessment of modules C₁-C₄ and D:

- 1) The product cannot be separated at the end of the life cycle.
- 2) Suffers a physical or chemical transformation so there is not an end of life for it.
- 3) Does not contain biogenic carbon.

Upstream Processes (A1: Raw Material Supply): Production for each product starts with raw materials which are sourced locally or transported from other locations. 'Raw material supply' includes raw material production and pre-treatment processes before production.

Product stage			Construction process stage		Use stage						End of life stage					Resource Recovery Stage
Raw materials	Transport	Manufacturing	Transport	Construction installation	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR

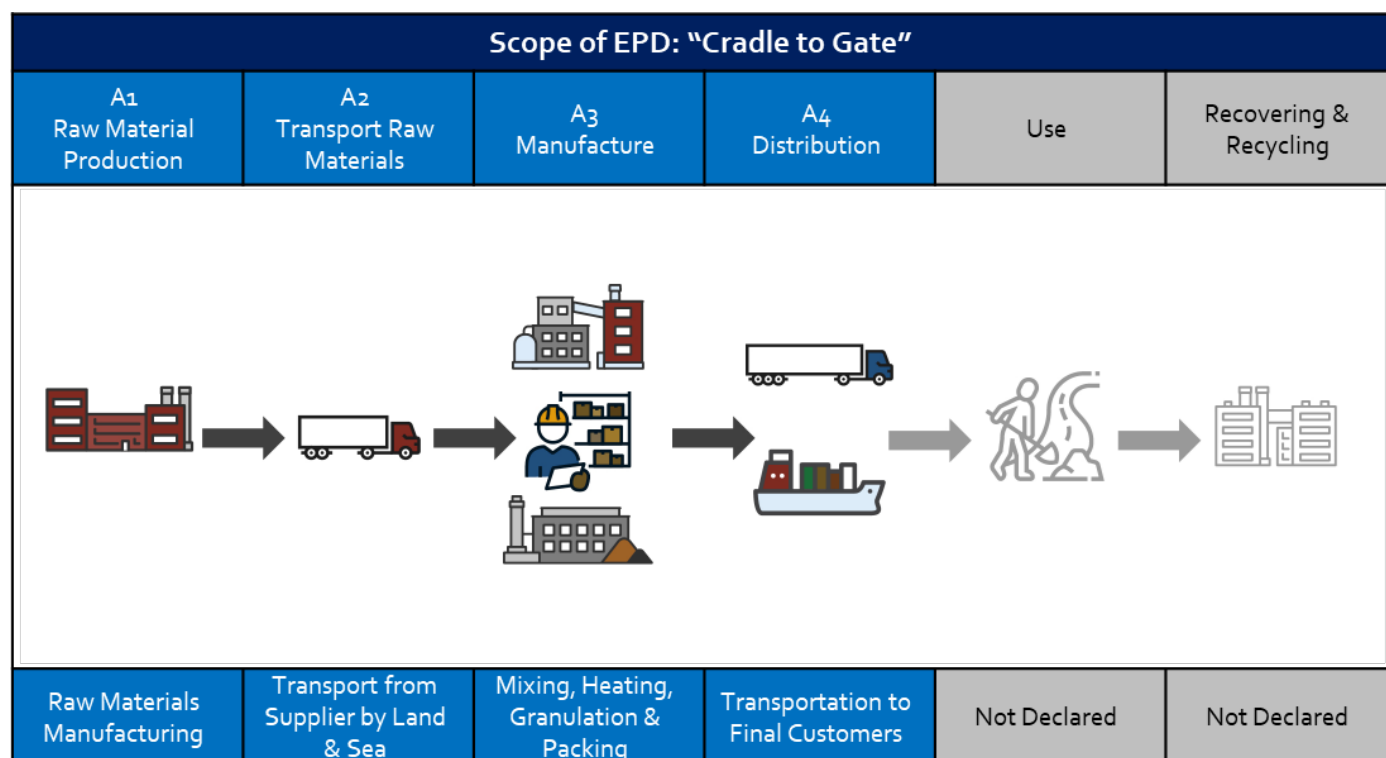
X = Included | ND=Module Not Declared | NR = Module Not Relevant

Core Processes (A2: Transportation and A3: Manufacturing): Transport is relevant for delivery of raw materials to the plant and the transport of materials within the plant. ButaPhalt® production starts by mixing the ingredients in a commercial blender at ambient temperature and finally packaging the product. Electricity is consumed during ButaPhalt® production.

Downstream Process (A4: Distribution): This analysis estimates a local distribution of the product with an average distance of 1000 kilometers by truck EURO 5.

Product Stages:

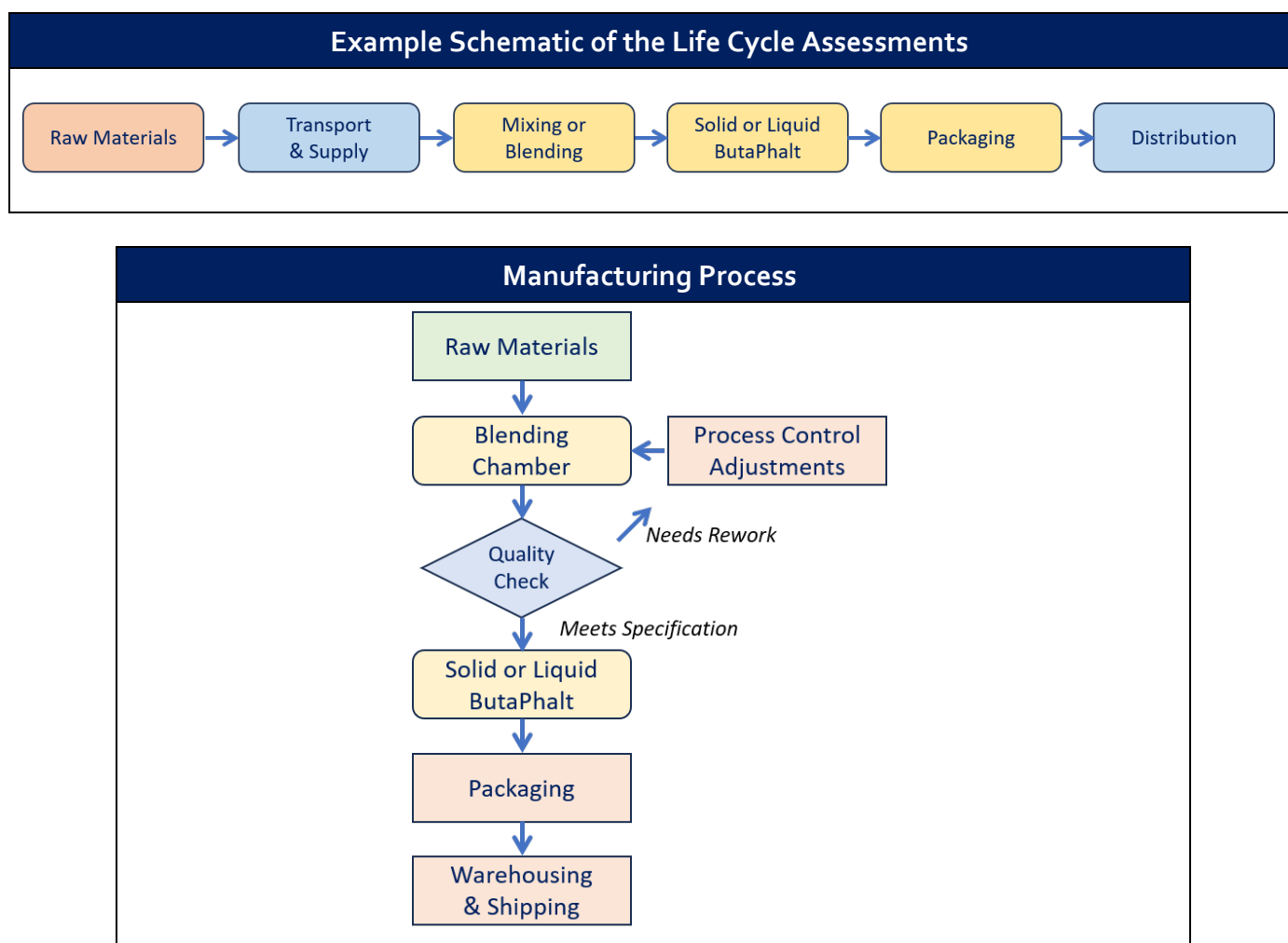
A simplified model of the manufacturing process is described in the "Scope of EPD" diagram, enumerating the main activities included in the system boundaries. The process and facilities are also linked to the phases of the product life cycle (A1-A3).



The first phase in the LCA is the manufacture of raw materials; SRIPATH® buys the raw materials from different suppliers. After the mixing, the ButaPhalt® product is packaged (A3) for distribution (A4) of the product to the final customers.

The “Example Schematic of Life Cycle Assessments” diagram is based on a design using the software tool Air.e LCA™. It shows a schematic representation of an example of raw material production, fuels consumption, energy consumption, transports and other elements and procedures included in the assessments.

The “Manufacturing Process” diagram shows a more detailed description of the A3 phase of the LCA.



Substances Listed in the “Candidate List of SVHC”

ButaPhalt® does not contain substances which exceed the limits for registration with the European Chemicals Agency regarding the “Candidate List of Substances of Very High Concern for Authorization”.

TECHNICAL INFORMATION

Calculation Methodology

This EPD represents a Type III Environmental Declarations according to ISO 14025 2010. The Life Cycle Assessment (LCA) has been developed according to the ISO 14040 International Standard and the environmental impacts calculation method in the ILCD methodology rev 3.1 developed by the European Commission. The report follows the specifications given in the European standard EN 15804:2012+A2:2019, as Product Category Rules. The

methodologies adopted are applicable to a wide range of jurisdictions around the world. The Environmental Footprint Institute has also validated the environmental impacts values calculated and reported in this EPD under the TRACI 2.1 methodology.

Emissions Factors

Emission factors and environmental impacts of elements in life cycles that are not directly controlled by SRIPATH® (raw materials, electricity, fuels production, etc.) have been analyzed using external studies and external emissions factors databases like Ecoinvent 3.10 due to the lack of direct data. Below is a description of the calculation rules and the criteria applied in the calculation of the environmental performance of these type of elements in the LCA.

Raw Materials: Datasets from Ecoinvent™ 3.12 with emission factors for raw materials have been characterized by Solid Forest to adjust them to the characteristics of manufacturing practices adopted by SRIPATH® suppliers. Datasets from Ecoinvent™ 3.12 with emission factors for other generic chemicals have been characterized by Solid Forest to adjust them to the characteristics of the products used or manufactured by SRIPATH's suppliers.

Fuels Production & Electricity Consumption: Specific datasets with the emissions factors corresponding to the natural gas combustion in plants and machinery have been developed for these LCAs. Indirect emissions due to fuel production and transportation are also included in the environmental impact value calculations reported in this EPD. High voltage electricity mix for Guangdong region in China from Ecoinvent 3.12 has been used for the calculation of the emission related to electricity consumption.

Transports: The means of transport in phase A2 for supply are estimated in the assessment as EURO 5 trucks with a capacity of > 32t. The means of transport in phase A4 for distribution is estimated as international cargo ships.

Calculation Rules

Version 3.22 of software Air.e LCA™ with Ecoinvent™ 3.12 database have been used for LCA modelling and impacts calculations. Minor components not directly related to the product, with less than 1% impact, including minor ingredients, have been excluded from the assessment.

All transports of components have been included in the LCA considering real distances travelled by materials used. Transport of raw materials needed to manufacture ButaPhalt® are estimated on a global scale according to Ecoinvent™ criteria. Main means of transport have been included for materials purchases and feed ingredients. As raw materials production locations are not known in detail, transport distances have been calculated from a general position in the country of origin. Operation in port has been excluded.

Road distances calculated using Google Maps. Maritime distances calculated using Marine Traffic Voyage Planner.

Cut-off rules: more than 99% of the materials and energy consumption have been included. The Polluter Payer Principle and the Modularity Principle has been followed.

By-Products Assignment

There are no by-products in this LCA so there was no need to apply allocation rules.

ENVIRONMENTAL PERFORMANCE

Potential Environmental Impacts

In the following tables, the environmental performance of the declared units "one kilogram of ButaPhalt®" are presented for the product and totaled for every sub-phase of the life cycle.

In the following table, environmental impacts for ButaPhalt® Solid were calculated using the Environmental Footprint (ILCD) version 3.1 methodology from the European Commission (EN 15804).

ButaPhalt® Solid				
Impact	A1 – A2 Materials	A3 Manufacturing	A4 Distribution	Total
Global Warming Potential (GWP ₁₀₀) [kg of CO ₂ eq.]	1.195	1.116E-2	7.40E-2	1.281
Ozone Depletion [kg of CFC ₁₁ equivalent]	5.764E-8	1.645E-10	0.000	5.778E-8
Acidification of Land & Water [mol of H ⁺ equivalent]	2.644E-2	8.925E-5	1.451E-4	2.667E-2
Eutrophication Freshwater [kg of P equivalent]	3.296E-4	6.469E-7	0.000	3.302E-4
Ecotoxicity Freshwater Organic [CTU equivalent]	9.592	2.988E-3	1.081E-4	9.596
Photochemical Ozone Creation [kg of NMVOCe]	6.383E-3	5.370E-5	2.010E-4	6.638E-3
Depletion of Abiotic Resources (elements) [Kg of Sb eq.]	1.044E-5	2.665E-8	0.000	1.047E-5
Depletion of Abiotic Resources (fossil) [MJ]	13.970	1.270E-1	0.000	14.097

In the following table, environmental impacts for ButaPhalt® Solid are calculated using the TRACI 2.1 methodology used by the United States Environmental Protection Agency.

ButaPhalt® Solid			
Section	Impact	Units	Value
Human Health	Carcinogenics	CTUc	7.179E-9
	Non-Carcinogenics	CTUnc	1.796E-8
	Respiratory Effects (average)	kg PM _{2.5} eq.	1.527E-3
Environmental Impact	Acidification	kg SO ₂ e	2.063E-2
	Ecotoxicity	CTUe	1.139
	Eutrophication	kg Ne	2.648E-3
	Global Warming	kg CO ₂ eq.	1.267
	Ozone Depletion	kg CFC ₁₁ eq.	5.763E-8
	Photochemical Oxidation	kg O ₃ eq.	8.286E-2

In the following table, environmental impacts for ButaPhalt® Liquid were calculated using the Environmental Footprint (ILCD) version 3.1 methodology from the European Commission.

ButaPhalt® Liquid				
Impact	A1 – A2 Materials	A3 Manufacturing	A4 Distribution	Total
Global Warming Potential (GWP ₁₀₀) [kg of CO ₂ eq.]	9.940E-1	1.116E-2	7.40E-2	1.080
Ozone Depletion [kg of CFC ₁₁ equivalent]	9.356E-8	1.645E-10	0.000	9.373E-8
Acidification of Land & Water [mol of H ⁺ equivalent]	3.635E-2	8.925E-5	1.451E-4	3.658E-2
Eutrophication Freshwater [kg of P equivalent]	4.774E-4	6.469E-7	0.000	4.781E-4

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Ecotoxicity Freshwater Organic [CTU equivalent]	60.760	2.988E-3	1.081E-4	60.763
Photochemical Ozone Creation [kg of NMVOCe]	9,98E-3	5.370E-5	2.010E-4	1.024E-2
Depletion of Abiotic Resources (elements) [Kg of Sb eq.]	1.525E-5	2.665E-8	0.000	1.525E-5
Depletion of Abiotic Resources (fossil) [MJ]	16.895	1.270E-1	0.000	17.022

In the following table, environmental impacts for ButaPhalt® Liquid are calculated using the TRACI 2.1 methodology used by the United States Environmental Protection Agency.

ButaPhalt® Liquid			
Section	Impact	Units	Value
Human Health	Carcinogenics	CTUc	9.167E-9
	Non-Carcinogenics	CTUnc	2.869E-8
	Respiratory Effects (average)	kg PM2.5 eq.	1.866E-3
Environmental Impact	Acidification	kg SO ₂ e	2.672E-3
	Ecotoxicity	CTUe	6.445
	Eutrophication	kg Ne	1.341E-3
	Global Warming	kg CO ₂ eq.	1.096
	Ozone Depletion	kg CFC ₁₁ eq.	9.450E-8
	Photochemical Oxidation	kg O ₃ eq.	1.581E-1

Energy Resources

The direct and indirect total emissions of CO₂e due to electricity consumption are 11.656 g CO₂e per kilogram of ButaPhalt®. There are no direct or indirect emissions of CO₂e due to natural gas consumption.

RENEWABLE ENERGY	A1 to A3 Total
Use of RENEWABLE primary energy excluding renewable primary energy resources used as raw materials	0.000
Use of RENEWABLE primary energy resources used as raw materials	0.000
Total use of RENEWABLE primary energy resources (primary energy and primary energy resources used as raw materials)	0.000
<i>Data in MJ, net calorific value</i>	

NON-RENEWABLE ENERGY	A1 to A3 Total
Use of NON-RENEWABLE primary energy excluding non-renewable primary energy resources used as raw materials	0.000
Use of NON-RENEWABLE primary energy resources used as raw materials	0.000
Total use of NON-RENEWABLE primary energy resources (primary energy and primary energy resources used as raw materials)	0.000
<i>Data in MJ, net calorific value</i>	

Use of Resources

The use of resources assessment refers to the production phases (A1-A3), distribution phase (A4) is not included.

SECONDARY MATERIALS	A1 to A3 Total	Description
Use of Secondary Material	0	Nu Secondary Material Used
<i>Data in kg</i>		

FRESH WATER	A1 to A3 Total	Description
Use of Net Fresh Water	2.268E-2	
<i>Data in m³</i>		

SECONDARY FUELS	A1 to A3 Total	Description
Use of RENEWABLE Secondary Fuels	0	No Renewable Fuels Used
<i>Data in MJ, net calorific value</i>		

Waste Disposed

The waste disposal assessment refers to the production phases (A1-A3), distribution phase (A4) is not included.

WASTE DISPOSAL	A1 to A3 Total	Description
Hazardous Waste Disposed	0.479	
Non-Hazardous Waste Disposed	2.473	
Radioactive Waste Disposed	0	No Nuclear Energy Used
<i>Data in kg</i>		

Other Output Flows

The output flows assessment refers to the production phases (A1-A3), distribution phase (A4) is not included.

OTHER OUTPUT FLOWS	A1 to A3 Total
Components for Reuse [kg]	0
Materials for Recycling [kg]	0
Materials for Energy Recovery [MJ]	0
Exported Energy [MJ]	0

INFORMATION & VERIFICATION

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Product group classification:	UN CPC 3455
Reference year for data:	2026
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Product category rules CR: P-3100 UNE-EN 15804+A2:2019
CR review was conducted by: The Environmental Footprint Institute. Chair: Alfredo Costalago Contact: info@huellaambiental.org
Independent verification of the declaration and data, according to ISO 14025:2006 and ISO 14040: ☐ EPD Process Certification (internal) ☒ EPD Verification (external)
Third party verifier: Accredited by: The Environmental Footprint Institute

MANDATORY STATEMENTS

Explanatory material can be obtained from EPD owner and/or LCA author. Contact information can be found below. The verifier and The Environmental Footprint Institute do not make any claim or present any responsibility about the legality of the product. EPDs within the same product category but from different programs may not be comparable

CONTACT INFORMATION

EPD Owner:	SRIPATH TECHNOLOGIES, LLC. 115 Franklin Turnpike, #250 Mahwah, NJ 07430, USA www.sripath.com ksrinivasan@sripath.com
LCA Project Manager:	Paloma Garcia-Poggio, Geovitia Limited Hoole Road, Egerton House, 55, CH2 3NJ Chester, UK www.geovitia.com paloma.garcia-poggio@geovitia.com
LCA Author:	Rubén Jiménez, Solid Forest S.L. CP 28004, Plaza de Santa María Soledad Torres Acosta 1 P4 Madrid, SPAIN www.solidforest.com info@solidforest.com
Program / Programme:	The Environmental Footprint Institute Calle Circe 49A Madrid, SPAIN www.environmentalfootprintinstitute.com info@environmentalfootprintinstitute.com



REFERENCES

This Environmental Footprint has been developed and circulated following the instructions of the Environmental Footprint Institute. Further information, and the document itself with reference 230410EPD, are available at: www.environmentalfootprintinstitute.org

LCA Report: Life Cycle Inventory of ButaPhalt® by SRIPATH.

Software: Air.e LCA™ rev. 3.22 www.solidforest.com

Main database: Ecoinvent™ 3.12 www.ecoinvent.org

Geographical scope of the EPD: Global

Standards: ISO 14040:2006 "Environmental management -- life cycle assessment -- principles and framework"; ISO 14044:2006 "Environmental management -- life cycle assessment -- requirements and guidelines"; ISO 14020 "Environmental Labelling: General Principles"; ISO 14025:2006 "Environmental labels and declarations -- type III environmental declarations -- principles and procedures" and CR:P-3100 EN 15804+A2 by EFl.

Product Overview: "ButaPhalt® - An Innovative Crosslinking Additive", available from Sripath Technologies, LLC.





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