



Environmental Product Declaration for GSB-78

Product Category: Pavement Preservation Products
Produced By: Asphalt Systems Inc.




Product Information

GSB-78 is a chemically engineered formulation of Gilsonite ore, specially selected plasticizers, and dilutents and is used as a pavement sealer and rejuvenator. The product rebinds the surface aggregate while sealing and rejuvenating the surface binder, providing a cosmetically enhancing finish. It has been used extensively in both early stage pavement preservation, as well as reactive late stage applications for badly raveled and deteriorated roads, parking areas, and airfield runways and taxiways. It extends the life of asphalt pavements by an average of five years. It is applied with standard asphalt emulsion application equipment, generally asphalt distributors. In some cases, it may be advisable to broadcast a very light application of sand over the still wet GSB-78.

The analysis shown here was performed in accordance with the Earthsure Environmental Product Declaration Program, using the product category rule for pavement preservation products. The analysis is based on a life cycle assessment of GSB-78, using data collected from January 2016 to December 2016. Environmental Product Declarations from other sources using different Product Category Rules may not be comparable to this one.

Measurement Certification

Product Name	GSB-78
Declaration Number	EPD 090
Meets Quality Specification	California technical specification ABC123, ISSI Standards 143 and ARRA standard 987.
Product Category Rule	Earthsure PCR Number 72141127-2017 Pavement Preservation Products
Product Category Rule Operator	Earthsure program, IERE PO Box 2449, Vashon WA 98070 earthsure.org 206-463-7430
This EPD is valid until	February 15, 2024
EPD Program Operator	ASTM International
Validator	Tom Gloria, Industrial Ecology Consultants 
Date	February 15, 2019

Summary Life Cycle Environmental Impacts of preserving one square meter of pavement for one year using GSB-78 (5 year service life)

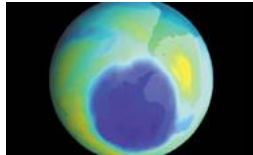
Global Warming Potential



Global warming is the increase in global surface temperatures caused by the accumulation of greenhouse gases in the atmosphere.

75.59 grams CO2 eq.

Ozone Depletion Potential



Ozone depletion is the reduction of the protective ozone within the stratosphere caused by emissions of ozone-depleting substances such as CFC's, HFC's, and halons.

9.46 E-11 kilograms CFC-11 eq.

Acidification Potential



Acidification is the result of the addition of acids (e.g., nitric acid and sulfuric acid) into the environment or by the addition of other substances which increase acidity indirectly.

0.84 grams SO2 eq.

Eutrophication Potential



Eutrophication is the over-fertilization of surface waters by nutrients that leads to ecosystem detriment. Nitrogen based mineral salts are eutrophication sources.

0.37 milligrams N eq.

Smog Potential



Smog is the trapping of emissions from combustion at ground level where, in the presence of sunlight, they produce photochemical smog.

10.61 grams O3 eq.

Summary Life Cycle Environmental Impacts of preserving one square meter of pavement for one year using GSB-78 (5 year service life)

Freshwater Ecotoxicity



Freshwater ecotoxicity is the effect (quantified in terms of comparative toxic unit for aquatic ecotoxicity impacts: CTUe) of contaminant emission on freshwater ecosystems.

0.41 E-3 CTUe

Human Toxicity Potential



Human toxicity is the effect (quantified in terms of the fraction of Comparative Toxic Unit for human toxicity impacts: CTUh) estimates the increase in morbidity in the total human population.

Cancer

1.61 E-12 CTUh

Non-Cancer

3.30 E-14 CTUh

Primary Energy Consumption



Total primary energy includes the use of non-renewable sources as well as renewable sources.

Total Primary Energy

5.66 megajoules

Renewable Energy

0.01

Fossil Energy

5.61

Feedstock Energy

1.81

The fossil energy consumption can be further broken down into the portion that is used as a raw material – called feedstock energy.

Resource Consumption



Water consumption accounts for the extraction of potable water from freshwater sources.

Water Consumption

0.26 liters

Material resource consumption accounts for all raw material inputs other than energy resources which are accounted for separately.

Material Resource Consumption

27.80 grams

Detailed Life Cycle Environmental Impacts of preserving one square meter of pavement for one year using GSB-78 (5 year service life)

Environmental Indicator	Unit	Total	Raw Materials	Transportation	Manufacturing	Application/ Use
Impact Category						
Global Warming Potential (climate change)	kg CO2 eq	7.56E-02	5.17E-02	7.57E-03	7.79E-03	8.49E-03
Acidification Potential	kg SO2 eq	8.44E-04	6.85E-04	4.52E-05	6.32E-05	5.07E-05
Eutrophication Potential	kg N eq	3.69E-05	3.04E-05	2.52E-06	1.17E-06	2.82E-06
Photochemical Ozone Creation/Smog Potential	kg O3 eq	1.06E-02	7.79E-03	1.24E-03	1.97E-04	1.39E-03
Ozone Depletion Potential	kg CFC-11 eq	5.83E-11	1.75E-11	2.88E-13	4.02E-11	3.23E-13
Human toxicity, cancer	CTUh	1.61E-12	1.08E-12	2.08E-14	4.93E-13	2.34E-14
Human toxicity, non-cancer	CTUh	3.30E-14	2.10E-14	4.02E-16	1.12E-14	4.51E-16
Freshwater ecotoxicity	CTUe	4.13E-04	3.92E-04	7.01E-06	6.49E-06	7.86E-06
Inventory Metrics - Total Primary Energy Consumption						
Total Primary Energy	MJ (HHV)	5.66E+00	5.30E+00	1.04E-01	1.36E-01	1.17E-01
Renewable Primary Energy	MJ (HHV)	4.85E-02	9.87E-04	0.00E+00	0.00E+00	0.00E+00
Total Fossil Energy	MJ (HHV)	5.61E+00	5.26E+00	1.03E-01	1.33E-01	1.16E-01
Feedstock Energy	MJ (HHV)	1.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Inventory Metrics - Material Resources Consumption						
Total Material Resources	kg	2.78E-02	8.05E-03	0.00E+00	3.00E-05	1.97E-02
Renewable Material Resources	kg	1.62E-04	1.59E-04	0.00E+00	1.95E-06	5.54E-07
Net Freshwater	l	2.63E-01	1.94E-01	0.00E+00	1.64E-02	5.24E-02
Inventory Metrics – Waste and Outputs						
Non-hazardous Waste Generated	kg	1.18E-03	0.00E+00	0.00E+00	1.18E-03	0.00E+00
Hazardous Waste Generated	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PM

More information on GSB-78

GSB-78 contains these hazardous materials

Cas Number 8030-30-6

Name Naphtha

To the best of our knowledge, GSB-78 contains no endocrine disrupters as defined by the European Commission.

Dates of primary data collection January 2017 to December 2017

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: Phil Manning, General Manager

Date: February 15, 2019

Signature

 2-15-19

Disclaimers

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 Asphalt Systems, Inc.

The results shown here pertain only to the referenced product category rule. They should not be compared directly to results using a different product category rule.

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