





Type III Environmental Product Declaration (EPD)

The environmental product declaration of one square foot of vegetation control, rolled matting system, manufactured from postconsumer recycled California tire rubber by U.S. Rubber Recycling, Inc. in Colton, CA

September 20, 2019

Program Operator:	 Labelling Sustainability Inc. info@labelingsustainability.com
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Product Category Rules:	International EPD® System PCR Construction products and construction services, V2.3 2012:01
Functional Unit:	One square foot of vegetation control rolled matting system, manufactured from post-consumer recycled California tire rubber
Reference year for data:	2018
Geographical scope:	United States

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): International EPD® System PCR Construction products
PCR review was conducted by: Martin Erlandsson, IVL Swedish Environmental Research Institute, martin.erlandsson@ivl.se
Independent third-party verification of the declaration and data, according to ISO 14025:2006:
<input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Geoff Guest, PhD. Ecogamut Consulting Inc. 
Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No

Contact Information:

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EPD Owner

U.S. Rubber Recycling Inc.

Contact:

Jeff Baldassari, General Manager, jeffb@usrubber.com

Site Location:

The U.S. Rubber manufacturing location is at 1231 South Lincoln Street, Colton, CA 92324.

Company Information:

Established in 1996, U.S. Rubber manufactures and distributes premium sports flooring, rolled underlayment and vegetation control rolled matting systems. U.S. Rubber is California's largest user of recycled crumb rubber for flooring, underlayment and rolled matting systems. U.S. Rubber diverts millions of rubber tires annually away from California landfills into a feedstream to produce Survivor SportFloor and QuietSound Acoustical Underlayment. By embedding this sustainable practice into their business model, they create a second life for such materials, and we reduce the need for virgin materials.

Since January 2015, US Rubber has qualified for, and participated in, the Tire Incentive Program that is administered by CalRecycle (the Department of Resources Recycling and Recovery). We're proud to play a role in the program's goal to increase demand for crumb rubber and promote higher value products through better innovation. California leads the nation with an approximate 65 percent diversion rate for all materials (including rubber tires), which improves economic vitality and environmental sustainability.

Product Information

Product Name: ClearSight Vegetation control rolled matting system

Product Identification:

This EPD assumes the impacts ClearSight vegetation control rolled matting system manufactured by U.S. Rubber Recycling Inc. in accordance with the standards outlined below. ClearSight weighs 2.9 pounds per square foot and is composed of 1.305 kilograms of raw material. It is sold in 0.5" x 4' x 200' rolls:

Table 1: ClearSight characteristics per ASTM standards and results

Quality characteristic	Test method	Requirement
Density	ASTM D3676	68.3 lb/cu ft
Hardness	ASTM D2240 - Shore	A 65 +/- 5
Abrasion	ASTM D4060 - 2000 cycles taber abraser 1kQ	0.32 to 0.35g loss
Flammability	ASTM D2859 - Pill test	Excellent value of 3.6

Product Description:

The product covered in this EPD is ClearSight vegetation control rolled matting system. ClearSight is used for roadside management treatment to prevent vegetation growth under and around guardrails, signposts and fencing. The benefits of ClearSight include the following: the reduction in herbicide use and labor costs to maintain median landscaping; it is unaffected by high winds or heavy rain; ClearSight is not susceptible to Hermosa gofer pilferage; and each standard roll contains 2,320 pounds of California recycled tire rubber diverted from landfills.

Geographical Scope:

This EPD covers the referenced product manufactured at the U.S. Rubber facility at 1231 South Lincoln Street, Colton, CA 92324. This is U.S. Rubber’s sole manufacturing location and they do not outsource any of their manufacturing processes.

LCA Information

Functional Unit:

One square foot of vegetation control rolled matting system, manufactured from postconsumer recycled California tire rubber by U.S. Rubber Recycling Inc. in Colton, CA.

Time Representativeness:

All primary data reported by U.S. Rubber Recycling stem from the 2018 calendar year from utility bills and primary company records.

Database and LCA Software Used:

To perform the LCA for this EPD OpenLCA software with ecoinvent v3.4 database was used.

System Boundaries:

This is a cradle-to-gate life cycle analysis reported in accordance with EPD Product Category Rule (PCR) v2.3 2012:01. The following three life cycle stages are included in the study:

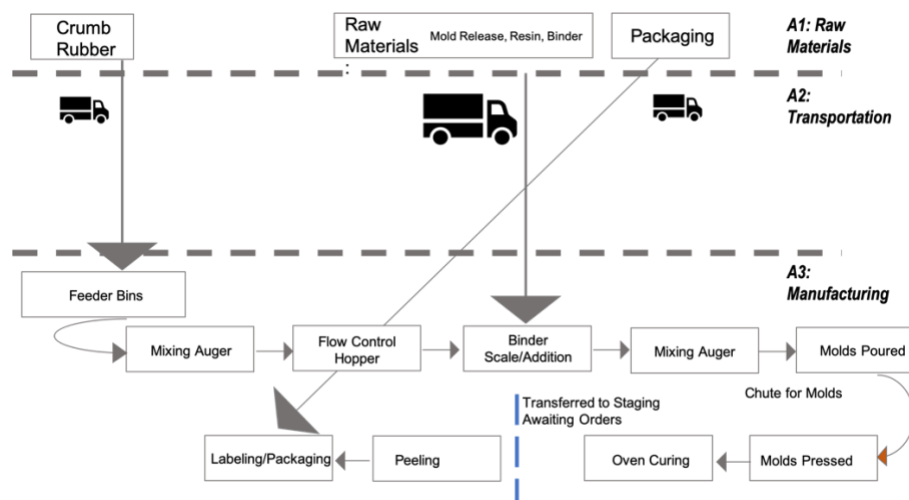
A1: Raw material supply (upstream processes)- Extraction, handling, and processing of the materials (including fuels) used in the production of the rubber matting systems

A2: Transportation- Transportation of these materials from the supplier to the “gate” of the manufacturing facility.

A3: Manufacturing (core processes)- The energy used to store, move, and manufacturer the matting system and to operate the facility (U.S. Rubber plant).

Exclusions to the system boundary are mentioned in the PCR and include the functional unit or performance characteristics of the construction product when integrated into the building or the product’s referenced service life (RSF). The system boundaries for the functional unit, o One square foot of vegetation control rolled matting system, manufactured from post-consumer recycled California tire rubber are outlined in the figure below.

Figure 1: System Boundaries for U.S. Rubber’s ClearSight life cycle analysis and subsequent Type III environmental product declaration



Excluded Life Cycle Stages:

This EPD does not require and therefore does not include the following stages:

A4-A5: Construction process stage- Transport and construction installation.

B-B7: Use stage- Use, maintenance, repair, replacement, refurbishment, operational energy use, and operational water use.

C1-C4: End of life stage- De-construction demolition, transport, waste processing, and disposal.

D: Resource recovery stage- Reuse-recycling-recovery potential.

A summary of the limitations of this EPD include the following:

- This “cradle-to-gate” EPD is to understand the environmental impacts of the products listed and is not a comparative study.
- No environmental claim can be implied about the environmental superiority of the products modeled in this study. The EPD reporting process does not make statements that the products modeled in an LCA, or the resulting EPD, are environmentally better or worse than other products.
- The LCIA results do not predict actual impacts and are a direct result of the information modeled only.
- This EPD does not report all the environmental impacts due to manufacturing of the product, but instead the environmental impacts for categories with established LCA-based methods to track and report. Unreported environmental impacts include, but are not limited to, factors attributed to human health, land use changes, and habitat destruction.
- In addition, the manufacturer can report on best practices in sustainability, including social indicators outside this EPD, in an attempt to illustrate a more complete picture of their sustainability practices that cannot be captured in this EPD.

More Information:

Allocation

The Product Category Rule (PCR) *Construction Products and Construction Services* v2.3 2012:01 outlines scenarios where allocation is necessary. These areas include a). a multi-output subprocess delivering goods that are treated equally, b). co-production on electricity and heat, and c). co-production of goods and energy. The manufacturing of U.S. Rubber’s products are linear processes where no co-products are produced. In terms of the energy/water/waste

treatment required directly at U.S. Rubber's facility such input requirements were divided across each rubber product based on type and the amount of square feet sold. The amount of square footage sold was divided into the total 2018 production and only that percentage of the electricity, water, and waste was allotted to ClearSight as product impacts.

Cut-Off Criteria

ISO 14044:2006 and PCR v2.3 2012:01 requires the LCA model to contain a minimum of 95% of the total inflows (mass and energy) to the upstream and core modules be included in this study.

The cut-off criteria were applied to all other processes unless noted above as follows:

- A 1% cut-off is considered for all renewable and non-renewable primary energy consumption and the total mass of inputs within a unit process where the total of the neglected inputs does not exceed 5%.

Data Variability and Quality:

This EPD was created using plant-specific data for upstream materials. Potential variations due to supplier locations, manufacturing processes and efficiencies of fuel use are not accounted for in this EPD.

Data differences can occur with changing suppliers, mine locations, manufacturing equipment, and overall efficiency. Data quality is judged based on the five indicators below. These indicators apply to the impact categories reported in this study based on the information obtained and used for the model. The corresponding detailed data clarifications are broken down to the process level. The five indicators included are:

- **Technical representativeness:** The degree to which the data reflects the actual technology(ies) used. **Overall quality: Good to very good**
- **Temporal Representativeness:** The degree to which the data reflects the actual time (e.g. year) or age of the activity. **Overall quality: Good with a few fair points of data**
- **Geographical representativeness:** The degree to which the data reflects the actual geographic location of the activity (e.g. country or site). **Overall quality: Good to very good**

- **Completeness:** The degree to which the data are statistically representative of the relevant activity. Completeness includes the percentage of locations for which data is available and used out of the total number that relates to a specific activity.

Overall quality: Good

- **Reliability:** The degree to which the sources, data collection methods and verification procedures used to obtain the data are dependable. **Overall quality: Very good**

Content Declaration

The product is made from primarily post-consumer recycled California tire rubber. A percentage of the product consists of materials that are considered proprietary formulas with no hazardous substances listed on their SDS, and therefore, the additional ingredients were not disclosed by their manufacturers. The composition modeled and screened below is for postconsumer tire rubber as listed in the Pharos database of common building materials (Healthy Building, 2019).

Table 2: Chemical composition of post-consumer recycled tire rubber (Estimated)

Chemicals Composition Identification and GreenScreen Score for Postconsumer Recycled Crumb Rubber		
Chemical Identification by CAS RN and Common Name		GreenScreen Score
Postconsumer Recycled Crumb Rubber		LT - 1
9003-55-8	Styrene-butadiene copolymers	LT - UNK
25038-36-2	Bicyclo[2.2.1]hept-2-ene, 5-ethylidene-, polymer with ethene and 1-propene	LT - UNK
64742-04-7	Extracts (petroleum), heavy paraffinic distillate solvent	LT - 1
14807-96-6	Talc	LT - UNK
95-33-0	2-Benzothiazolesulfenamide, N-cyclohexyl-	LT - P1

7704-34-9	Sulfur, Elemental	LT - UNK
793-24-8	1,4-Benzenediamine, N-(1,3-dimethylbutyl)-N'-phenyl-	LT - P1
1333-86-4	Carbon black	LT - 1
557-05-1	Octadecanoic acid, zinc salt	LT - P1
9003-17-2	Polybutadiene	LT - 1
7439-92-1	Lead (Impurity)	LT - 1
No RN	Latex, Natural Rubber	LT - UNK
5873-54-1	Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-	LT - UNK
101-68-8	4,4'-Methylenediphenyl diisocyanate	LT - UNK
232418	Benzene, 1,1'-methylenebis[2-isocyanato-	LT - UNK
7732-18-5	Water	BM - 4

Packaging:

U.S. Rubber ships their ClearSight rolls to customers on pallets wrapped in plastic wrap. A standard pallet is 36" x 48" and holds 1500 to 2000 lbs.

Recycled Content

U.S. Rubber's ClearSight Vegetation Control rolled matting system is manufactured from post-consumer recycled California tire rubber. This recycled content accounted for the waste tire processing and delivery to U.S. Rubber's manufacturing facility. All original impacts were ignored per the "Polluter Pays Principle". ClearSight does not contain post industrial recycled material. ClearSight is manufactured from 94.98% post-consumer recycled California tire rubber processed in California.

Environmental Performance

Potential Environmental Impact:

Parameters describing environmental potential impacts were calculated using TRACI 2.1, CML-IA Baseline and OpenLCA Methods EPD EN:15804 Method.

TRACI/CML-IA Baseline

Table 3: LCI Impact results using TRACI in Open LCIA Methods

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (TRACI)					
	Acidification	Eutrophication	Global Warming	Ozone Depletion	Photochemical ozone formation
Product	kg SO2 eq	kg N eq	kg CO2 eq	kg CFC-11 eq	kg O3 eq
ClearSight	8.22E-03	2.53E-03	3.29E+00	2.38E-07	1.15E-01

Table 4: LCI Impact results using CML-IA Baseline in Open LCIA Methods

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (CML IA-Baseline)					
	Acidification	Eutrophication	Global Warming (GWP100)	Ozone Depletion	Photochemical ozone formation
Product	kg SO2 eq	kg N eq	kg CO2 eq	kg CFC-11 eq	kg C2H4 eq
ClearSight	8.18E-03	1.52E-03	3.31E+00	1.84E-07	4.28E-04

Table 5: LCI Impact results using CML-IA Baseline in Open LCIA Methods (continued)

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (CML IA-Baseline)		
	Abiotic depletion potential for fossil resources	Abiotic depletion potential for non-fossil resources
Product	MJ	kg Sb eq.

ClearSight	3.83E+01	1.81E-05
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Use of Resources

Parameters describing the use of resources were calculated using OpenLCA EN15804 Methods, AWARE, direct LCI reporting, and Cumulative Energy Demand. These methods are in accordance with the PCR and EN:15804.

Cumulative Energy Demand

Table 6: LCI Impact results using Cumulative Energy Demand in Open LCIA Methods for Nonrenewable Energy

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (Cumulative Energy Demand- Nonrenewable energy)				
	Total use of nonrenewable primary energy resources	Use of nonrenewable primary energy	Use of non-renewable secondary fuels	Use of non-renewable primary energy resources used as raw materials
Product	MJ	MJ	MJ	MJ
ClearSight	4.23E+01	4.23E+01	0	0

Table 7: LCI Impact results using Cumulative Energy Demand in Open LCIA Methods for Renewable Energy

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (Cumulative Energy Demand- Renewable energy)				
	Total use of renewable primary energy resources	Use of renewable primary energy	Use of renewable secondary fuels	Use of renewable primary energy resources used as raw materials
Product	MJ	MJ	MJ	MJ
ClearSight	1.08E+00	1.08E+00	0	0

Table 8: LCI Impact results using AWARE and EN:15804 in Open LCIA Methods

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness			
	Use of Net Fresh Water	Use of Secondary Materials	Water Scarcity Potential (AWARE)
Product	m3	kg	m3
ClearSight	2.07E-04	1.34	4.15E-01

Waste Production

Parameters describing the use of resources were calculated using EDIP 2003 and direct LCI reporting.

Table 9: LCI Impact results using EDIP 2003 in Open LCIA Methods and direct LCI reporting

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (Waste)			
	Hazardous Waste	Non-Hazardous Waste	Radioactive Waste
Product	kg	kg	kg
ClearSight	1.63E-05	6.65E-02	8.36E-05

Table 10: Additional LCIA Impact Results (EN:15804)

Results (A1-A3) for 1 ft2 of ClearSight vegetation control rolled matting system manufactured from post-consumer recycled tire rubber, .5" thickness (EN:15804)
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	Components for reuse	Materials for recycling	Materials for energy recovery	Exported electricity	Exported heat
Product	kg	kg	kg	MJ	MJ
ClearSight	0	1.24	0	0	0

Additional Information:

This environmental product declaration was conducted in accordance with ISO 14025:2006 and EN 15804. It is a declaration with all the relevant information disclosed per the governing product category rule the International EPD® System PCR Construction products and construction services, V2.3 2012:01. The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

- Aitor P. Acero, C. R. (2015). *LCIA methods: Impact assessment methods in Life Cycle Assessment and their impact categories*. online: Green Delta.
- City of Colton California. (2019, June). *Water/Wastewater*. Retrieved from City of Colton: <http://www.ci.colton.ca.us/index.aspx?NID=180>
- EPD International. (2017). *Construction Products and Construction Services, Version 2.2 2012:01*. EPD International.
- Healthy Building Network. (2019, August 1). *Building Product library*. Retrieved from pharos: <https://www.pharosproject.net/material/product>
- Johansson, K. (2018). *Life cycle assessment of two end-of-life tyre applications: artificial turfs and asphalt rubber*. Vänersborg, Sweden: Ragn-Sells Däckåtervinning AB.
- Oers, L. v., & Guinée, J. (2016). The Abiotic Depletion Potential: Background, Updates, and Future. 5(6).
- Pehlken, A. (2006). Identifying LCA-elements in scrap tire recycling. *WIT Transactions on Ecology and the Environment*.
- Recycling Research Institute . (2019). *Crumb Rubber Overview*. Retrieved from Scrap Tire News: <https://www.scraptirenews.com/crumb.php>
- Staaf, Denice. (2019). *Life Cycle Analysis (LCA) in accordance with ISO 14040:2006 & 14044:2006 of one square foot of vegetation control rolled matting system, manufactured from postconsumer recycled California tire rubber by U.S. Rubber Recycling Inc. in Colton, CA*.
- United States Environmental Protection Agency. (2016, December 9). *Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts* . (United States Environmental Protection Agency) Retrieved May 2017, from epa.gov:

<https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci>