



Basalt Scoria Aggregate

Environmental Product Declaration

This Environmental Product Declaration (EPD) is for Light Weight aggregate products manufactured by Teichert Materials at the Truckee Quarry.



Environmental Product Declaration

This Environmental Product Declaration (EPD) reports the impacts for 1 metric tonne (dry weight) Lightweight aggregates, for use in business-to-business (B2B) in accordance with ISO 14025, ISO 21930, and ASTM International's EPD program operator rules.

PCR review was conducted by:

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The PCR peer review report is available upon request: cert@astm.org

Independent verification of the declaration and data, according to ISO 14025: ☐ internal ☒ external

Third-party verifier:

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ASTM Declaration Number: EPD-411

Products

The lightweight aggregates covered in this EPD are produced at:

Truckee Quarry

15899 Archery view.

Truckee, CA 96161

Each aggregate is compliant with the standards and specifications listed in Table 1.

Material Composition

The material composition of the aggregates covered in this study is Basalt Scoria Aggregate.

Product Category Rule:

ASTM Product Category Rules (PCR) for Construction

Aggregates: Natural Aggregate, Crushed Concrete, and Iron/Steel

Furnace Slag, issued January 2017.

Declared Unit: 1 metric tonne (dry weight).

Program Operator:

ASTM International

<http://www.astm.org/EPDs.htm>



EPD Owner:

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Date of Issue:

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LCA Study

Table1: Aggregates Covered in this Study

Item Code	Name	Standards	Description	
1788	1/2" x #4 Light Weight aggregate (regular)	ASTM C33/33M -18 ASTM C330/330M-17A	Lightweight coarse aggregate. Colors consist of gray, black and red, with the assumption that the portable plant is powered by regular diesel	
1788 RD	1/2" x #4 Light Weight aggregate (RD)	ASTM C33/33M -18 ASTM C330/330M-17A	Lightweight coarse aggregate. Colors consist of gray, black and red where the portable plant is powered by 99% pure renewable diesel.	

System boundary

This study captures the following mandatory cradle-to-gate (A1-A3) life cycle product stages (as illustrated in Figure 1):

A1 - Extraction and processing of raw materials including fuels used in extraction and transport within the process;

A2 – Specific transportation of raw materials (including Scoria) from extraction site or source to manufacturing site (including any recovered materials from source to be recycled in the process) and including empty backhauls and transportation to interim distribution centers or terminals.

A3 – Manufacturing of the product, including all energy and materials required and all emissions and wastes produced.

Product Stage			Construction Process Stage		Use Stage							End of Life Stage			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Raw material supply	Transport	Manufacturing	Transport	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Figure 1. Life-Cycle Stages and Modules (Note: MND = module not declared; x = module included)

Except as noted above, all other life cycle stages as described in Figure 1 are excluded from the LCA study. The following processes are also excluded from the study:

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1. Production, manufacture, and construction of manufacturing capital goods and infrastructure;
2. Production and manufacture of production equipment, delivery vehicles, and laboratory equipment;
3. Personnel-related activities (travel, furniture, office supplies);
4. Fuel used to transport personnel around the mine and sand & gravel facility.
5. Energy and water use related to company management and sales activities.

The main processes included in the system boundary are illustrated in Figure 2.

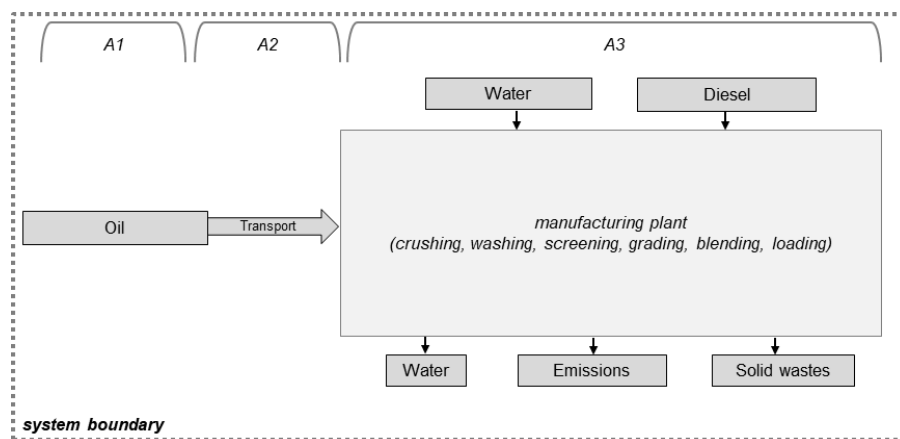


Figure 2. Main Processes Included in System Boundary

Explanatory materials may be requested by contacting:

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Environmental Impacts

Cradle to Gate (A1-A3) impact results per 1 metric tonne (dry weight) of the two products studied here are outlined in Table 2 and Table 3.

Table 2: Cradle-to-Gate Impact Results for Light Weight Aggregate (regular) Covered in Study

Impact category	Unit	A1	A2	A3	Total
Global warming potential	kg CO2 eq	0.003	1.93E-05	31.5	31.5
Acidification potential	kg SO2 eq	2.18E-05	2.25E-07	0.41	0.41
Eutrophication potential	kg N eq	7.49E-06	1.35E-08	0.03	0.03
Smog creation potential	kg O3 eq	1.50E-04	5.70E-06	13.5	13.5
Ozone depletion	kg CFC-11 eq	2.32E-09	8.10E-16	5.66E-08	5.90E-08
Non renewable, fossil	MJ	0.21	2.91E-04	451.0	451.2
Non-renewable, nuclear	MJ	0.004	0	6.16	6.17
Renewable, biomass	MJ	2.47E-04	0	0.16	0.16
Renewable, wind, solar, hydro, geothermal	MJ	0.00079961	0	0.76	0.76
Nonrenewable material resources	kg	4.04E-05	1.51E-08	0.03	0.03
Renewable material resources	kg	1.42E-05	0	9.03E-03	9.04E-03
Net fresh water	m3	4.22E-05	0	0.128	0.13
Non-hazardous waste generated	kg	1.10E-05	0	0.401	0.40
Hazardous waste generated	kg	9.43E-08	0	8.49E-05	8.50E-05

Table 3: Cradle-to-Gate Impact Results for Lightweight Aggregate (RD) Covered in Study

Impact category	Unit	A1	A2	A3	Total
Global warming potential	kg CO2 eq	0.003	1.93E-05	6.98	6.98
Acidification potential	kg SO2 eq	2.18E-05	2.25E-07	0.029	0.03
Eutrophication potential	kg N eq	7.49E-06	1.35E-08	0.001	0.001
Smog creation potential	kg O3 eq	1.50E-04	5.70E-06	0.72	0.72
Ozone depletion	kg CFC-11 eq	2.32E-09	8.10E-16	4.62E-13	2.32E-09
Non renewable, fossil	MJ	0.21	2.91E-04	0.15	0.36
Non-renewable, nuclear	MJ	0.004	0	16.57	16.6
Renewable, biomass	MJ	2.47E-04	0	0.15	0.15
Renewable, wind, solar, hydro, geothermal	MJ	0.001	0	0.96	0.96
Nonrenewable material resources	kg	4.04E-05	1.51E-08	7.84E-06	4.83E-05
Renewable material resources	kg	1.42E-05	0	4.63E-09	1.42E-05
Net fresh water	m3	4.22E-05	0	0.09	0.09
Non-hazardous waste generated	kg	1.10E-05	0	3.89E-05	4.99E-05
Hazardous waste generated	kg	9.43E-08	0	4.45E-11	9.43E-08

This EPD only covers the cradle-to-gate impacts of aggregates using a declared unit and the results cannot be used to compare between products. EPDs from different programs (using different PCR) may not be comparable. Based on the PCR, only EPDs prepared from cradle-to-grave life-cycle results and based on the same function, reference service life, and quantified by the same functional unit, and meeting all the conditions in ISO 14025, Section 6.7.2 can be used to assist purchasers and users in making informed comparisons between products.