

ENVIRONMENTAL PRODUCT DECLARATION

This EPD is in accordance with ISO 14025 and EN 15804.

Owner of the declaration: Program operator: Publisher:

Declaration number:

Issue date: Valid to: Beer Sten AS

The Norwegian EPD Foundation The Norwegian EPD Foundation NEPD-4063-3090-EN

19.12.2022 19.12.2027

BeerEcoSten® Evjen - The Polar Selection

BeerEcoSten® Evjen Granitt

BEER STEN AS

Etabl ★ 1879

Et trygt valg

Beer Sten AS

www.epd-norge.no







General information

| Product | Owner of the dec | laration | | |
|---|---------------------------------|--|--|--|
| BeerEcoSten® Evjen Granitt | EPD owner | Beer Sten AS | | |
| Deer Ecooleries Evjeti Granitt | | Monica Midtun Sander | | |
| | Contact person: | | | |
| | Phone: | +47 415 52 474 | | |
| | e-mail: | monica@beersten.no | | |
| | Address: | Habornveien 56 1630 Gamle Fredrikstad | | |
| Program holder | Manufacturer | | | |
| Næringslivets Stiftelse for Miljødeklarasjoner | Evjen Granitt AS | | | |
| Postboks 5250 Majorstuen, 0303 Oslo | Evjen 8120, Nygår | rdssigen | | |
| Phone: +47 977 22 020 | L 1,011 0 120, 11, gui | 1 dooj 2 011 | | |
| | | | | |
| e-mail: post@epd-norge.no | | | | |
| | | | | |
| Declaration number | Place of producti | on: | | |
| NEPD-4063-3090-EN | Evjen, Norway | | | |
| | | | | |
| This declaration is based on Product Category Rules: | Management sys | tem: | | |
| EN 15804:2012+A1:2013 v.1.0 (24.11.2013). | | | | |
| NPCR Part A v.1.0 for Construction products and services (07.04.2017). | | | | |
| NPCR 018 v.1.0 Part B for natural stone products, aggregates and fillers | | | | |
| (20.05.2020). | | | | |
| | | | | |
| Statements: | Organisation no: | | | |
| The owner of the declaration shall be liable for the underlying information and | 952 440 330 | | | |
| evidence. | 002 110 000 | | | |
| EPD Norway shall not be liable with respect to manufacturer, life cycle | | | | |
| · | In accordate | | | |
| assessment data and evidences. | Issue date | | | |
| | 19.12.2022 | | | |
| | Valid to | | | |
| | 19.12.2027 | | | |
| | 19.12.2021 | | | |
| | | | | |
| Declared unit: | Year of study: | | | |
| | 2021 | | | |
| | | | | |
| Declared unit with option: | Comparability: | | | |
| | EPDs of construct | ion products may not be comparable if they do not | | |
| | | 5804 and are seen in a building context. EPDs from | | |
| | | than EPD-Norway may not be comparable. | | |
| | | | | |
| Functional unit: | The EPD has bee | n worked out by: | | |
| 1 tonne of BeerEcoSten® installed in roads/pavements/parking lots/city | | | | |
| squares/driveways/gardens/parks etc. | Simon A. Saxegår | rd | | |
| | S. i.c | 1 1 | | |
| | Scman & Sexes | and | | |
| Verification: | - 3 | | | |
| Independent verification of the declaration and data, according to | | | | |
| ISO14025:2010 | | | | |
| | | | | |
| ☐ internal ☑ external | Nama and | | | |
| Third party verifier: | Approved | 1 11 | | |
| Third party verifier. | 110 | ika Hayan | | |
| Olie I del | , , , | Håkon Hauan | | |
| Mie Vold | Managi | | | |
| (Independent verifier approved by EPD Norway) | Managing Director of EPD-Norway | | | |

Product

Product description:

BeerEcoSten ® Evjen is a product group of stone products. The product group includes pavers, wallstones, elements and curbs in an infinite variety of sizes. During installation it is only curb stones that requires adhesive concrete. A specific installation scenario (A5) is described for curb stones because these require additional B30 concrete.

Technical data:

Density of product: 2.6 t/m3

Product specifications are tested in accordance to standards:

NS-EN 1926 (Compressive strength).

NS-EN 12372 (Bending tensile strength).

NS-EN 13755 (Water absorption).

Product specification

| Declared stone types | Water abs | orption | Bending te | nsile | Compressi | ve | Mineral composition |
|----------------------|-----------|---------|------------|-------|-----------|-----|--------------------------------------|
| | | | strength | | strenght | | |
| Evjen Granitt | 0,20 | % | 10,9 | MPa | 207,2 | Мра | Quartz, feldspar, biotite, muscovite |

Use and application:

- Elements and wallstones
- Curb stone
- Pavers
- Setts and cubes
- Steps

All products are licenced for road use according to strength and property parameters.

Market: Norway

Reference service life: >60 years.

Average data:

This EPD declares natural stone products, from one type of stone, in various shapes, sizes and surfaces. The manufacturing data collected represent an average of all variations.

A test was performed to investigate variations in the amount of saw dust from variations in saw blade thicknesses for cutting. It was found less than 10% variations in amounts of saw dust for the smallest stones cut (10x10x10) across the range of saw blade thicknesses.

Similarly, flaming contributed with less than 10% variation for all stone sizes. Data were normalised per tonne stone product sold from manufacturer. Cut wastages, flaming, administrative consumables, and waste management are averaged accordingly.

LCA: Calculation rules

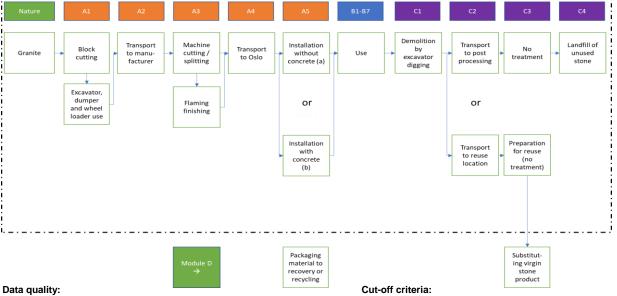
Functional unit:

1 tonne of BeerEcoSten® Evjen installed in roads/pavements/parking lots/city squares/driveways/gardens/parks etc.

System boundary:

The system boundary includes the whole life cycle of Beer Sten AS natural stone products from Evjen, Norway.

Figure 1: System boundary



Data quality: Good quality. Data based on manufacturer and Beer Sten AS. Transport based on information from distribution actors.

Database data based on Ecoinvent 3.8, where no data are more than 10 years old.

LCA software: SimaPro 9.4.0.2

Year of average data from manufacturer: 2020.

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

Allocation:

The allocation is performed in accordance with the provisions of ISO 14025 and the definitions in EN 15804+A1 and NPCR 018 Part B. The manufactured natural stones make up 98.5% of the total revenue whereas 1.5% stem from gravel sold, which is also the appointed allocation keys in this study for A1-A3. Mass allocation shall only be used when the difference in revenue between products is low (<25%, >1%).

LCA: Scenarios and additional technical information

The following information describes the scenarios in the different modules of the EPD.

Transport from production place to assembly/user (A4)

| Туре | - | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energ | ıy | Value (I/t) |
|-------|---|--|-------------------------|-------------|-------------|-------|-------------|
| | | Capacity utilisation (incl. return) 70 | | | consumption | on | |
| Truck | | 55 % | >32 EURO 6 B7 fuel | 45 | 0,022106 | l/tkm | 1,0 |
| Boat | | 60 % | 5000 DWT Container ship | 1554 | 0,0037 | l/tkm | 5,7 |
| Truck | | 55 % | >32 EURO 6 B7 fuel | 90 | 0,022106 | l/tkm | 2,0 |

Stones are transported from the factory to harbour (24 km) before shipment to Fredrikstad. Sea vessel sizes have been adjusted according to information from EPD owner. Fuel consumption is based on Smith et al. (2014).

Assembly (A4) Intermediate storage

| | Unit | Value |
|---|------|-------|
| Beer Sten AS' sales and storage operation | t | 1 |

Activities at Beer Sten AS are included as storage activity during the transport phase A4. Impacts associated with the storage are yearly activities and direct emissions divided on the annual sales of all natural stones.

Assembly (A5a) Stone installment without concrete

| | Unit | Value |
|--------------------------|-------|-------|
| Excavator in operation r | min/t | 2 |

Assembly (A5b) Curb stone installment with concrete

| | Unit | Value |
|----------------------------------|-------|--------|
| Excavator in operation | min/t | 2 |
| Concrete B30 (NEPD-2327-1071-NO) | m3/t | 0,0007 |

Use phase (B1-B7)

No activity necessary to achieve the function of the declared unit. Natural stones are products which need no maintenance, washing or other activities to fullfill their intended use throughout their reference service life.

End of Life (C1, C3, C4)

Natural stone products can be reused. No national statistics on the life cycle scenario of natural stones are available, so a conservative approach was selected in accordance with NPCR 018. The end-of-life treatments typical for natural stone products are either direct reuse (80%), i.e., reuse as raw material to new stone produce, or reuse as raw material to gravel/sand production (10%) or as inert landfill (10%).

C1 Demolition

| | Unit | Value |
|------------------------|-------|-------|
| Excavator in operation | min/t | 10 |

The demolition phase is assumed to be mainly performed by hand, but with aid of machinery, like an excavator, in the process.

Transport to waste processing (C2)

| Туре | Capacity utilisation (incl. return) % | Type of vehicle | | Fuel/Energy consumption | Value (I/t) |
|-------|---------------------------------------|-----------------|----|-------------------------|-------------|
| Truck | 36 % | 16-32t EURO 5 | 50 | 0,043287 l/tkm | 2,2 |

C3 Waste treatment

| | Unit | Value |
|---------------------------------|------|-------|
| Rock crushing, for landfill | t | 0,1 |
| Rock crushing, as recycling | t | 0,1 |
| Sorting for reuse (no activity) | t | 0,8 |

C4 Final disposal

| | Unit | Value |
|-----------------------|------|-------|
| Inert waste, landfill | t | 0,1 |

Benefits and loads beyond the system boundaries (D)

| | Unit | Value |
|--|------|-------|
| Natural stone, reused at site or nearby | t | 0,8 |
| Crushed stone, recycled to road constructions etc. | t | 0.1 |

Natural stone products can in most cases be reused directly for refurbishment or new installments. Beer Sten describes that about 10% will be landfilled/long time stored (>3 years) as inert gravel, leaving 90% to be reused either as natural stones (80%) or downcycled to gravel (10%). Crushing to gravel is included as the waste management process.

Additional technical information

The stones will maintain the same technical properties as described for the declared functional unit when reused or recycled.

LCA: Results

The results present the environmental and resource impact as well as delivered outputs associated to the declared unit as described in EN 15804+A1

| System boundaries (Y | -included MND-me | dula not doclared A | MNR=module not relevant) |
|----------------------|--------------------|----------------------|--------------------------|
| System boundaries (A | =INCludea. WIND=MC | dule noi declared. N | MINK=Module Not relevant |

| Pro | oduct sta | age | Assemb | oly stage | | | | Use | stage | | | E | nd of life | stage | |
|---------------|-----------|---------------|-----------|-----------|-----|-------------|--------|-------------|---------------|------------------------|-----------------------|------------------------------|------------|------------------|----------|
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction demolition | Transport | Waste processing | Disposal |
| A1 | A2 | А3 | A4 | A5 | B1 | B2 | В3 | B4 | B5 | В6 | В7 | C1 | C2 | C3 | C4 |
| Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х |

| Beyond the system boundaries |
|--|
| Reuse-Recovery- Recycling-potential |
| D |
| Х |

Environmental impact

| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 |
|-----------|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| GWP | kg CO2 -eqv | 4,1E+01 | 3,1E+01 | 2,3E+00 | 2,4E+00 | 0,0E+00 | 1,1E+01 | 8,2E+00 | 5,9E-03 | 6,7E-01 |
| ODP | kg CFC11-eqv | 5,4E-06 | 5,4E-06 | 4,0E-07 | 4,0E-07 | 0,0E+00 | 2,0E-06 | 1,5E-06 | 2,9E-10 | 2,1E-07 |
| POCP | kg C2H4 -eqv | 8,8E-03 | 1,4E-02 | 3,9E-04 | 1,1E-03 | 0,0E+00 | 1,7E-03 | 1,1E-03 | 1,9E-06 | 1,5E-04 |
| AP | kg SO2 -eqv | 2,7E-01 | 4,0E-01 | 9,0E-03 | 9,2E-03 | 0,0E+00 | 3,8E-02 | 2,6E-02 | 2,1E-05 | 4,9E-03 |
| EP | kg PO43eqv | 7,1E-02 | 5,8E-02 | 3,7E-03 | 3,3E-03 | 0,0E+00 | 8,4E-03 | 5,8E-03 | 9,8E-06 | 1,1E-03 |
| ADPM | kg Sb-eqv | 3,0E-04 | 6,6E-05 | 2,8E-06 | 2,9E-06 | 0,0E+00 | 1,2E-05 | 2,9E-05 | 1,2E-07 | 9,8E-07 |
| ADPE | MJ | 5,5E+02 | 4,6E+02 | 3,4E+01 | 3,5E+01 | 0,0E+00 | 1,6E+02 | 1,3E+02 | 5,6E-02 | 1,8E+01 |

| D | |
|----------|--|
| -9,5E+01 | |
| -1,5E-05 | |
| -1,6E-02 | |
| -6,6E-01 | |
| -1,8E-01 | |
| -3,6E-04 | |
| -1,3E+03 | |
| | |

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

| Resource us | se | | | | | | | | | |
|-------------|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 |
| RPEE | MJ | 3,8E+02 | 1,3E+01 | 3,2E-01 | 3,1E-01 | 0,0E+00 | 1,3E+00 | 1,8E+00 | 5,6E-01 | 3,8E-01 |
| RPEM | MJ | 0,0E+00 |
| TPE | MJ | 3,8E+02 | 1,3E+01 | 3,2E-01 | 3,1E-01 | 0,0E+00 | 1,3E+00 | 1,8E+00 | 5,6E-01 | 3,8E-01 |
| NRPE | MJ | 5,5E+02 | 4,4E+02 | 3,2E+01 | 3,2E+01 | 0,0E+00 | 1,6E+02 | 1,3E+02 | 9,0E-02 | 1,7E+01 |
| NRPM | MJ | 0,0E+00 |
| TRPE | MJ | 5,5E+02 | 4,4E+02 | 3,2E+01 | 3,2E+01 | 0,0E+00 | 1,6E+02 | 1,3E+02 | 9,0E-02 | 1,7E+01 |
| SM | kg | 0,0E+00 | 0,0E+00 | 0,0E+00 | 4,5E-02 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 |
| | | | | | | | | | | |

0,0E+00

0,0E+00

3,2E+01

| D |
|----------|
| -1,3E+03 |
| 0,0E+00 |
| -1,3E+03 |
| -2,6E+03 |
| 0,0E+00 |
| -2,6E+03 |
| 0,0E+00 |
| 0,0E+00 |
| 0,0E+00 |
| -2,6E+03 |

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

0,0E+00

1,6E-01

3,2E+01

0,0E+00

0,0E+00

0,0E+00

0,0E+00

0,0E+00

1,6E+02

0,0E+00

0,0E+00

1,3E+02

0,0E+00

0,0E+00

9,0E-02

0,0E+00

0,0E+00

1,7E+01

End of life - Waste

RSF

NRSF

| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 |
|-----------|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| HW | kg | 1,9E-03 | 6,8E-04 | 8,8E-05 | 8,8E-05 | 0,0E+00 | 4,3E-04 | 3,3E-04 | 2,5E-07 | 2,5E-05 |
| NHW | kg | 2,2E+01 | 2,4E+01 | 5,8E-01 | 5,5E-01 | 0,0E+00 | 2,3E+00 | 7,3E+00 | 8,2E-03 | 2,0E+02 |
| RW | kg | 3,2E-03 | 3,0E-03 | 2,2E-04 | 2,2E-04 | 0,0E+00 | 1,1E-03 | 8,5E-04 | 6,6E-07 | 1,2E-04 |

-3,3E-03 -1,8E+01 -2,8E-02

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

0,0E+00

0,0E+00

5,5E+02

kg

0,0E+00

0,0E+00

4,4E+02

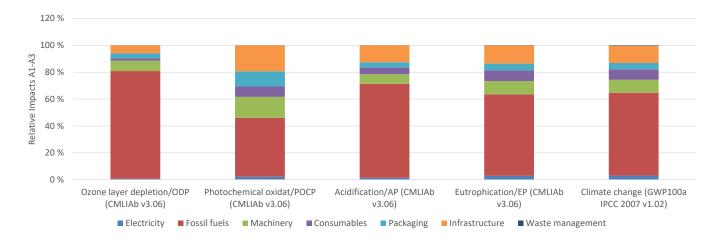
| End of I | lifa - Ou | itnut | flow |
|----------|-----------|-------|------|

| End of the - Output now | | | | | | | | | | |
|-------------------------|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 |
| CR | kg | 0,0E+00 | 8,0E-01 | 0,0E+00 |
| MR | kg | 2,9E-02 | 0,0E+00 | 1,6E-02 | 1,6E-02 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 1,0E-01 | 0,0E+00 |
| MER | kg | 2,3E-01 | 8,7E-01 | 3,1E-03 | 5,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 |
| EEE | MJ | 3,1E-01 | 1,2E+00 | 6,5E+00 | 6,5E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 |
| ETE | MJ | 6,3E-01 | 2,5E+00 | 1,4E+01 | 1,4E+01 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 | 0,0E+00 |

| D |
|---------|
| 0,0E+00 |
| 0,0E+00 |
| 0,0E+00 |
| 0,0E+00 |
| 0.0F+00 |

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9.0 E-03 = 9.0*10-3 = 0.009



The use of fossil fuels is the greatest single contributor to the impact for most of the assessed environmental impact indicators. Infrastructure makes up a significant portion of the environmental contribution for most impact categories even with an assumed life time expectancy of 50 years per building. Consumables (tap water, oxygen, saw blades, and cutting wire), packaging, and machinery all have significant environmental impact contributions. The use of electricity, here from the Norwegian grid, is of lesser importance in most of the environmental impact categories.

Additional Norwegian requirements

Greenhouse gas emission from the use of electricity in the manufacturing phase

National production mix from import, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing prosess(A3).

| Data source | Amount | Unit |
|--|--------|---------------|
| Ecoinvent v3.8 Electricity, medium voltage {NO} market for Cut-off, U | 22.feb | g CO2-eqv/kWh |

Dangerous substances

- ☑ The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

| Name | CAS no. | Amount |
|------|---------|--------|
| | | |
| | | |

Indoor environment

The product meets the requirements for low emissions.

No tests have been carried out on the product concerning indoor climate because the usage is intended for outdoor applications and installation.

Carbon footprint

Calculations connected to climate change and global warming potential (GWP) include greenhouse gas emissions from fossil sources and land use change connected to extraction of natural stones, but does not include calculations of biogenic emissions of CO₂.

Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines

Ecoinvent v.3.8 Swiss Centre of Life Cycle Inventories. www.ecoinvent.ch

EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declaration - Core rules for the product

category of construction products (24.11.2013).

ISO 21930:2007 Sustainability in building construction - Environmental declaration of building products

NEPD-2327-1071-NO NEPD-2327-1071-NO, 1002 B30 M60 22mm

NS-EN 1926:2006 Natural stone test methods Determination of uniaxial compressive strength

NS-EN 12372 Natural stone test methods - Determination of flexural strength under concentrated load

NS-EN 13755 Natural stone test methods - Determination of water absorption at atmospheric pressure

NPCR Part A v.1.0 Part A for Construction products and services (07.04.2017).

NPCR 018 v.1.0 Part B for Crushed Stones and Stone Products (20.05.2020)

Smith et al. 2014 Third IMO GHG Study 2014; International Maritime Organization

(IMO) London, UK, April 2015; Smith, T. W. P.; Jalkanen, J. P.; Anderson, B. A.; Corbett, J. J.;

Faber, J.; Hanayama,

Saxegård 2021 Saxegård, S. A (2021) EPD BeerEcoSten® LCA report. OR 33.21

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| BEER STEN AS | Owner of the declaration Beer Sten AS | Phone: | +47 41 55 24 74 |
| Et trygt valg | | e-mail: web | monica@beersten.no www.beersten.no |
| NORSUS | Author of the Life Cycle Assessment Simon A. Saxegård | Phone: | +47 482 57 831 |
| 14511303 | , and the second | e-mail: web | simon@norsus.no www.norsus.no |



ENVIRONMENTAL PRODUCT DECLARATION

This EPD is in accordance with ISO 14025 and EN 15804.

Owner of the declaration: Program operator:

Publisher:

Declaration number:

Issue date: Valid to: Beer Sten AS

Næringslivets Stiftelse for Miljødeklarasjoner The Norwegian EPD Foundation

NEPD-4063-3090-EN - A4 update 2023

19.12.2022

19.12.2022

BeerEcoSten® Evjen - The Polar Selection - A4 update 2023

BeerEcoSten® Evjen Granitt

Beer Sten AS

www.epd-norge.no

BEER STEN AS

Etabl ★ 1879

Et trygt valg







General information

| Product | Owner of the declaration |
|--|---|
| A4 Transport of BeerEcoSten® Evjen Granitt from manufacturer to installation site. | EPD owner Contact person: Phone: e-mail: Address: Beer Sten AS Monica Midtun Sander +47 415 52 474 monica@beersten.no Habornveien 56 1630 Gamle Fredrikstad |
| Program holder | Manufacturer |
| Næringslivets Stiftelse for Miljødeklarasjoner Postboks 5250 Majorstuen, 0303 Oslo Phone: +47 977 22 020 e-mail: post@epd-norge.no | Evjen Granitt AS Evjen 8120, Nygårdssjøen |
| Declaration number | Place of production: |
| NEPD-4063-3090-EN | Evjen, Norway |
| | = 1 ₁ 0, 1.0. may |
| This declaration is based on Product Category Rules: | Management system: |
| EN 15804:2012+A1:2013 v.1.0 (24.11.2013). NPCR Part A v.1.0 for Construction products and services (07.04.2017). NPCR 018 v.1.0 Part B for natural stone products, aggregates and fillers (20.05.2020). | |
| 04-4 | Onnenta etten me |
| Statements: The owner of the declaration shall be liable for the underlying information and | Organisation no: 952 440 330 |
| evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidences. This dataset only represent A4 (transport to installation location) and is to replace existing scenario in EPD NEPD-4063-3090-EN. | Issue date 19.12.2022 |
| | Valid to 19.12.2027 |
| Declared unit: | Year of study: |
| 1 tonne of BeerEcoSten® for roads/pavements/parking lots/city squares/driveways/gardens/parks etc. transported from manufacturer (Evjen) to Oslo for installation (A4). | 2021 |
| Declared unit with option: | Comparability: |
| Dosialoù ame wan opalom | EPDs of construction products may not be comparable if they do not comply with EN 15804 and are seen in a building context. EPDs from other programmes than EPD-Norway may not be comparable. |
| Functional unit: | The EPD edit has been worked out by: |
| | Simon A. Saxegård |
| | Simon t. Sexuard |
| Verification: | |
| Independent verification of the declaration and data, according to ISO14025:2010 | |
| ☐ internal ☑ external Third party verifier: | Approved Haken Hauran |
| | |
| sign | Håkon Hauan |
| (Independent verifier approved by EPD Norway) | Managing Director of EPD-Norway |

LCA: A4 Scenario and additional technical information

The following information describes the scenarios in the different modules of the EPD.

Transport from production place to assembly/user (A4)

| Туре | Capacity utilisation (incl. return) % | Type of vehicle | | Fuel/Energy consumption | Value (I/t) |
|-------|---------------------------------------|--------------------|------|-------------------------|-------------|
| Truck | 55 % | >32 EURO 6 B7 fuel | 1214 | 0,022106 l/tkm | 26,8 |

Stones are transported from Evjen, Evjen Granitt AS, Evjen, 8120 Nygårdsjøen, to Oslo about 1214km. The vehicle uses 7% Biodiesel and acieves EURO6 class using 5% additives of Selective Catalytic Reduction.

Assembly (A4) Intermediate storage

| | Unit | Value |
|---|------|-------|
| Beer Sten AS' sales and storage operation | t | 0 |

Stones are not transported to Beer Sten AS intermediate storage nor processes at Beer Sten AS. Instead it goes directly to Oslo from Evjen.

LCA: Results

The results present the environmental and resource impact as well as delivered outputs associated to the declared unit as described in EN 15804+A1

| System boundaries | (X=included, I | MND=module not declared, MNR=m | odule not relevant) |
|-------------------|----------------|--------------------------------|---------------------|
| | | | |

| Pro | oduct sta | age | Assemb | oly stage | Use stage | | | | | | E | End of life stage | | | |
|---------------|-----------|---------------|-----------|-----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|------------------------------|-----------|------------------|----------|
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction demolition | Transport | Waste processing | Disposal |
| A1 | A2 | А3 | A4 | A5 | B1 | B2 | В3 | B4 | B5 | В6 | В7 | C1 | C2 | C3 | C4 |
| | | | Х | | | | | | | | | | | | |

| Beyond the system boundaries |
|--|
| Reuse-Recovery- Recycling-potential |
| D |
| |

| Environment | al impact | | | | | | | | | | |
|-------------|--------------|-------|----------|-----|-----|-------|----|----|----|----|-----|
| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 | D |
| GWP | kg CO2 -eqv | | 1,03E+02 | | | | | | | | |
| ODP | kg CFC11-eqv | | 2,0E-05 | | | | | | | | ı İ |
| POCP | kg C2H4 -eqv | | 1,4E-02 | | | | | | | | |
| AP | kg SO2 -eqv | | 2,8E-01 | | | | | | | | ı İ |
| EP | kg PO43eqv | | 7,0E-02 | | | | | | | | ı İ |
| ADPM | kg Sb-eqv | | 3,0E-04 | | | | | | | | į į |
| ADPE | MJ | | 1,7E+03 | | | | | | | | |

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

| Resource us | se | | | | | | | | | | |
|-------------|------|-------|---------|-----|-----|-------|----|----|----|----|---|
| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 | D |
| RPEE | MJ | | 9,0E+01 | | | | | | | | |
| RPEM | MJ | | 0,0E+00 | | | | | | | | |
| TPE | MJ | | 9,0E+01 | | | | | | | | |
| NRPE | MJ | | 1,7E+03 | | | | | | | | |
| NRPM | MJ | | 0,0E+00 | | | | | | | | |
| TRPE | MJ | | 1,7E+03 | | | | | | | | |
| SM | kg | | 0,0E+00 | | | | | | | | |
| RSF | kg | | 0,0E+00 | | | | | | | | |
| NRSF | kg | | 0,0E+00 | | | | | | | | |
| W | kg | | 1,7E+03 | | | | | | | | |

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste

| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 | 1 | D |
|-----------|------|-------|---------|-----|-----|-------|----|----|----|----|---|---|
| HW | kg | | 4,0E-03 | | | | | | | | 1 | |
| NHW | kg | | 1,7E+02 | | | | | | | | ' | |
| RW | kg | | 1,1E-02 | | | | | | | | 1 | |

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

| End of life - Output flow | | | | | | | | | | | | |
|---------------------------|------|-------|---------|-----|-----|-------|----|----|----|----|--|---|
| Parameter | Unit | A1-A3 | A4 | A5a | A5b | B1-B7 | C1 | C2 | C3 | C4 | | D |
| CR | kg | | 0,0E+00 | | | | | | | | | |
| MR | kg | | 0,0E+00 | | | | | | | | | |
| MER | kg | | 0,0E+00 | | | | | | | | | |
| EEE | MJ | | 0,0E+00 | | | | | | | | | |
| FTF | MI | | 0.05+00 | | | | | | | | | ĺ |

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9.0 E-03 = 9.0*10-3 = 0.009

Fibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines

Ecoinvent v.3.8 Swiss Centre of Life Cycle Inventories. www.ecoinvent.ch

EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declaration - Core rules for the product

category of construction products (24.11.2013).

ISO 21930:2007 Sustainability in building construction - Environmental declaration of building products

NPCR Part A v.1.0 Part A for Construction products and services (07.04.2017).

NPCR 018 v.1.0 Part B for Crushed Stones and Stone Products (20.05.2020)

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