

ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025 ISO 21930 EN 15804

**epd-norge.no**

The Norwegian EPD Foundation

| | |
|--------------------------|------------------------------|
| Owner of the declaration | Saint-Gobain Byggevarer as |
| Program holder | The Norwegian EPD Foundation |
| Declaration number | NEPD00276E |
| Issue date | 20.10.2014 |
| Valid to | 20.10.2019 |

Leca Universalblokk 20 cm, Lightweight Concrete Block

Product

Saint-Gobain Byggevarer as

Owner of the declaration



General information

Product:

Leca Universalblokk 20 cm, Lightweight Concrete Block

Program holder:

The Norwegian EPD Foundation
P.O.Box 5250 Majorstuen
0303 Oslo
Phone: +47 23 08 80 00
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Declaration number:
This declaration is based on Product Category Rules:

EN 15804:2012+A1:2013 serve as core PCR
Requirements on the EPD for Lightweight concrete.

Declared unit:

1 m3 Leca Universalblokk 20 cm, Lightweight Concrete Block

Declared unit with option:

A1,A2,A3,A4

Functional unit:
The EPD has been worked out by:

The declaration has been developed using EPDGen-version 1.0, Approval: NEPDT02
Company specific data are collected and registry by:

Stian Gravnås

Company specific data are audited by:

Line Holaker
Verification:

Independent verification of data, other environmental information and EPD has been carried out in accordance with ISO14025, 8.1.3 and 8.1.4

externally



Senior Researcher Anne Rønning
(Independent verifier approved by EPD-Norway)

Owner of the declaration:

Saint-Gobain Byggevarer as
Contact person: Line Holaker
Phone: +47 22 88 77 00
e-mail: [info\(at\)weber-norge.no](mailto:info(at)weber-norge.no)

Manufacturer:

Saint-Gobain Byggevarer as

Place of production:

Weber Leca Borge, Moumgt.,
1658 Torp, Norway

Management system:

ISO 9001, ISO 14001

Org. No:

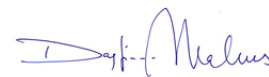
940 198 178

Issue date:
Valid to:
Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Year of study:

2014

Approved:


Dagfinn Malnes
Managing Director of EPD-Norway

Declared unit:

1 m3 Leca Universalblokk 20 cm, Lightweight Concrete Block

| Key environmental indicators | Unit | Cradle to gate A1 - A3 | Transport A4 |
|------------------------------|------------|---------------------------|--------------|
| Global warming | kg CO2 eqv | 117,08 | 2,84 |
| Energy use | MJ | 1635,1528 | 37,1641 |
| Dangerous substances | | * | * |

*The product contains no substances from the REACH Candidate list or the Norwegian priority list

Product

Product description:

Leca Universalblokk 20 cm is produced by Leca lightweight aggregate, cement, sand and water. Leca Universalblokk is a fast and efficient solution for loadbearing and non-bearing walls.

Technical data:

SINTEF Technical Approval – TG2032. For further information see www.weber-norge.no

Reference service life:

As for the building

Product specification:

The composition of the product is described in the following table:

| Materials | Percent |
|-----------|---------|
| Cement | 10,90 |
| Aggregate | 76,43 |
| Water | 10,88 |
| Packaging | 1,79 |

Market:

Norway

LCA: Calculation rules

Declared unit:

1 m³ Leca Universalblokk 20 cm, Lightweight Concrete Block

Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included.

Allocation:

The allocation is made in accordance with provisions in EN 15804. Incoming energy and water, and in-house waste from the production, is allocated equally among all products through mass allocation. Effects of primary production of recycled materials are allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

| Materials | Data quality | Source | Year |
|-----------|------------------|------------------|------|
| Aggregate | EPD | NEPD00120E | 2013 |
| Aggregate | EPD | NEPD00120E | 2013 |
| Aggregate | Database | Østfoldforskning | 2012 |
| Cement | EPD | NEPD00024N | 2013 |
| Water | | | |
| Packaging | | | |
| Packaging | European Average | APME | |

System boundary:

All processes from raw material extraction to product from the factory gate are included in the analysis (A1-A3). In addition, transportation to a central warehouse placed in accordance with guidelines issued by the EPD Norway (A4) is included.

FlowChart:



LCA: Scenarios and additional technical information

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

Transport from production site to user (A4)

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---------|---------------------------------------|-----------------|-------------|-------------------------|-------|-------------|
| Truck | 75 % | Lorry to market | 50 | 0,015594 | l/tkm | 0,78 |
| Railway | . | . | . | . | . | . |
| Boat | . | . | . | . | . | . |
| Other | . | . | . | . | . | . |

Installation in the building (A5)

| . | Unit | Value |
|---------------------------------------|----------------|-------|
| Auxiliary | kg | 0 |
| Water consumption | m ³ | 0 |
| Electricity consumption | kWh | 0 |
| Other energy carriers | MJ | 0 |
| Material loss | kg | 0 |
| Output materials from waste treatment | kg | 0 |
| Dust in the air | kg | 0 |

Label

Maintenance (B2)/Repair (B3)

| . | Unit | Value |
|-------------------------|----------------|-------|
| Maintenance cycle | . | 0 |
| Auxiliary | kg | 0 |
| Other resources | kg | 0 |
| Water consumption | M ³ | 0 |
| Electricity consumption | kWh | 0 |
| Other energy carriers | MJ | 0 |
| Material loss | kg | 0 |

Use (B1):

| . | Unit | Value |
|-----------|------|-------|
| No effect | 0 | 0 |

End of Life (C1, C3, C4)

| . | Unit | Value |
|---------------------------------------|------|-------|
| Hazardous waste disposed | kg | 0 |
| Collected as mixed construction waste | kg | 0 |
| Reuse | kg | 0 |
| Recycling | kg | 0 |
| Energy recovery | kg | 0 |
| To landfill | kg | 0 |

Transport to waste processing (C2)

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---------|---------------------------------------|-----------------|-------------|-------------------------|-------|-------------|
| Truck | 0 % | . | 0 | 0 | l/tkm | 0 |
| Railway | . | . | . | . | . | . |
| Boat | . | . | . | . | . | . |
| Other | . | . | . | . | . | . |

Benefits and loads beyond the system boundaries (D)

LCA: Results

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

| Product stage | | | | Construction installation stage | User stage | | | | | | | | End of life stage | | | | Beyond the system boundaries |
|---------------|-----------|---------------|-----------|----------------------------------|------------|-------------|--------|-------------|---------------|------------------------|-----------------------|-----------------------------|-------------------|------------------|----------|-------------------------------------|------------------------------|
| Raw materials | Transport | Manufacturing | Transport | Construction/ Installation stage | 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 | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | |

Environmental impact

| Parameter | Unit | A1 | A2 | A3 | A4 | A5 | C1 | C2 |
|-----------|---------------------------------------|-----------|-----------|-----------|-----------|----|----|----|
| GWP | kg CO ₂ -eqv | 1,01E+002 | 2,98E+000 | 1,31E+001 | 2,84E+000 | | | |
| ODP | kg CFC11 -eqv | 1,23E-006 | 0,00E+000 | 1,96E-006 | 0,00E+000 | | | |
| POCP | kg C ₂ H ₄ -eqv | 1,05E-001 | 2,94E-003 | 3,15E-002 | 7,51E-003 | | | |
| AP | kg SO ₂ -eqv | 3,46E-001 | 9,71E-003 | 5,13E-003 | 1,73E-003 | | | |
| EP | kg PO ₄ ³⁻ -eqv | 3,13E-002 | 1,49E-003 | 2,64E-003 | 1,16E-003 | | | |
| ADPM | kg Sb -eqv | 1,27E-004 | 0,00E+000 | 5,16E-005 | 0,00E+000 | | | |
| ADPE | MJ | 5,62E+002 | 3,93E+001 | 1,68E+002 | 3,73E+001 | | | |

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 use

| Parameter | Unit | A1 | A2 | A3 | A4 | A5 | C1 | C2 |
|-----------|----------------|-----------|-----------|-----------|-----------|----|----|----|
| RPEE | MJ | 3,09E+002 | 5,28E-002 | 1,07E+002 | 6,41E-002 | | | |
| RPEM | MJ | 1,75E-001 | 1,81E-002 | 1,43E-001 | 0,00E+000 | | | |
| TRPE | MJ | 3,10E+002 | 7,09E-002 | 1,08E+002 | 6,41E-002 | | | |
| NRPEE | MJ | 6,79E+002 | 3,91E+001 | 1,77E+002 | 3,71E+001 | | | |
| NRPEM | MJ | 0,00E+000 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |
| TNRPE | MJ | 6,79E+002 | 3,91E+001 | 1,77E+002 | 3,71E+001 | | | |
| SM | kg | 1,53E+001 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |
| RSF | MJ | 0,00E+000 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |
| NRSF | MJ | 3,24E+002 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |
| W | m ³ | 1,12E+002 | 3,64E-001 | 2,44E+001 | 3,31E-001 | | | |

RPEE Renewable primary energy resources used as energy carrier; **RPEM** Renewable primary energy resources used as raw materials; **TRPE** Total use of renewable primary energy resources; **NRPEE** Non renewable primary energy resources used as energy carrier; **NRPEM** Non renewable primary energy resources used as materials; **TNRPE** Total use of virgin, non-renewable resources with energy content; **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 | A2 | A3 | A4 | A5 | C1 | C2 |
|-----------|------|-----------|-----------|-----------|-----------|----|----|----|
| HW | kg | 3,29E-003 | 0,00E+000 | 2,22E-002 | 0,00E+000 | | | |
| NHW | kg | 1,66E+001 | 8,31E-003 | 2,20E+000 | 6,93E-003 | | | |
| RW | kg | 0,00E+000 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |

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

End of life - Output flow

| Parameter | Unit | A1 | A2 | A3 | A4 | A5 | C1 | C2 |
|-----------|------|-----------|-----------|-----------|-----------|----|----|----|
| CR | kg | 0,00E+000 | 0,00E+000 | 2,00E-003 | 0,00E+000 | | | |
| MR | kg | 6,82E-002 | 0,00E+000 | 4,22E-001 | 0,00E+000 | | | |
| MER | kg | 0,00E+000 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |
| EEE | MJ | 0,00E+000 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |
| ETE | MJ | 0,00E+000 | 0,00E+000 | 0,00E+000 | 0,00E+000 | | | |

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

Additional Norwegian requirements

Electricity

The following data from ecoinvent v3 (June 2012) for Norwegian production mix included import, low voltage is used; Energy/Electricity country mix/Low voltage/Market: Electricity, low voltage {NO}| market for | Alloc Def, U. Production of transmission lines, in addition to direct emissions and loss in grid are included. Characterisation factors stated in EN 15804:2012+A1:2013 are used. This gives following greenhouse gas emissions: 24 g CO₂-eqv/kWh

Hazardous substances

None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern (checked 10.10.2014) substances on the Norwegian Priority list (checked 10.10.2014) and substances that lead to the product being classified as hazardous waste. The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations

Indoor air

The product meets the requirements for low pollutant (M1) by EN15251:2007 Appendix E. The product has no impact on the indoor environment.

Bibliography




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

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

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

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

www.bau-umwelt.com: Requirements on the EPD for Light weight concrete. Vold, M and Edvardsen, T, 2013: Weber EPD Generator Background information, Østfoldforskning AS, Fredrikstad, Norge, Nov 2013

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