

Constructional data

| Name | Value | Unit |
|--|-------------|-------------------|
| Compressive strength | 2.9 - 8.7 | N/mm ² |
| Gross density | 460 - 760 | kg/m ³ |
| Thermal conductivity | 0.09 - 0.19 | W/(mK) |
| Water vapour diffusion resistance factor acc. to /EN1745/ | 5/10 | - |
| Shrinkage - Nominal Drying Shrinkage Value /BS EN 680/ Conventional Reference Value) | 0.4 | mm/m |
| Reaction to fire | A1 | Euro class |
| Equilibrium moisture content | 6 | % |
| Vapour resistivity | 60 | MNs/g |
| Specific heat capacity | 1.05 | kJ/kgK |

The information contained within the Constructional Data table is based on APA Technical Committee agreed Performance data of the product in accordance with the Declaration of Performance with respect to its Essential Characteristics according to EN 771-4:2011+A1:2015/ Specification for masonry units. Autoclaved aerated concrete masonry units.

Base materials / Ancillary materials

The concrete mix proportions for this EPD are as follows:

PFA 61% other aggregates 14% cement 14% Quicklime 8%; water 3%.

Note - these are averaged figures and not all blocks covered by this EPD will follow this mix.

No /REACH/ substances of very high concern are included.

Reference service life

Autoclaved aerated concrete (Aircrete) is a durable material. Walls constructed from the products will have durability equivalent to walls of traditional masonry and will fulfil their intended function for the life of the building in which they have been installed. This statement of durability is the opinion of the British Board of Agrément (BBA). With reference to masonry products declared under the same IBU scheme the reference service life (RSL) is 150 years.

LCA: Calculation rules

Declared Unit

The declared unit is 1 m³ of generic precast aerated concrete blocks (460-760 kg/m³). Concrete blocks are manufactured to a range of dimensions, 440 x 215 x 100 mm taken as the dimensions for this EPD, although this EPD can apply to other block formats which commonly exist. Information on density and other physical characteristics are shown in the table below.

Declared unit

| Name | Value | Unit |
|---------------|-------|-------------------|
| Declared unit | 1 | m ³ |
| Gross density | 600 | kg/m ³ |
| Declared unit | 0.6 | t |
| Grammage | 60 | Kg/m ² |

System boundary

Type of EPD: Cradle to Gate with all options declared. The modules considered in the Life Cycle Assessment are modules A1-C4 inclusive.

Packaging

The amount and type of packaging used on autoclaved aerated concrete blocks will vary dependent on specific requirements. In a proportion of cases product will need no packaging other than banding and pallets for transportation. In other circumstances, the product will be stacked, banded, shrink-wrapped and placed on pallets for transportation.

Cut-off criteria

/EN 15804/ requires that where there are data gaps or insufficient input data for a unit process the cut-off criteria shall be 1% of renewable and non-renewable primary energy usage and 1% of the total mass of this unit process. The total neglected flows from a product stage must be no more than 5% of product inputs by mass or 5% of primary energy contribution.

In this assessment, all information gathered from data collection for the production of precast concrete has been modelled, i.e. all raw materials used, the electrical energy and other fuels used, use of ancillary materials and all direct production waste. Transport data on input and output flows are also considered. Scenarios have been developed to account for downstream processes such as fabrication, installation, demolition and waste treatment. No cut-offs have been made. Hence this study complies with the cut-off criteria defined in the PCR.

Background data

Background data is based primarily on a generic dataset /GaBi ts 2014 software database/ integrated into the IBU verified bespoke British Precast Envision EPD tool. The background data also includes UK specific cement data supplied by members of the Mineral Products Association (MPA). (Tool Verified 07/03/17).

Allocation

All allocation is performed according to the /PCR/. As no co-products are produced, the flow of materials and energy and also the associated release of substances and energy into the environment are related exclusively to the concrete produced.

Product information

Product description

The main product components are shown in the table below.

| Material | Weight-% of declared product | |
|-----------------|------------------------------|---------|
| | AAC 375 | AAC 535 |
| Anhydrite | 0% | 1% |
| Aluminium paste | 0,1% | 0,06% |
| Cement | 19% | 16% |
| Gypsum | 9% | 1% |
| Lime | 5% | 9% |
| Mould oil | 0,1% | 0,05% |
| Plasticizer | 0,02% | 0% |
| Recycled AAC | 0% | 1% |
| Sand | 35% | 40% |
| Water | 32% | 31% |
| Sum | 100% | 100% |

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

| Material | Weight-% of packaging | |
|--------------------|-----------------------|---------|
| | AAC 375 | AAC 535 |
| Foil, Shrink hood | 0% | 3.2% |
| Foil, Stretch hood | 5.4% | 2.4% |
| Wooden pallet | 94.6% | 94.4% |

Representativity

This declaration, including data collection and the modelled foreground system including results, represents the production of the autoclaved aerated concrete products on the production site located in Germany. Product specific data are based on average values collected in the year 2021. Background data are based on the GaBi LCA software and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.



Configuration with profiled surface

Hazardous substances

The autoclaved aerated concrete products from H+H does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation".

(<http://echa.europa.eu/candidate-list-table>)

Essential characteristics

The autoclaved aerated concrete blocks are covered by harmonised technical specification in EN 771-4 and for the EPD it follows EN 15804. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:

<https://www.hplush.dk>

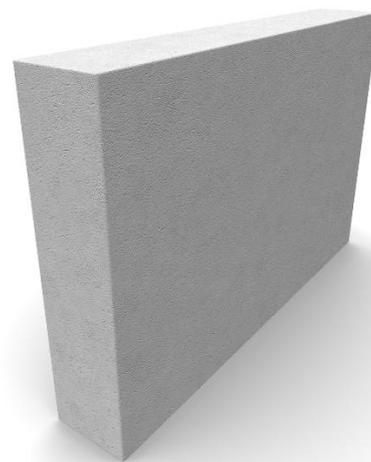
<https://www.hplush.de>

Reference Service Life (RSL)

The reference service life (RSL) of the product is set to 80 years.

Picture of product(s)

Below is shown photos of autoclaved aerated concrete block.



Configuration with plain surface

Application

Unreinforced AAC building blocks are used for bricklaid, monolithic, load bearing and non-loadbearing infill walls. As intended, direct contact with ground water is avoided thanks to the constructional features.



Technical Specifications

| Name | Value | Unit |
|--|--------------|-------------------|
| Compressive strength \geq | 1.5 - 5 | N/mm ² |
| Gross density | 300 - 600 | kg/m ³ |
| Tensile strength | 0.24 - 1 | N/mm ² |
| Modulus of elasticity | 750 - 2250 | N/mm ² |
| Thermal conductivity | 0.085 - 0.16 | W/(mK) |
| Water vapour diffusion resistance factor acc. to EN 4108-4 | 0.5 | - |
| Moisture content at 23 °C, 80% | 4 | M.-% |

Base Materials

| Name | Value (%) |
|-----------------------|-----------|
| Quartzite | 40-55 |
| Portland cement | 25-35 |
| Gypsum | 3-10 |
| Quick Lime | 3-10 |
| Recycled Ytong Slurry | 5-15 |
| Aluminium powder | 0-1 |

*In addition, 40-60% water is used (in relation to the solid substances).

Reference Service Life

AAC does not change once it leaves the autoclaves. When used as intended, it is boundlessly stable. It was assumed that the average life expectancy of AAC is 100 years.