ENVIROMENTAL PRODUCT DECLARATION

ROCKWOOL® Stone Wool Thermal Insulation for buildings

EPD according to EN 15804 and ISO 14025 and 3rd party verified ROCKWOOL Group EPD rules and LCA model

Manufacturer: ROCKWOOL Peninsular S.A.U.

Owner of the declaration:
Rockwool Peninsular S.A.U.
Poligono Industrial de Caparroso
Carretera Zaragoza km 53.5 N-121
31380 Caparroso (Navarra)
Spain
www.rockwool.es

Contact person:
Anna Manyes (anna.manyes@rockwool.com)

Date of issue: November 2015
Valid until: November 2020

Life Cycle Assessment study

This environmental product declaration is based on a Life Cycle Assessment (LCA) background study according to EN15804:2012 carried out by:
Clarisse Vecchiato (clarisse.vecchiato@rockwool.com)
ROCKWOOL® FRANCE S.A.S.
ZI du puits du Manoir.
63700 St Eloy les mines,
France

Verification:
CEN standard EN 15804 serves as the core PCR
Independent verification of the "Rules for LCAs / EPDs for ROCKWOOL products" and the underlying LCA model described in the rules, in accordance with ISO 14025: 2010, EN 15804: 2012+A1:2013, with prEN 16783 serving as the PCR: External
Independent verification of the calculation and this declaration, in accordance with EN ISO 14025:2010: Internal

Third-party verifier:
Jane Anderson [Principal Consultant at thinkstep Ltd].

28 July 2015

Remark: this EPD is issued by ROCKWOOL International and has been internally reviewed by senior experts. The externally reviewed rules and model have been applied.

Environmental Product Declarations (EPDs) may not be comparable if they do not comply with the EN15804:2012 Clause 5.3
Product

Declared unit

1 m² ROCKWOOL stone wool thermal insulation product with a thermal resistance of Rₜₐₚ=1 m² K/W.

Intended application of the Environmental Product Declaration

This EPD is intended to be available to Rockwool Peninsular S.A.U. customers. This EPD can also be used in other markets that receive products from the factory in Caparroso. Such markets include but are not limited to: France, Portugal, and Italy.

Product description

Stone wool is a widely used building material and is mainly used for thermal insulation. ROCKWOOL® insulation products contribute to energy-efficient and fire-safe buildings with good acoustics and a comfortable indoor climate.

Stone wool is available with different densities and thermal conductivities and is applicable in all areas of the building, ranging from roofs, loft, walls, floors, foundation, to fire-prevention solutions, HVAC systems and sub-sea pipelines. The products considered in this EPD are boards or rolls used for general building insulation, ETICS and flat roofs. The specific product referred to in the declared unit is 37 mm thick and has a density of 30 kg/m³.

The packaging is included in the assessment. Any facings that may be applied to the products, such as glass fleece, aluminium foil or other laminations, are excluded in this EPD. If relevant for a product, their environmental parameter values should be added.

Product specification

ROCKWOOL® stone wool insulation is a firesafe¹ material for insulation against heat, cold, fire, vibrations and noise. It is traditionally made from volcanic rock (typically basalt or dolomite), an increasing proportion of recycled material, and a few percent resin binder (typically 2–3% w/w for external wall and pitched roof products and slightly more for ETICS and flat roof products). The product is wrapped with PE-foil and placed on wooden - or stone wool pallets for further distribution.

The binder is a water-based dextrose resin (without formaldehyde) which is polymerized into solid resin during production of the final stone wool product.

Reference service life

As the in-use stage of the building (B2 Maintenance, B3 Repair, B4 Replacement, B5 Refurbishment, B6 Operational energy use) is not considered in this EPD, reference service lives are not included.

However, ROCKWOOL products are extremely durable and usually provide effective performance for the lifetime of the building or host structure. A reference service life of 50 years has been agreed as the basis of EN 13162 (the product standard for stone wool thermal insulation) but this could be adapted if a longer service life is assumed for a particular building element. In some calculations, a service life equivalent to the lifetime of the building element can be applied.

Technical information


Specific characteristics and additional functionalities shall be taken into account when applying the EPDs in the building context:

- Most ROCKWOOL® stone wool material is classified as non-combustible (Euroclass A1), the best reaction to fire class according to EN13501-1.
- ROCKWOOL® stone wool products are often applied

¹ At tested according to EN 13501-1 (Euroclasses)
because of their acoustic properties. For example, a well-constructed wall using ROCKWOOL stone wool insulation can help comply with any acoustic regulation requirements in average building typologies. Specific acoustic properties can be retrieved through the technical consultancy support.

ROCKWOOL® stone wool products are durable without any ageing of the thermal performance. They are dimensional stable and both water repellent and moisture resistant. Moisture and nutrient are necessary conditions for mould growth. Since more than 95% of the mass of mineral wool products is inorganic, there is little nutrient source to allow fungi/mould growth [ref. Eurima-health-safety].

More specific product information can be found on www.rockwool.es or through the local ROCKWOOL® sales organizations.

Guidance on safe and effective installation is also provided through the local organization and at the end of this EPD.

ROCKWOOL® stone wool is approximately 97% recyclable. For waste ROCKWOOL® material that may be generated during installation or at end of life, the local organization is happy to discuss the individual requirements of contractors and users considering returning these materials to ROCKWOOL factories for recycling.

ROCKWOOL® stone wool waste is classified as nonhazardous. ROCKWOOL® insulation waste is covered by the non-hazardous entry (17 06 04) in the List of Wastes of the European Waste Catalogue. Leaching tests of mineral wool waste by Eurima demonstrate that they comply with the criteria for acceptance of waste at a landfill for non-hazardous waste and with the criteria for acceptance of waste at a landfill for inorganic waste with low organic content [ref. Hjelmer 2004, Abdelghafour 2004].

Technical data

The environmental impacts and indicators given in the section “Life Cycle Assessment: Results” of this EPD are for 1m² of product, providing a thermal resistance of $R_{o}=1$ m² K/W (the declared unit). The reference product is 37 mm thick ROCKWOOL® stone wool with a density of 30 kg/m³. For other specific ROCKWOOL® products, the environmental impacts and indicators are determined by applying the appropriate scaling factors and products R₀-value. [Applying simply refers to multiplying the environmental impacts with the scaling factor in the table below and the R₀-value as indicated on the sold product. The R₀-values used for scaling give a very good indication of the amount of materials needed to achieve the desired insulation effect of other product types, but it is not an exact measure.

Product specification

Composition of delivered product

<table>
<thead>
<tr>
<th>Material</th>
<th>% of total weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-scarce natural stone and secondary raw materials</td>
<td>89%</td>
</tr>
<tr>
<td>Binder (resin)</td>
<td>3%</td>
</tr>
<tr>
<td>Oils</td>
<td>&lt;0.2%</td>
</tr>
<tr>
<td>Packaging</td>
<td>8%</td>
</tr>
</tbody>
</table>
## Scaling factors for other products

<table>
<thead>
<tr>
<th>Products</th>
<th>Scaling Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fieltro 128 (^1&amp;^3)</td>
<td>0.8</td>
</tr>
<tr>
<td>Soda</td>
<td>1.0</td>
</tr>
<tr>
<td>Confortpan 208 ROXUL</td>
<td>1.0</td>
</tr>
<tr>
<td>Confortpan 208.116 (^1)</td>
<td>1.0</td>
</tr>
<tr>
<td>Fixrock Eco</td>
<td>1.0</td>
</tr>
<tr>
<td>Crossrock 209</td>
<td>1.0</td>
</tr>
<tr>
<td>Rockmur-E- ALU 201.216</td>
<td>1.0</td>
</tr>
<tr>
<td>Rockmur-E- Kraft 201.116</td>
<td>1.0</td>
</tr>
<tr>
<td>Fixrock Optimo</td>
<td>1.3</td>
</tr>
<tr>
<td>Rockband</td>
<td>1.3</td>
</tr>
<tr>
<td>Rockband VN (^1)</td>
<td>1.3</td>
</tr>
<tr>
<td>Rockcalm-E- 211</td>
<td>1.3</td>
</tr>
<tr>
<td>Panel 213</td>
<td>1.3</td>
</tr>
<tr>
<td>Rockplus-E 220</td>
<td>1.6</td>
</tr>
<tr>
<td>Ventirock Duo (^2)</td>
<td>1.6</td>
</tr>
<tr>
<td>Panel 211.652 (^1&amp;^3)</td>
<td>1.6</td>
</tr>
<tr>
<td>Panel 221.652 (^1&amp;^3)</td>
<td>2.0</td>
</tr>
<tr>
<td>Manta 129 (^1&amp;^3)</td>
<td>2.1</td>
</tr>
<tr>
<td>Alpharock-E 225</td>
<td>2.2</td>
</tr>
<tr>
<td>Fixrock Plus</td>
<td>2.2</td>
</tr>
<tr>
<td>Panel 231</td>
<td>2.2</td>
</tr>
<tr>
<td>Labelrock -30mm (^1)</td>
<td>2.5</td>
</tr>
<tr>
<td>Panel 403</td>
<td>2.8</td>
</tr>
<tr>
<td>Firerock 910.219 (^1)</td>
<td>3.1</td>
</tr>
<tr>
<td>Labelrock -40 to 120mm (^1&amp;^2)</td>
<td>3.2</td>
</tr>
<tr>
<td>Panel 233</td>
<td>3.2</td>
</tr>
<tr>
<td>Rocksol-E 501</td>
<td>3.4</td>
</tr>
<tr>
<td>Rockciel-E 444 (^2)</td>
<td>3.5</td>
</tr>
<tr>
<td>Panel 750</td>
<td>3.9</td>
</tr>
<tr>
<td>Coquilla 880 (^3)</td>
<td>4.1</td>
</tr>
<tr>
<td>Rockwood Abeto Natural (^1)</td>
<td>4.2</td>
</tr>
<tr>
<td>Rockwood OSB (^1)</td>
<td>4.2</td>
</tr>
<tr>
<td>Rockwood Placa de Yeso Laminado (^1)</td>
<td>4.2</td>
</tr>
<tr>
<td>Rockfeu-E 520</td>
<td>4.3</td>
</tr>
<tr>
<td>Durock 386 - Bigpanel (^2)</td>
<td>5.2</td>
</tr>
<tr>
<td>Durock 387 (^1&amp;^2)</td>
<td>5.2</td>
</tr>
<tr>
<td>Monorock 365</td>
<td>5.2</td>
</tr>
<tr>
<td>Monorock 366 (^1)</td>
<td>5.2</td>
</tr>
<tr>
<td>Panel 755</td>
<td>5.2</td>
</tr>
<tr>
<td>Rocksol-E 2-525</td>
<td>5.7</td>
</tr>
<tr>
<td>HardRock 391 - Bigpanel (^2)</td>
<td>5.9</td>
</tr>
<tr>
<td>Hardrock 393 (^1&amp;^2)</td>
<td>5.9</td>
</tr>
<tr>
<td>Panel Claraboya 388 (^1)</td>
<td>6.0</td>
</tr>
<tr>
<td>Rocksupport 360 - BigPanel</td>
<td>6.3</td>
</tr>
<tr>
<td>Rocksupport 369 (^1)</td>
<td>6.3</td>
</tr>
</tbody>
</table>

1 Products with extra features such as facings out of wire netting or aluminum foil. These extra features are not included in the EPD-calculations.
2 Double density products were the average density is calculated while taking the different thicknesses of the layers into account.
3 HVAC products for which the lambda value varies according to the declared work temperatures. For Fieltro 128 and Manta 129 the assumed lambda correlates with the work temperature 10°C and for the other three it is 50°C. Please see the product specific websites for details.
Life Cycle Assessment: Calculation rules

Flow diagram system boundaries

EPD type
Cradle-to-grave. Included are all relevant life cycle stages.
ROCKWOOL stone wool insulation products do not require maintenance (B2), repair (B3), replacement (B4), or refurbishment (B5) during use in standard conditions. They do not use energy (B6) or water (B7) during use of the building.
Description of production process

Stone wool is produced as follows:

Raw materials, mainly basaltic rocks and secondary raw materials and coke are weighed and led into the cupola oven where they are melted. The melted mass from the cupola then goes through a spinning machine in order to create fibres. At this stage also, binder is applied and fibres are formed. This moist pack of stone wool (uncured binder) is led into the curing oven where the binder is polymerized. Once removed from the oven, the products are cooled down and go through a series of confectioning stages in order to give each product its final dimensions before packaging.

For cleaning the air of the melting process and the curing oven several after-burners, installations and filters (made of stone wool) are used. Off-cuts and stone wool air filters are all recycled back into the production.

The collected data reflects the actual stone wool produced by the ROCKWOOL® plant in Caparroso. Throughout its factories, ROCKWOOL® stone wool products are manufactured with the same underlying technology and pass through the same production processes in different production plants.

Cut-off criteria

Included are all the basic materials used as per formulation, utilized thermal energy, internal fuel consumption and electric power consumption, all packaging materials (plastic wrapping, pallets, labels), any direct production waste, and all emission measurements available. Machines and facilities required during production are treated as capital goods and their production is therefore not included in the LCA.

Allocation

Besides stone wool, pig iron is produced during the melting process of raw materials and sold. The iron is considered to be a co-product. Iron as a co-product is allocated by economic value. This is in line with EN15804.

Data quality

The quality of the data of this specific EPD is assessed as good and appropriate by internal experts. The data gathering approach for all EPDs is assessed as good and appropriate by the external verifier. Data was collected consistently and based on the financial year 2014.

Adjusted secondary LCIs are taken from the DEAM, Plastics Europe and ecoinvent databases.
Life Cycle Assessment: Results

Limitations
Conservative choices are made in the LCA as described in the ROCKWOOL® Group LCA rules. Therefore, the results can be considered to be conservative and worst case.

Description of the system boundaries (x=included, MNA = Module not assessed)

<table>
<thead>
<tr>
<th>Product stage</th>
<th>Construction stage</th>
<th>Use stage</th>
<th>End-of-life stage</th>
<th>Benefits and loads beyond the system boundaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials</td>
<td>Transport</td>
<td>Manufacturing</td>
<td>Transport</td>
<td>Assembly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>A4</td>
<td>A5</td>
</tr>
</tbody>
</table>

ROCKWOOL® stone wool thermal insulation product for buildings

1 m² stone wool thermal insulation product with a thermal resistance of RD=1 m² K/W (thickness of 37 mm; density of 30 kg/m³)
## Environmental impact

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Production stage</th>
<th>Construction stage</th>
<th>Use stage</th>
<th>End-of-life stage</th>
<th>D</th>
<th>Benefits and loads beyond the boundaries of the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4 Transport</td>
<td>1.2E+00</td>
<td>1.5E-01</td>
<td>3.1E-02</td>
<td>0</td>
<td>MNA</td>
<td>MNA</td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5 Installation</td>
<td>1.5E-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5 Installation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6 Use</td>
<td>3.1E-02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A7 Maintenance</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A8 Repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A9 Replacement</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A10 Energy use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A11 Water use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A12 Refurbishment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A13 Operational energy use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A14 Operational water use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A15 Dismantling/demolition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A16 Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A17 Waste treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A18 Disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Global warming potential (GWP)**

The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.

- **kg CO2 eqv**
  - **1.2E+00**
  - **1.5E-01**
  - **3.1E-02**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **2.1E-03**
  - **MNA**
  - **7.3E-03**
  - **-4.0E-02**

**Ozone depletion potential (ODP)**

Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.

- **kg CFC11 eqv**
  - **4.9E-08**
  - **1.1E-07**
  - **3.3E-09**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **1.5E-09**
  - **MNA**
  - **2.2E-09**
  - **-3.1E-10**

**Acidification potential (AP)**

Acid depositions have negative impacts on natural ecosystems and the man-made environment incl, buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.

- **kg SO2 eqv**
  - **8.8E-03**
  - **9.3E-04**
  - **2.1E-04**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **1.3E-05**
  - **MNA**
  - **4.3E-05**
  - **-1.8E-04**

**Eutrophication potential (EP)**

Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.

- **kg PO43- eqv**
  - **4.2E-04**
  - **2.3E-04**
  - **5.0E-05**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **3.1E-06**
  - **MNA**
  - **1.1E-05**
  - **-1.3E-05**

**Photochemical ozone creation (POCP)**

Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.

- **kg Ethene eqv**
  - **6.2E-04**
  - **6.8E-05**
  - **1.8E-05**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **9.2E-07**
  - **MNA**
  - **1.8E-05**
  - **-8.8E-05**

**Abiotic depletion potential for non-fossil resources (ADP-elements)**

Consumption of non-renewable resources, there by lowering their availability for future generations.

- **kg Sb eqv**
  - **4.7E-08**
  - **1.6E-10**
  - **1.6E-09**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **1.9E-12**
  - **MNA**
  - **5.6E-09**
  - **-5.3E-09**

**Abiotic depletion potential for fossil resources (ADP-fossils)**

- **MJ**
  - **20**
  - **1.9**
  - **0.5**
  - **0**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **MNA**
  - **2.7E-02**
  - **MNA**
  - **1.8E-01**
  - **-1.3E-00**
### Resource use

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Production stage</th>
<th>Construction stage</th>
<th>Use stage</th>
<th>End-of-life stage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A1–A3</td>
<td>A4 Transport</td>
<td>A5 Installation</td>
<td>B1 Use</td>
</tr>
<tr>
<td>Use of renewable primary energy excluding renewable primary energy resources used as raw materials - MJ/FU</td>
<td>1.3</td>
<td>1.3E-03</td>
<td>2.6E-02</td>
<td>0</td>
</tr>
<tr>
<td>Use of renewable primary energy resources used as raw materials - MJ/FU</td>
<td>--*</td>
<td>--*</td>
<td>--*</td>
<td>0</td>
</tr>
<tr>
<td>Total use of renewable primary energy resources - MJ/FU</td>
<td>1.3</td>
<td>1.3E-03</td>
<td>2.6E-02</td>
<td>0</td>
</tr>
<tr>
<td>Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - MJ/FU</td>
<td>11.2</td>
<td>2.0</td>
<td>2.6E-01</td>
<td>0</td>
</tr>
<tr>
<td>Use of non-renewable primary energy resources used as raw materials - MJ/FU</td>
<td>4.7</td>
<td>6.4E-06</td>
<td>9.4E-02</td>
<td>0</td>
</tr>
<tr>
<td>Total use of non-renewable primary energy resources - MJ/FU</td>
<td>15.9</td>
<td>2.0</td>
<td>3.6E-01</td>
<td>0</td>
</tr>
<tr>
<td>Use of secondary materials - kg/FU</td>
<td>5.5E-01</td>
<td>0</td>
<td>1.1E-02</td>
<td>0</td>
</tr>
<tr>
<td>Use of renewable secondary fuels - MJ/FU</td>
<td>0**</td>
<td>0**</td>
<td>0**</td>
<td>0</td>
</tr>
<tr>
<td>Use of non-renewable secondary fuels - MJ/FU</td>
<td>0**</td>
<td>0**</td>
<td>0**</td>
<td>0</td>
</tr>
<tr>
<td>Net use of fresh water - m3/FU</td>
<td>4.0E-03</td>
<td>1.9E-04</td>
<td>8.4E-05</td>
<td>0</td>
</tr>
</tbody>
</table>

* The heating value for stone fibers is "0" and therefore this cell intentionally left blank. Packaging material, facings and binder is not included here. The primary energy is calculated as product-related indicators. But within the modules A1–A3 the production of packaging materials is included.

** There are no renewable and no non-renewable secondary fuels used in A3. The minor use of secondary fuels as part of the background datasets is not accounted for.
## Waste categories

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Production stage</th>
<th>Construction stage</th>
<th>Use stage</th>
<th>End-of-life stage</th>
<th>D Benefits and loads beyond the boundaries of the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous waste disposed - kg</td>
<td>2.4E-02</td>
<td>6.0E-05</td>
<td>4.8E-04</td>
<td>0</td>
<td>MNA</td>
</tr>
<tr>
<td>Non-hazardous waste disposed - kg</td>
<td>1.7E-01</td>
<td>2.6E-04</td>
<td>2.3E-02</td>
<td>0</td>
<td>MNA</td>
</tr>
<tr>
<td>Radioactive waste disposed - kg</td>
<td>n/a*</td>
<td>3.1E-05</td>
<td>6.2E-07</td>
<td>0</td>
<td>MNA</td>
</tr>
</tbody>
</table>

* There is never radioactive waste from a ROCKWOOL plant (A3), but potentially in its upstream chain (A1 & A2), which is not taken into account here.

## Output flows

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Production stage</th>
<th>Construction stage</th>
<th>Use stage</th>
<th>End-of-life stage</th>
<th>D Benefits and loads beyond the boundaries of the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component for re-use - kg</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>0</td>
<td>MNA</td>
</tr>
<tr>
<td>Materials for recycling - kg</td>
<td>3.9E-04</td>
<td>n/a</td>
<td>2.2E-02</td>
<td>0</td>
<td>MNA</td>
</tr>
<tr>
<td>Materials for energy recovery - kg</td>
<td>1.6E-01</td>
<td>n/a</td>
<td>1.6E-02</td>
<td>0</td>
<td>MNA</td>
</tr>
<tr>
<td>Exported energy - MJ</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>0</td>
<td>MNA</td>
</tr>
</tbody>
</table>
Other Information

Dangerous substances

ROCKWOOL® stone wool does not contain substances from the Candidate List of Substances of Very High Concern.

Mineral wool fibres produced by ROCKWOOL® are classified as non-hazardous under REACH [Regulation (EC) No 1272/2008 of the European parliament and of the council of 16 December 2008 on classification, labelling and packaging of substances and mixtures]. The ROCKWOOL® fibres are registered with REACH under the following definition: “Man-made vitreous [silicate] fibres with random orientation with alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content greater than 18% by weight and fulfilling one of the Note Q conditions”.

ROCKWOOL® products produced in Europe fulfil the Note Q requirements [ref. Note Q]. This is certified by the independent certification body EUCEB. More information on EUCEB can be found at www.euceb.org

The International Agency for Research on Cancer (IARC), part of the World Health Organization, revised its classification of mineral wool fibres in October 2001, including them in Group 3 as an agent “not classifiable as to its carcinogenicity to humans”.

Indoor air

ROCKWOOL® stone wool products fulfil the national demands in the EU with regard to emission to indoor climate. ROCKWOOL® stone wool products have small impact on emission levels in buildings. Salthammer et al. 2010 notes that “the presence of mineral wool had no influence on the formaldehyde level in the house”.

Instruction for safe installation

Due to the well-known mechanical effect of coarse fibres, mineral wool products may cause temporary skin itching. Mineral wool fibres cannot cause a chemical or allergic reaction.

To diminish the mechanical effect of coarse fibres and avoid unnecessary exposure to mineral wool dust, information on good practice is available on the packaging of all mineral wool products with pictograms and/or written information (see pictograms on this page). Safe use instruction sheets are also available from www.rockwool.es.

Cover exposed skin. When working in unventilated area wear disposable face mask

Ventilate working area if possible

Rinse in cold water before washing

Waste should be disposed of according to local regulations

Clean area using vacuum equipment

Bibliography


EN 15804:2012 – Sustainability of construction works – Environmental product declaration – Core rules for the product category of construction products.


Hjelmer, Ole: Results of column leaching tests performed on 4 mineral wool products, DHI Water & Environment. Internal ROCKWOOL report [Ref. 5256], March 22, 2004.


ROCKWOOL® International A/S: Primary data for Caparroso production side, entered in verified parameter template for calculation in verified LCA model. [internal due to confidentiality], October, 2015.


ROCKWOOL® International A/S: Rules for calculating Life Cycle Assessments (LCAs) / Environmental Product Declarations (EPDs) for ROCKWOOL products. 3rd party verification by thinkstep UK, in July, 2015