

# Life Cycle Assessment: Results

The following supplementary LCA results are to be read alongside the complete ROCKWOOL® Environmental Product Declaration, attached.

**ROCKWOOL® stone wool product:** ROCKLAP H&V Pipe Section  
 The results are for: 1 linear metre of product, with a thickness of 25 mm.  
 Inner diameter of pipe section: 89 mm

## 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)

| Product stage |           |               | Construction installation stage |          | Use stage |             |        |             |               |                        |                       |                            | End-of-life stage |                  |          |   | Benefits and loads beyond the system boundaries<br>Reuse-<br>Recovery-<br>Recycling-<br>potential |
|---------------|-----------|---------------|---------------------------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-------------------|------------------|----------|---|---|
| Raw materials | Transport | Manufacturing | Transport                       | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport         | Waste processing | Disposal |   |   |
| A1            | A2        | A3            | A4                              | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2                | C3               | C4       | D |   |
| x             | x         | x             | x                               | x        | x         | MNA         | MNA    | MNA         | MNA           | MNA                    | MNA                   | x                          | x                 | x                | x        | x |   |

## Environmental impact

| Parameter  | Unit                                 | A1-3    | A4       | A5      | B1      | C2       | C4      | D        |
|--|--------------------------------------|---------|----------|---------|---------|----------|---------|----------|
| Global warming   | kg CO <sub>2</sub> eqv               | 1.4E+00 | 2.0E-01  | 2.1E-01 | 0       | 4.0E-03  | 1.7E-02 | -5.1E-02 |
| 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.  |                                      |         |          |         |         |          |         |          |
| Ozone depletion  | kg CFC11 eqv                         | 2.8E-09 | 3.4E-17  | 3.2E-10 | 0       | 6.6E-16  | 3.7E-14 | -2.9E-15 |
| 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. |                                      |         |          |         |         |          |         |          |
| Acidification  | kg SO <sub>2</sub> eqv               | 5.8E-03 | 1.6E-04  | 1.1E-04 | 0       | 5.3E-06  | 1.1E-04 | -1.7E-04 |
| 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.  |                                      |         |          |         |         |          |         |          |
| Eutrophication   | kg PO <sub>4</sub> <sup>3-</sup> eqv | 1.1E-03 | 3.3E-05  | 4.0E-05 | 0       | 1.3E-06  | 1.2E-05 | -2.4E-05 |
| Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.   |                                      |         |          |         |         |          |         |          |
| Photochemical ozone creation   | kg Ethene eqv                        | 3.3E-04 | -6.9E-07 | 1.1E-05 | 1.1E-10 | -9.2E-07 | 8.2E-06 | -1.9E-05 |
| 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.  |                                      |         |          |         |         |          |         |          |
| Depletion abiotic resources -elements  | kg Sb eqv                            | 1.0E-05 | 1.7E-08  | 4.2E-09 | 0       | 3.1E-10  | 6.3E-09 | -1.1E-08 |
| Depletion abiotic resources -- fuels   | MJ                                   | 1.7E+01 | 2.8E+00  | 3.7E-01 | 0       | 5.4E-02  | 2.3E-01 | -1.3E+00 |
| Consumption of non-renewable resources, thereby lowering their availability for future generations.  |                                      |         |          |         |         |          |         |          |

## Resource use

| Parameter  | Unit           | A1-3    | A4      | A5       | B1  | C2      | C4      | D        |
|--|----------------|---------|---------|----------|-----|---------|---------|----------|
| Use of renewable primary energy excluding renewable primary energy resources used as raw materials         | MJ             | 5.0E+00 | 1.6E+00 | 1.9E+00  | 0   | 3.2E-03 | 3.0E-02 | -7.0E-01 |
| Use of renewable primary energy resources used as raw materials  | MJ             | 2.3E+00 | 0.0E+00 | -1.8E+00 | 0   | 0.0E+00 | 0.0E+00 | 0.0E+00  |
| Total use of renewable primary energy resources  | MJ             | 7.4E+00 | 1.6E-01 | 1.4E-01  | 0   | 3.2E-03 | 3.0E-02 | -7.0E-01 |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | MJ             | 1.7E+01 | 2.8E+00 | 4.0E-01  | 0   | 5.4E-02 | 2.4E-01 | -1.3E+00 |
| Use of non-renewable primary energy resources used as raw materials  | MJ             | 2.7E+00 | 0.0E+00 | -6.9E-03 | 0   | 0.0E+00 | 0.0E+00 | 0.0E+00  |
| Total use of non-renewable primary energy resources  | MJ             | 2.0E+01 | 2.8E+00 | 3.9E-01  | 0   | 5.4E-02 | 2.4E-01 | -1.3E+00 |
| Use of secondary materials   | kg             | 0.0E+00 | n/a     | 0.0E+00  | n/a | n/a     | n/a     | n/a      |
| Use of renewable secondary fuels   | MJ             | --*     | --*     | --*      | --* | --*     | --*     | --*      |
| Use of non-renewable secondary fuels   | MJ             | --*     | --*     | --*      | --* | --*     | --*     | --*      |
| Net use of fresh water   | m <sup>3</sup> | 7.2E-03 | 1.8E-04 | 5.1E-04  | 0   | 3.0E-06 | 5.8E-05 | -4.6E-04 |

\* 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

| Parameter                    | Unit | A1-3    | A4      | A5      | B1 | C2      | C4      | D        |
|------------------------------|------|---------|---------|---------|----|---------|---------|----------|
| Hazardous waste disposed     | kg   | 3.0E-06 | 1.3E-07 | 8.6E-09 | 0  | 8.0E-09 | 1.3E-08 | -2.3E-09 |
| Non-hazardous waste disposed | kg   | 1.2E-01 | 4.3E-04 | 3.0E-02 | 0  | 8.9E-06 | 1.2E+00 | -3.4E-03 |
| Radioactive waste disposed*  | kg   | 5.2E-04 | 3.5E-06 | 8.7E-06 | 0  | 6.7E-08 | 2.8E-06 | -1.9E-06 |

\* There is never radioactive waste from a ROCKWOOL plant (A3), but there might be small amounts associated with the secondary LCI datasets used for the upstream chain (A1 & A2), which are taken into account here.

## Output flows

| Parameter                     | Unit | A1-3     | A4  | A5       | B1  | C2  | C4  | D   |
|-------------------------------|------|----------|-----|----------|-----|-----|-----|-----|
| Component for re-use          | kg   | 2.87E-07 | n/a | 8.55E-09 | n/a | n/a | n/a | n/a |
| Materials for recycling       | kg   | 5.06E-02 | n/a | n/a      | n/a | n/a | n/a | n/a |
| Materials for energy recovery | kg   | 5.80E-05 | n/a | n/a      | n/a | n/a | n/a | n/a |

Exported energy

MJ

n/a

n/a

n/a

n/a

n/a

n/a

n/a

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