STONE®
CYCLING

WasteBasedBrick®

SUSTAINABILITY

At StoneCycling, we work hard on the next generation of sustainable building materials. Here you can read about the sustainability and how to use them in your next project.

Upcycling waste, saving raw materials
The WasteBasedBrick® has been developed based on the philosophy of high-value reuse of waste and the reduction of the use of scarce raw materials. We think this is important because:

- Construction, demolition and industrial waste is the largest waste stream we know in the Netherlands (25 million tons annually) and Europe (850 million tons annually). This is about 30% to 35% of all the waste we generate together, every year.
- Raw materials are becoming increasingly scarce. Whether it is construction sand, gravel, high-quality clay or other mineral raw materials, the trend is the same: we are rapidly running out of stocks, excavations have major effects on ecosystems and demand is structurally greater than supply.

With the WasteBasedBrick® and the WasteBasedSlip® we now replace 60% of raw materials with waste materials. By doing this, we clean up part of the waste and we reduce the use of raw materials. Based on a standard waal-sized brick with a 10mm joint, this comes down to:

- 91 kg waste upcycling per m^2 for the WasteBasedBricks®
- 91 kg per m^2 saving of raw materials; we can leave these in the ground.

CO_2 emissions / *GWP* and MKI / *ECI*
In 2018, research agency SGS Intron commissioned to investigate the preliminary environmental impact of the WasteBasedBrick®. This study is an exploratory and internal LCA and shows that the WasteBasedBrick® scores significantly (+20%) better than a conventional brick, based on comparable production methods. The improvement is primarily in the reduced use of raw materials and the potential reduced energy input during the production process in fully scaled-up production. In 2022, StoneCycling will have performed a renewed LCA.

The *GWP* of the WasteBasedBrick® is 1.76E + 02 per ton kg compared to 2.50E + 02 for standard stone. This is measured on the basis of available Dutch data on the average environmental impact of masonry in general. This data is calculated based on a fully scaled-up production, which we are working towards. If we look at the Environmental Cost Indicator (ECI), the WasteBasedBrick® performs about 25% better than normal bricks, when production is fully scaled up.

In addition, and not calculated in the GWP or the ECI / MKI, we use 'forest compensated gas' for the WasteBasedBricks® firing process. This largely compensates for the WasteBasedBrick®'s CO_2 footprint, as the firing process requires the most energy. We emphatically consider this as an intermediate step. In the meantime, we are working hard together with the manufacturer on production processes and recipes with an alternative and CO_2 neutral energy mix.

EPD
StoneCycling has an EPD based on an LCA from 2018. StoneCycling is currently working on a renewed LCA and EPD because the European rules regarding the preparation of an LCA and EPD have changed and we would also like to see the EPD verified in accordance with ISO 14025.

BREEAM
BREEAM is an assessment method to determine the sustainability performance of buildings. The method includes four different quality marks, of which the BREEAM New Build and Renovation label is relevant when using the WasteBasedBrick®. This label is available for offices, retail, schools, industrial buildings, homes, meeting- and accommodation functions and data centres.

With BREEAM New Build and Renovation, buildings are assessed on nine different sustainability topics: management, health, energy, transport, water, materials, waste, land use and ecology and pollution.

Developers using BREEAM New Build and Renovation score higher if they use the WasteBasedBrick® in the following categories:

Materials

- Substantiated origin of materials
- Use of recycled material

The final score and the contribution of the WasteBasedBrick® to this depends on the overall design.

LEED
LEED is an evaluation and certification system that can be used to determine the sustainability performance of buildings. LEED stands for 'Leadership in Energy and Environmental Design'. LEED assesses on the following elements: sustainable site development, water conservation, energy efficiency, material selection, indoor environment quality, innovation and design and regional priority. With the WasteBasedBrick®, points are scored on the themes Materials and Resources.

We invite you to discover the possibilities of the WasteBasedBricks® and make sustainable building the standard together!