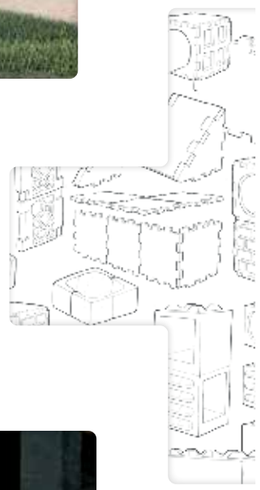
THE PLAYGROUND OF THE FUTURE

GEOPOLYMER CONCRETE AND BAMBOO MODULAR **PLAY** BLOCKS

Geobam Play Blocks

Children are increasingly staying indoors instead of playing outside. This is a problem as playing outside increases a childs mental and physical health: They develop their muscles, sense of balance and make new friends along the way. Boring playgrounds are partly responsible for the decline in children that engage in outside play. To encourage children to **play outside** again I developed the **GeoBam Play Blocks**, which is **modular playground equipment** that focusses on circularity and sustainability, thus contributing to a **greener** tomorrow!

The Blocks are made from **geopolymer concrete**. A durable material which requires only minimal maintenance and repairs. These material properties allow the Blocks to be **reused** for decades without the need for new blocks, thus increasing sustainability and circularity. Geopolymer concrete is made from **recycled** sand, gravel and stone with agricultural and industrial waste acting as the binder, creating a soft paste which can be moulded into the desired shape. The Blocks will be produced with a new innovation: **3D-printing**.



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Production method

3D concrete printing allows to create hollow objects, reducing the amount of material. Because of this the Play Blocks are as light as possible and can be moved and reconfigured to create new play configurations. The image at the top shows a **Geobam Play Block** being printed at Saint Gobain Weber. Each Block consists of **80 printlayers** with a witdh of 30 mm and a height of 6 mm. This was chosen as it is the smallest print layer Weber offers, which reduces the overall weight of the Block. The wall-thickness is 60 mm in most places as it consists of the external and internal wall which both have a width of 30 mm. This thick wall creates playground equipment which can not be damaged easily.

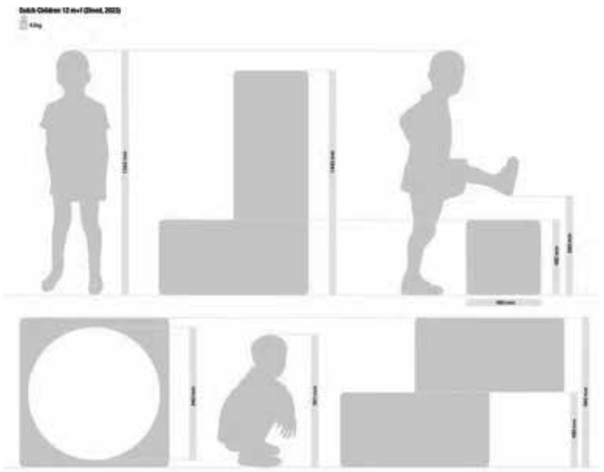
Play functions

The GeoBam Play Blocks focus on providing children with the play functions **climbing and swinging & swaying** (as can be seen at number 1,2,3 and 5 in the image above), with a focus on **risky play** where children are challenged. These play functions both encourage children to play outside more and increase their physical and mental wellbeing. Such conclusions were derived from **design sessions with children aged 6 to 11**. The resulting four playground themes were integrated into the final design of the modular geopolymer concrete playground equipment. These are 'Hideaway Hunt' which focusses on exploring, 'Acrobatic Adventure' which focusses on climbing and swinging & swaying, and 'Rapid Rush' which focusses on moving fast such as skating and freerunning. 'Treetop Retreat' provides children spaces in the playground where they can retreat to relax, play house or hide as this is also important in playgrounds.

Circularity and sustainability

The modular design of the Blocks and the use of geopolymer concrete allows this playground equipment to be **reused for decades**. The same couple of Blocks can be used in one playground as an obstacle course and reused in another as a skatepark. The Blocks are even designed in a way which allows them to be **repurposed**: Reuse with a different function. Blocks can be used as a planter, side of a sandbox or a bench. Lastly, as the Blocks are made from a **mono-material** this playground equipment can be **efficiently recycled** where part of the materials can be used in new products, maybe even new Geobam Play Blocks!

Technical specifications



The shape of the Blocks is derived from Tetris blocks i.e. T-shape, L-shape, square-shape and Z-shape. The measurements of the Blocks can be seen in the image above and are based on the measurements of 12-year-old children. The **weight of a Block is +-380 kg** which makes them sturdy to play on.