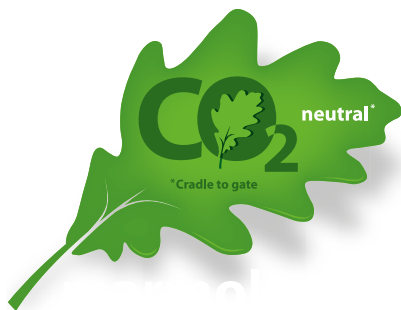


# MARMOLEUM CO<sub>2</sub> NEUTRAL

*Marmoleum  
is Forbo's  
established  
linoleum  
brand.*

## Marmoleum, the sustainable floor

Marmoleum is a cradle-to-gate CO<sub>2</sub> neutral product range that does not affect worldwide climate change. It combines ecological values with contemporary design and offers an important contribution to a sustainable world.



**marmoleum**<sup>®</sup>  
*live forward*

creating better environments

**forbo**  
FLOORING SYSTEMS

## Global warming through CO<sub>2</sub> emissions

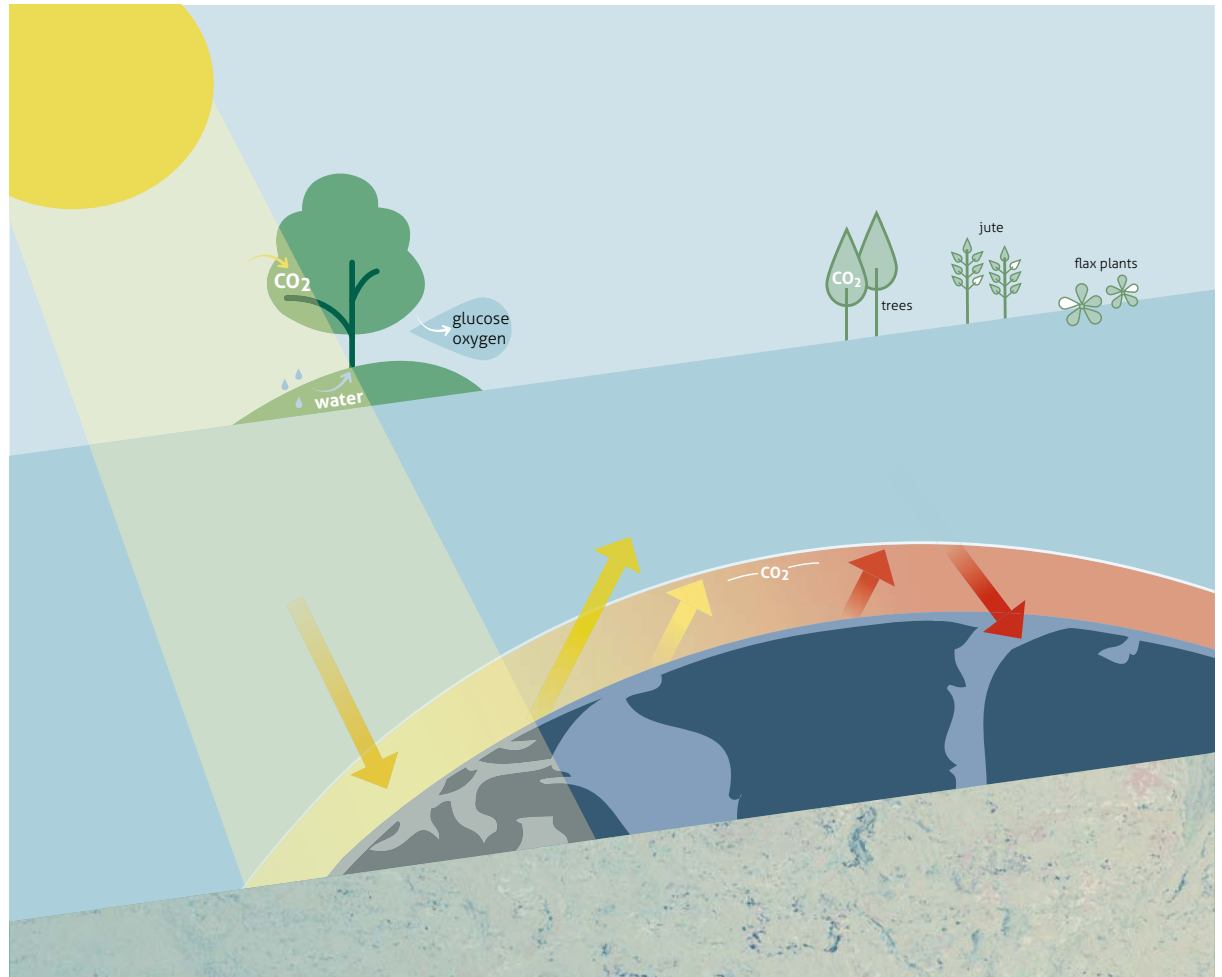
Global warming is the effect caused by an accumulation of so-called greenhouse gases such as carbon dioxide (CO<sub>2</sub>) and methane in the earth's atmosphere. These gases effectively form a blanket around the earth, trapping in heat. The burning of fossil fuels for energy has increased concentrations of greenhouse gases in the atmosphere, and is believed to be causing the surface of the planet to get hotter. The Paris Agreement is a framework for tackling climate change internationally. It sets the goal of 'keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius'.<sup>1</sup>

In order to achieve this, greenhouse gas emissions must be curbed by relying less on fossil fuels and transitioning over to green and renewable sources of energy.

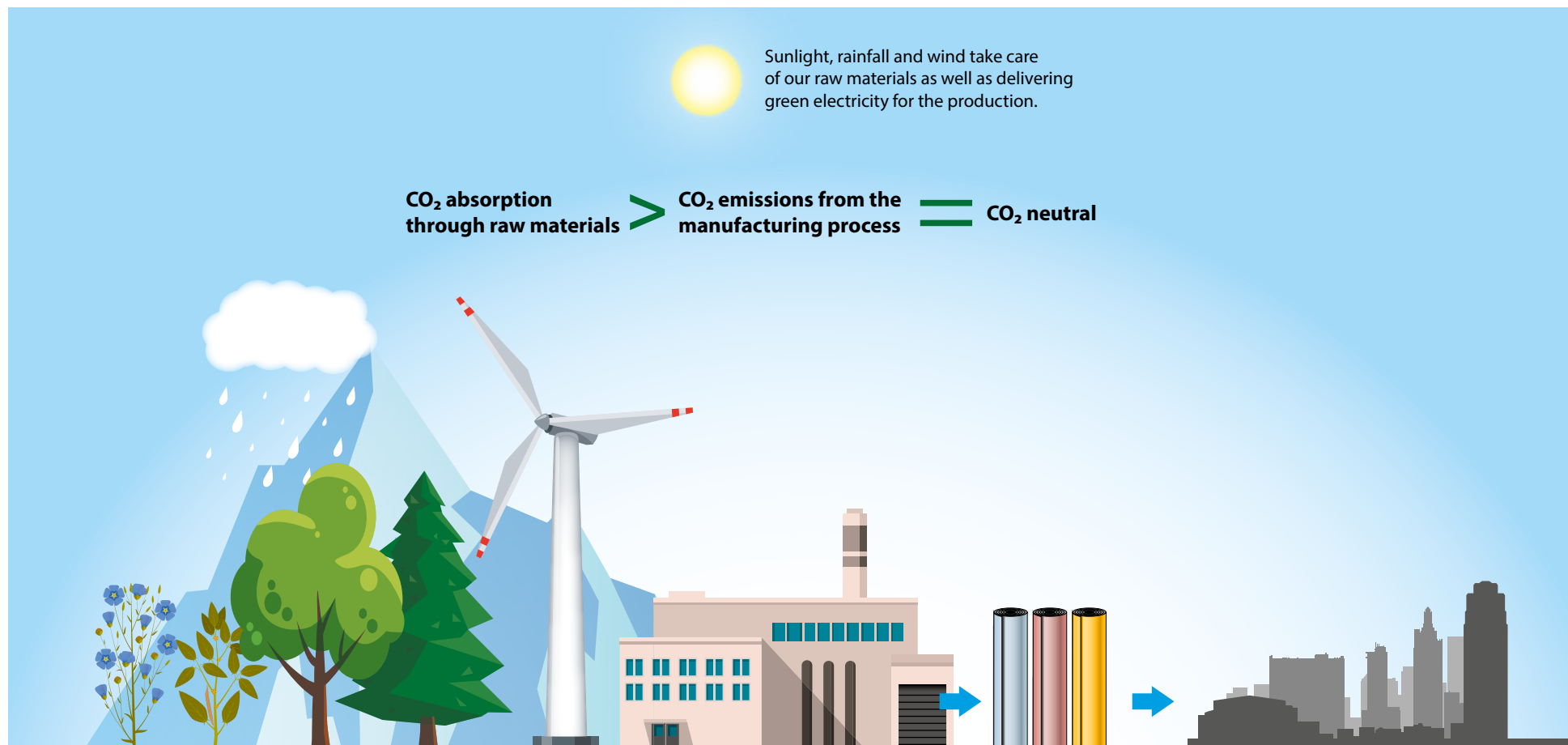
The building sector is a major contributor of carbon dioxide emissions, and the introduction of tougher building standards is therefore anticipated. As a CO<sub>2</sub> neutral product, Marmoleum can help create greener buildings and reduce overall CO<sub>2</sub> levels in the building sector.

<sup>1</sup> United Nations Climate Change, *The Paris Agreement*, <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

*Bamboo, cork and wooden floors are also CO<sub>2</sub> neutral. But these floors lack other benefits offered by resilient flooring, such as unlimited design possibilities, low maintenance, water-resistance and durability.*



*Marmoleum is cradle-to-gate CO<sub>2</sub> neutral,  
without offsetting  
Marmoleum is unique, as carbon dioxide  
emissions are neutralised by its raw materials*



The combined photosynthesis of all plants used in Marmoleum achieves a CO<sub>2</sub> uptake that is greater than the CO<sub>2</sub> emissions resulting from transportation and production. On average, 1m<sup>2</sup> of Marmoleum relieves the environment of 40g of carbon dioxide. As such, Marmoleum is CO<sub>2</sub> neutral, cradle to gate\*.

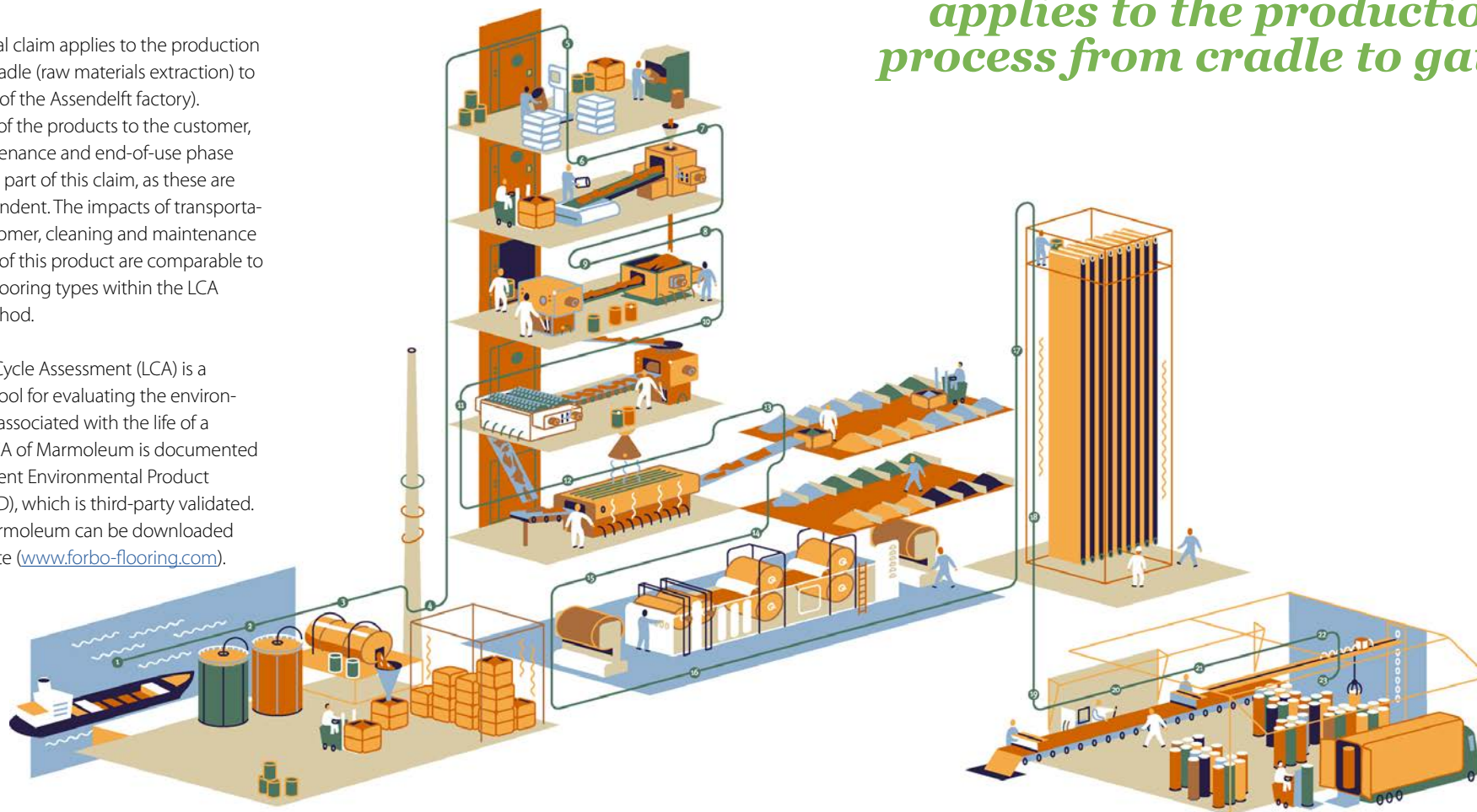


## Cradle to gate

\*Our CO<sub>2</sub> neutral claim applies to the production process from cradle (raw materials extraction) to gate (the gates of the Assendelft factory). Transportation of the products to the customer, cleaning, maintenance and end-of-use phase impacts are not part of this claim, as these are customer-dependent. The impacts of transportation to the customer, cleaning and maintenance and end of use of this product are comparable to other resilient flooring types within the LCA calculation method.

A product Life Cycle Assessment (LCA) is a measurement tool for evaluating the environmental impact associated with the life of a product. The LCA of Marmoleum is documented in an independent Environmental Product Declaration (EPD), which is third-party validated. The EPD for Marmoleum can be downloaded from our website ([www.forbo-flooring.com](http://www.forbo-flooring.com)).

*Our CO<sub>2</sub> neutral claim applies to the production process from cradle to gate*



## From natural materials to Marmoleum rolls

Marmoleum is made from natural, renewable and recycled materials. More specifically, 97%\* natural raw materials, of which 62%\* are renewable and 29%\* of those rapidly renewable. The linseed oil, gum rosin, wood flour and jute used in Marmoleum have a harvest cycle of under 10 years and can be defined as rapidly renewable.

*\*Typical value; may vary based on batch and/or design.*

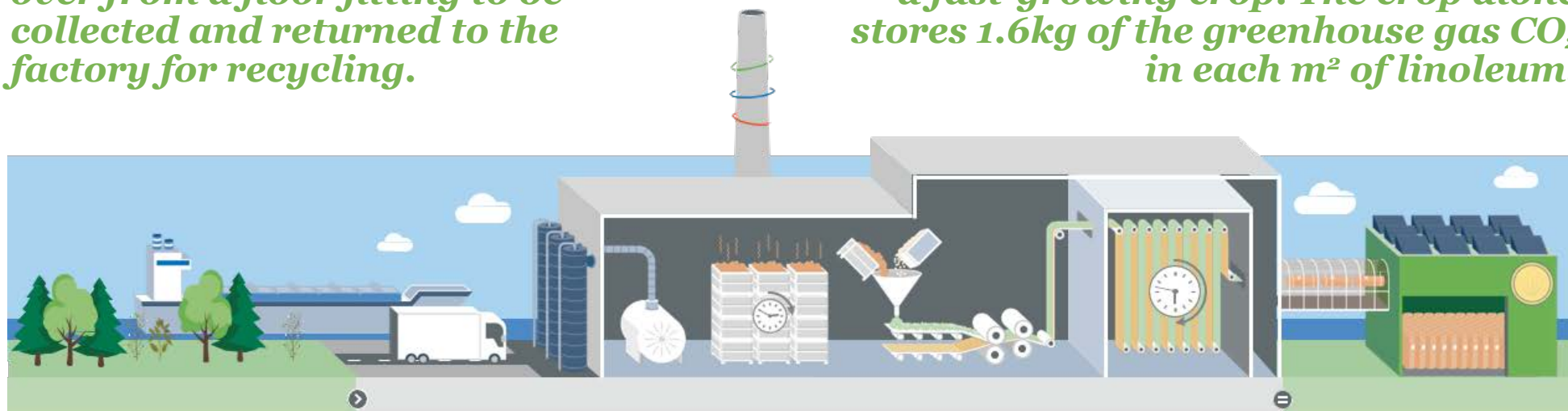
43% of the materials used are recycled products: tall oil, wood flour and re-used linoleum. Any Marmoleum that is left over or trimmed off during the manufacturing process is fed back into production. Like all other upcycling materials, technically, these remnants cannot be positively included in the environmental footprint of Marmoleum, but they do retain their natural character.


The basis for this sustainable floor covering is linseed oil, which is extracted from the seeds of the flax plant. This linseed oil is mixed and heated-up with tree rosin to produce a linoleum paste. To this, we add finely ground, upcycled wood flour from the branches, trunks and roots of trees harvested in the certified forestry industry. Finely ground limestone is added as a fourth element. A host of different colour pigments ensures great visual variety. The

linoleum paste is then calendered onto a 2m-wide jute mesh, which serves as a natural backing material for the Marmoleum. The floor covering is pressed into its final form over a long production line of castors and rollers, and held in drying rooms for around three weeks. Once the linoleum is dry enough, it is trimmed to size and packaged, before being sent to the fully automated warehouse.


***The Dutch sales organisation arranges for linoleum offcuts left over from a floor fitting to be collected and returned to the factory for recycling.***

***Marmoleum contains linseed oil derived from the seeds of the flax plant, a fast-growing crop. The crop alone stores 1.6kg of the greenhouse gas CO<sub>2</sub> in each m<sup>2</sup> of linoleum.***





The energy used is predominantly required for the calendering process and the heaters that regulate the drying process of the linoleum sheet.



The route that the rolls of finished linoleum take to the warehouse is emission-free, thanks to a suspension-rail conveying system spanning 750 metres.


Between 2013 and the beginning of 2020, Forbo reduced CO<sub>2</sub> emissions from logistics by 31.5% – without changing transport routes – thanks to the introduction of environmentally friendly vans and electric vehicles on factory premises.




100% of the electricity used for the production of Marmoleum comes from renewable sources like wind and solar power.



Forbo has installed solar panels on the newest of its three large warehouses, for which it received LEED gold certification as a particularly environmentally friendly building.



Forbo is committed to continuous process optimisation: more green energy, solar cells and green energy supplier selection.



*Marmoleum's CO<sub>2</sub> neutral status is a major achievement in our endeavour to create better environments. But sustainable improvement does not stop at carbon neutrality: Forbo's sustainable horizon is set on circularity and healthy buildings.*