



Master **Bloc**®

# CARBSTONE

---

CIRCULAR BUILDING BLOCKS WITHOUT CEMENT

orbix



Master **Bloc**®



# CARBSTONE,

## A WORLD PREMIERE FROM LIMBURG

With the introduction of Carbstone, Masterbloc was the first building materials manufacturer to succeed in offering, on an industrial scale, a **circular, CO2-negative and cement-free** alternative to the traditional concrete block.

The applied **carbonation technology**, developed by our partner Orbix, converts metal slag from the steel industry into circular products with added value. CO2 acts as a binding agent in this process, **eliminating the use of cement**. A huge step forward when you know that cement production is responsible for about 10% of global CO2 emissions!

### Carbstone in a nutshell:



**CO2-negative:** during the production of our Carbstone blocks, more CO2 is absorbed than emitted. Moreover, the blocks also extract CO2 from the air afterwards, which they retain forever.



**Cradle-to-cradle:** In the production process, valorised slag is converted into useful material. This makes Carbstone building blocks 100% recyclable, time after time. When the blocks are crushed after the demolition of a building, only sand and gravel remain.



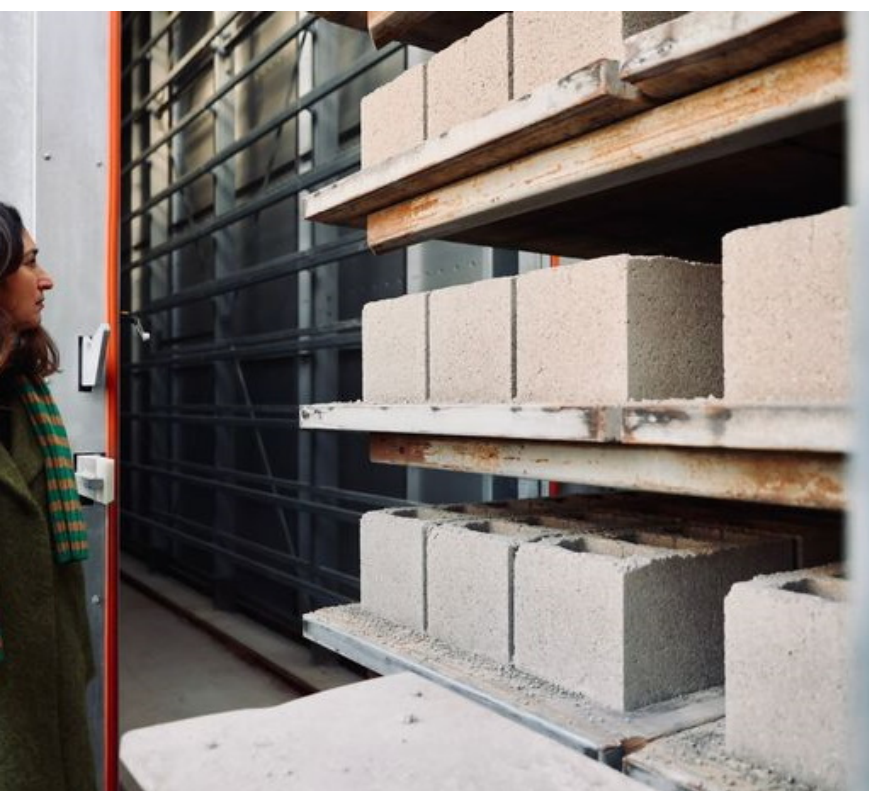
**High compressive strength:** as the bricks keep absorbing CO2 from the air even after they have been processed, they become harder and harder. This results in walls with an extremely high load-bearing capacity.



## What is carbonation?

Carbonation is the natural process by which Ca-containing materials react with carbon dioxide and transform into calcium carbonate. That **calcium carbonate**, better known as limestone, is found globally in the subsurface and is an important source of natural CO<sub>2</sub> storage. Although the Romans already knew how to make clever use of this process, it disappeared into the background for a long time. Until recently, due to the **demand for sustainable CO<sub>2</sub> storage**, industries showed renewed interest in it.

Besides CO<sub>2</sub>, it also requires a source of **calcium oxide**, in this case slag. **Slag** is the by-product of steel production and has been recycled for years to recover the metal and gravel. Until recently, What remained had no industrial use at all. However, thanks to this **patented process**, it can now be converted into **high-quality building materials** by adding CO<sub>2</sub>.



## Our partners:

**orbix**

 **vito**

The launch of Carbstone was accompanied by a lot of domestic and foreign press attention. Flemish Energy Minister Zuhail Demir was also present. In this photo, she inspects one of our first productions of Carbstone blocks.

# FLEXIBILITY

## ALWAYS THE APPROPRIATE SOLUTION

### Carbstone applications:

To offer you maximal flexibility in every construction project, our Carbstone building blocks are available as:

- Traditional masonry block
- Climasono masonry block
- Adhesive block
- Climasono adhesive block
- Soundblox acoustic block
- MasterWalls prefab wall

They come in **all common formats** (see further) in both **solid and hollow versions**. For more information, prices and delivery times, please contact us.

# CASE STUDY

## ICEBERG

With our Carbstone building blocks, we also contribute our bit to Project Iceberg, an international collaboration between 35 partners (including Colruyt and Orbix) from no fewer than 10 different countries that aspires to a circular economy of building materials. This project aims to develop new, cost-effective and, above all, smart solutions for the improved recovery of secondary raw materials throughout the circular value chain: from discarded building materials to new building products made with circularity and resource efficiency in mind; and containing 30-100% high-purity (>92%) recycled materials.



*Our CO2 chamber is the beating heart of our Carbstone production. In here, the blocks are bound with CO2 and then hardened. After 24h - depending on the size - they are ready for processing.*

# PROJECT

This project uses aggregates derived from the demolition of old Colruyt supermarkets. These are upcycled and supplemented with Carbinox to then cure in our CO2 drying chambers. In this way, construction waste is converted to the full 100% into new, high-quality building blocks with a negative CO2 balance. After all, more CO2 is absorbed than emitted during production and, moreover, the blocks will continue to absorb CO2 even after processing – provided they are placed in the open air. All this happens under the watchful eye of VITO, a Flemish independent research organisation in the field of cleantech and sustainable development.

## CARBSTONE DIMENSIONS

### Hollow masonry blocks

39x19x09	39x19x14	39x19x19	39x19x29
29x19x14	29x19x19	29x14x14	29x14x19

### Solid masonry blocks

29x09x09	29x19x09	29x14x09	29x19x14
29x19x19	29x20x14		

### Hollow Climasono masonry blocks

39x19x09	39x19x14	39x19x19	29x14x14
----------	----------	----------	----------

### Solid Climasono masonry blocks

29x19x09	29x19x14	29x19x19
----------	----------	----------

## Adhesive blocks

40x14x20

40x19x20

## Adhesive Climasono blocks

40x14x20

40x19x20

50x14x24

50x19x24



Our adhesive blocks feature a tongue-and-groove joint and are supplied with our own MasterFix stone adhesive. Thanks to the minimum joint thickness of 1 to 2 mm, they can be worked quickly and easily into a perfectly straight wall.

## Soundblox

N1

G1

W1

A1

N2

G2

W2

A2

N3

Special productions and MasterWalls prefabricated walls available on request.  
For more information, please contact us.

# FREQUENTLY ASKED QUESTIONS

## What happens when you drill the Carbstone blocks?

*The composition will not expand as a result of the drilling. The CO2 will therefore remain trapped.*

## Is it healthy living in a building that was build with Carbstone blocks?

*Absolutely, the blocks will continue to store CO2. However, this does not mean that they release it into the house. They bind more and more and thus become harder.*

## Are Carbstone blocks as solid as traditional concrete blocks?

*Yes, they meet the exact same specifications. In addition, Carbstones – when used outdoors – will continue to absorb CO2, hardening them even further and, as a result, making them stronger.*

## What's the average delivery time?

*The minimum curing time of the blocks is 24h, unlike traditional masonry blocks that require 3 weeks. The production time always varies according to the order size. Please contact us for more information.*



**NV Betonagglomeraten Gubbels - Masterbloc**

Industrial Zone - Steenweg naar As 4  
3630 Maasmechelen, Belgium

T: +32 (0)89/65 78 85 - F: +32 (0)89/65 78 86

[www.masterbloc.be](http://www.masterbloc.be) - [info@masterbloc.be](mailto:info@masterbloc.be)