

Dossier of Bio-EcoMatter®

Technological and
sustainable solution for the
construction sector.



Bio-EcoMatter

Residuos Y Materiales

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Bio-EcoMatter

Bio-EcoMatter is a new mortar **without cement nor sand**.

It counts with a **patented formula** and it is manufactured starting from the recycling of **agro-industrial waste** (Secondary Raw Material).

Bio-EcoMatter is a product developed by



360 Soluciones Cambio Climático

They offer solutions divided in three departments:

Environmental Engineering



Sustainability



Innovation





Current situation and problems to be solved

CEMENT INDUSTRY EMISSIONS

Account for 8% of GHGs global emissions. For 2050, we will need to produce additional 230M tons of cement to cover global demand.

OVER-EXPLOITATION OF SAND

25.000M tons of sand are consumed yearly for construction. It is becoming a scarce good, generating market uncertainty and price volatility.

ENVIRONMENTAL LEGISLATION

The industry is still dependent on fossil fuel. Need to implement Green Deal, Net Zero 2050 and New Spanish Law on Climate Change.



Spain and Europe are committed to choose **only** construction products with the lowest possible carbon footprint.

SECTOR'S IMAGE

Urban areas generate 75% of global CO2 emissions. Only the construction industry generates 500M tons of waste per year.

Key features

Technologic solution

- Easily transferable
- No need to invest in process transformation

Innovative solution

- Complete substitution of cement and sand
- European Patent

Nature-Based solution

- Based on agro-industrial waste that is globally abundant



Winner of the "Metabuilding" Project



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 873964.



Partners of the project:



- 360 SOLUCIONES CAMBIO CLIMÁTICO from the circularity & recycling sector, coordinated the project, the marketing, industrial protection and LCA of the new mortar.
- INTROMAC technology center tested and validated the product in the laboratory.
- SABRAB from the construction sector, specialized in bioconstruction, applied the product in the rehabilitation and construction of the rural hotel Herdade do Magarreiro (Alandroal, Portugal).
- AUSCULTIA validated and guaranteed that the mortar complies with international technical quality standards.
- FIRMAMENTUM INGENIERÍA from the digital sector, developed BIM format solutions in Revit and tools designing solutions with the new mortars according to their technical characteristics.



Bio-EcoMatter v. traditional mortar

GHG Emissions



↓ 100% of CO₂ related to cement production

Water consumption



↓ 50-60%

Energy consumption



↓ 90%

Weight



↓ 30-40%

Performance (m²)



↑ 40%

Applications

- Construction material
- Mortar for rework and coating
- Decoration and masonry

Investigating new applications, such as structural mortar, 3D printing, etc.

**Pilot Building In
Alandroal, Portugal.**



Market Study

Investment hypothesis (taking into account investment in land, construction and machinery - negative scenario) based on quantity of agroindustrial waste managed.

Hypothesis 1: **1% of waste produced nationally**

400.000€
INVESTMENT

- 3.150 ton final product
- ↓ 60% market price
- **1,9M € Revenues 1º year**

63%
EBITDA

Hypothesis 2: **5% of waste produced nationally**

850.000€
INVESTMENT

- 15.750 ton final product
- ↓ 60% market price
- **9,5M € Revenues 1º year**

71,5%
EBITDA

Hypothesis 3: **10% of waste produced nationally**

1,6M €
INVESTMENT

- 31.500 ton final product
- ↓ 60% market price
- **19M € Revenues 1º year**

72,5%
EBITDA

Life Cycle Assessment

Results of LCA compared with conventional mortar.

Abiotic depletion - elements

↓ 92%

Abiotic depletion - fossil fuel

↓ 49%

Global Warming Potential

↓ 12%

Ozone layer depletion

↓ 56%

Photochemical oxidation

↓ 73%

Acidification

↓ 44%

Eutrophication

↓ 3%

[Click here to download full
LCA study](#)

Want to know more?



WATCH OUR VIDEO

[The Metabuilding Project: Bio-EcoMatter](#)

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Residuos Y Materiales

BIO-ECOMATTER

For a more efficient, circular and
sustainable construction sector.

EcoMatter

Residuos Y Materiales



DESCRIPTION

Lightweight mortar without sand or cement. Recommended for use on interior and exterior walls.

COMPOSITION

Product based on selected agro-industrial waste, hydraulic lime and other additives.

CHARACTERISTICS AND APPLICATIONS

SUPPORT

- Direct application in brick and concrete factory
- Masonry
- Indoor and outdoor applications
- Permeable to water vapor, allowing the support to breathe
- Excellent adhesion and great plasticity
- Smooth or troweled finish
- Manual application or with projector
- Plasters and revoke
- Thickness up to 1 cm without sagging

INSTRUCTIONS FOR USE

- Conventional cement-based supports and brick factory
- The supports must be resistant, stable, healthy and clean, free of dust, traces of release agents, organic products, etc.
- In case of heat, wind or on very absorbent supports, it is advisable to moisten the support and wait for the disappearance of the film of water
- On poorly porous substrates, apply a primer or improve roughness by mechanical means
- Do not apply on plasters or paints
- Add water and mix manually or mechanically until homogeneous and workable
- For plastering, spread the product on the support with a trowel
- Allow the necessary time to pass and trowel

PRECAUTIONS AND RECOMMENDATIONS

- Do not apply below 5°C or above 30°C
- Do not apply with risk of frost, rain, strong winds or direct sun
- For thickness greater than 1 cm it is recommended to apply the product in two layers
- In extreme weather conditions (high wind or high temperatures) it is necessary to water the product by gentle spray the day after the application

PRESENTATION



20 kg bags of kraft paper.

Storage up to 1 year in its original closed packaging, sheltered from the weather and humidity.



TECHNICAL DATA

Aspect	GREY POWDER
Classification according to UNE EN 998-1	CSIIIWc1
Density of the hardened product	925,8 kg/m ³
Approximate performance	8,3 kg/m ² per cm of thickness
Water absorption by capillarity: W1	$c \leq 0,4 \text{ kg/m}^2 \text{ min}_{0,5}$
Compressive strength	3,5 N/mm ² a 7,5 N/mm ²
Thickness of the layer	$\leq 1 \text{ cm}$
Thermal conductivity	0,173 W/(m•K)

ENVIRONMENTAL VALUE



Mortar made with local agro-industrial waste abundant at a global level, without incorporating neither cement nor sand, a firm commitment to sustainability and respect for the environment. The product counts with a **Life Cycle Assessment** developed according to ISO 14040 and 14044.

NOTES

Bio-EcoMatter counts with a **National Spanish Patent** and **European Patent**.

The instructions for use are made according to our tests and knowledge and do not involve commitment of Bio-EcoMatter or release the consumer from the examination and verification of products for their correct use.

Bio-EcoMatter is not responsible, in any case, for the application of its products or constructive solutions by the applying company or other subjects involved in the application and/or execution of the work in question, limiting the responsibility of Bio-EcoMatter exclusively to the possible damages attributable directly and exclusively to the products supplied, individual or integrated systems, due to failures in the manufacture of those.

In any case, the drafter of the work, the technical management or responsible for the work, or subsidiarily the implementing company or other subjects involved in the application and/or execution of the work in question, they must satisfy themselves of the suitability of the products taking into account the characteristics thereof, as well as the conditions, support and possible pathologies of the work in question.

The values of Bio-EcoMatter products or constructive solutions which, where applicable, are determined in the UNE standard or any other standard applicable to it in each case relate exclusively to the conditions expressly provided for in that regulation and which are referred to, among others, to certain characteristics of the support, humidity and temperature conditions, etc. without being required to tests obtained under different conditions, all in accordance with the expressly established in the reference regulations.