Eggshell: a potential raw material for ceramic wall tiles

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Contextualization

In 2018, 77 million tons of eggs were produced worldwide which corresponds to approximately **8.5 million tons of eggshell waste** [1].

SOLID WASTE MANAGEMENT a key to delivering

THE GLOBAL GOALS For Sustainable Development

Ceramic wall tiles

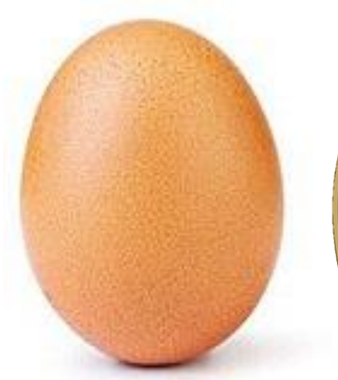
- Sand
- Kaolin
- Clay
- Limestone ($CaCO_3$) – 10/15 wt.% [2]

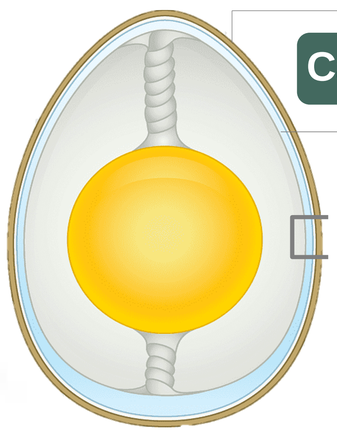
60.5 billion € (2018)

CAGR 6.1% (2019-2025)

Objective

Promote **circular economy** by establishing a process of industrial symbiosis between two very different sectors: the **food** sector, represented by **egg production** companies, and the **ceramic** sector, represented by **atomized powder** producers and ceramic **tile manufacturers.**





Shell **90 wt.%**

Calcium Carbonate, $CaCO_3$

Inner & outer Shell Membranes **10 wt.%**

Made of protein – organic membrane.

➢ **To use eggshells** as raw material in ceramic industry is **mandatory** to separate the two components: membrane and shell.

Our **ambition** is to produce **4,000m² of ceramic tiles** with biological $CaCO_3$ from eggshells.

Eggshell waste

Ceramic Tiles

Ceramic Industry

- clay
- kaolin
- sand

Bio-based product

$CaCO_3$ Powder

Substitution of limestone by:
0, 25, 50, 75 and 100 wt.% of eggshell waste

➢ Bio-$CaCO_3$ replacing natural raw materials
➢ **Reduce** up to **90%** of the eggshells deposited in landfills.
➢ Diminish the **extraction of natural raw materials**
➢ Reduce **environmental impact** and bring **economic benefits**.
➢ Implementation of the **circular economy** concept through an **industrial symbiosis** between egg-processing companies and ceramic companies

➢ New market opportunities

www.lifeeggshellence.eu

References

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