CERIS : Civil Engineering Research and Innovation for Sustainability

Eco-Mortar 2.0 – Eco-friendly and high-performance thermal insulating fibre-reinforced mortar to be applied on walls as a coating or panel

Summary

One of the priorities of the 2030 Agenda is to achieve a sustainable development path to balance environmental, social, and economic needs for present and future generations. The United Nations Sustainable Development Goals (SDGs) are the blueprint for a better and more sustainable future. The Green Deal is the roadmap towards applying the 2030 Agenda and the SDGs.

European policies. In this context, the European construction industry faces significant challenges that need real solutions. On the environmental side, a sector with an unsustainable environmental profile must overcome the traditional linear path of production and consumption to adopt a circular economy model and energy-efficient solutions. The number of studies on new sustainable solutions to minimize the incorporation of processed raw materials or improve the thermal insulation properties of mortar has increased. Examples relate to the use of stone sludge waste from the cutting process as filler in rendering mortars or fibres from textile waste to reduce its cracking or to the increased insulation of rendering mortars through the incorporation of cork (recycled by-product of the cork industry) or silica-based aerogels (nano-structured material) as lightweight aggregates. However, studies on a combination of stone sludge waste, textile waste, and recycled cork with aerogel in mortars have not been found in the current literature.

The main objective of the Eco-Mortar 2.0 project is to develop an eco-friendly and high-performance thermal insulating fibre-reinforced rendering mortar for wall exterior retrofitting or wall panel coating of buildings by using diabase sludge from stone cutting as filler, recycled cork and aerogel granules as lightweight aggregates and textile waste as fibres. This mortar will decrease the use of non-renewable natural resources, improve thermal insulation, and allow shrinkage cracking control.

As a result of all this work, the seven WPs are considered (Figure 1) in a 2-year project (Figure 2).

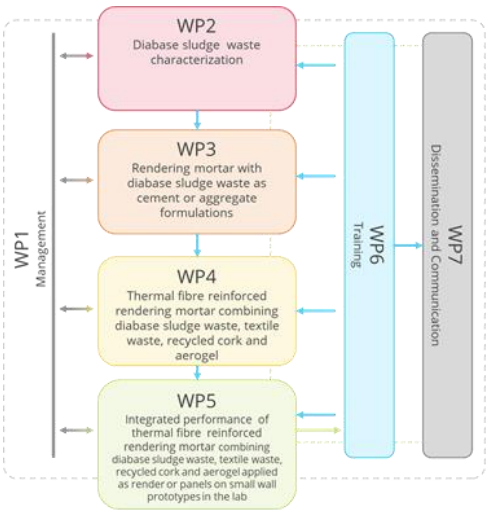

Figure 1. WP structure in the Eco-Mortar 2.0 project.

n° WP	Work packages	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
WP 1	Management	D1.1 M1.1																							
WP 2	Diabase sludge waste characterization			D2.1 M2.1																					
WP3	Rendering mortar with diabase sludge waste as cement or aggregate formulations										D3.1 M3.1														
WP 4	Thermal fibre reinforced rendering mortars combining diabase sludge waste, textile waste, recycled cork and aerogel																		D4.1 D4.2 M4.1						
WP 5	Integrated performance of thermal fibre reinforced rendering mortar combining diabase sludge waste, textile waste, recycled cork and aerogel applied as render or panels on small wall prototypes in the lab																				M5.1			D5.1 M5.2 M5.3	
WP 6	Trainnig	D6.1 M6.1											D6.2												D6.3 M6.3
WP 7	Dissemination and communicaton	D7.1											D7.2 M7.1								D7.2 M7.1			D7.2	D7.3 M7.1

Figure 2. Gantt chart of Eco-Mortar 2.0.

Project Reference

Grant agreement ID: 101109675

Leading Institution

IST – Instituto Superior Técnico (Portugal)

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Funding

EU Marie Skłodowska-Curie Actions (MSCA)

Period

2023-2025

Total

156 778.56€

CERIS

24 000.00€

Project Website

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