Coating composition with antimicrobial and antisaline activity and process for the preparation thereof.

**Priority Number**

n. 102016000004103 _ 18.01.2016.

**Patent Type**

Patent for invention.

**Co-Ownership**

Sapienza University of Rome 60%, University of Perugia 40%.

**Inventors**

Maria Sabrina Sarto, Daniela Uccelletti, Maria Paola Bracciale, Alessandra Broggi, Chandrakanth Reddy Chandraiahgari, Giovanni De Bellis, Maria Laura Santarelli, Elena Zanni, Assunta Marrocchi.

**Industrial & Commercial Reference**

Producers of biocides for environmental applications, manufacturers of building materials, wood, ship manufacturers, paint manufacturers.

**Time to Market**

The state of development of the product can be considered at TRL 4/5 level, before going on the market it is necessary to set-up large-scale production.

**Availability**

Cession, Licensing, Research, Development and Experimentation.

---

**KEYWORDS**

- PLASTERS
- PAINTS
- BOATS
- CULTURAL HERITAGE
- WOOD
- MARBLE
- BRICKS

**AREA**

- ARCHITECTURE, DESIGN & CULTURAL HERITAGE

---

**CONTACTS**

- **PHONE NUMBERS**
  +39.06.49910888
  +39.06.49910855

- **EMAIL**
  u_brevetti@uniroma1.it

---

**Abstract**

The present invention relates to the formulation of a coating composition in the form of an aqueous suspension based on micro and / or nanorods of zinc oxide and at least one polycarboxylic acid with a combined antimicrobial and inhibitory activity with respect to the saline crystallization, its application for the treatment of various surfaces, and a procedure for its preparation.

The composition of the present invention is particularly adapted to be used for the durability of materials, in particular porous materials, such as plasters, mortars, tuff, cement, wood, etc.
Coating composition with antimicrobial and antisaline activity and process for the preparation thereof.

### Technical Description

The product of this patent is able to physically prevent the hydration of the salts by new plasters during the application and drying phase and at the same time ensure antimicrobial coverage.

This product can guarantee over time the durability of plasters, tuff and other building materials, both traditional and / or macroporous.

Compared to the chemical "precipitation", this product guarantees the result regardless of the type and nature of the salts themselves.

Furthermore, the non-toxicity of this compound guarantees immediate usability of the treated material and ease of application by the operators.

### Technologies & Advantages

The production technologies for obtaining this product are those necessary to produce polycarboxylic acids and add them to nanomaterials, thus requiring low costs and ease of industrial scale-ups.

The addition of nanomaterials based on non-toxic zinc oxide, makes the water-based product innovative and easy to use.

The advantages relate to high workability, it is in fact sufficient to spray the product on the surfaces to be treated, it is highly transpiring being in aqueous solution, is suitable for all cases of salinity, respects the thermo-hygrometric balance of the support, has antimicrobial properties and is environmentally friendly.

### Applications

The product can be used as an antisaline barrier in the treatment of problems related to humidity (rising humidity, bad thermal protection, ... etc.), avoiding the passage of water-soluble salts in the layer of plaster.

Furthermore, its use is useful as an antimicrobial agent that prevents the attack of biodegradative microorganisms.

This product is suitable for bearing and brick walls, brick, tuff, stone and mixed internal and external.

The product is recommended for interventions in green building and restoration, where it is necessary to guarantee the breathability of the wall and the use of non-toxic natural materials.

---

**Fig. 3** FE-SEM photomicrograph of the product deposited on porous material.

**Fig. 4** Schematic representation of the antimicrobial mechanism.

**Fig. 5** Micrograph image of bacterial cells.

---

**CONTACTS**

- **PHONE NUMBERS**
  - +39.06.49910888
  - +39.06.49910855

- **EMAIL**
  - u_brevetti@uniroma1.it