

## Luminescent sanitizing compositions

### DESCRIPTION OF INVENTION

The hands of patients and healthcare professionals are the main vector for the spread of nosocomial infectious diseases, and their correct disinfection with hydroalcoholic hand gel is the best solution. However, 89% of people who sanitize their hands with hydroalcoholic gel do not clean the whole surface. To improve prevention strategies against COVID-19 and other topically transmissible infectious diseases, it is critical to monitor the quality of the sanitization process (at hospital entrances, establishments, when cleaning surfaces...). However, there is currently no solution to ensure correct hand/surface washing in an immediate, safe, routinely and economical manner. The invention describes the compositions, preparation methods and preferred uses of sanitizing products that simultaneously allow hands and/or surfaces, objects, footwear, etc. to be sanitized while monitoring the quality of the sanitization process by means of luminescence in an immediate, safe, routinely and economical manner.

The invention describes several sanitizing compositions, among which hydroalcoholic gel stands out, characterized by comprising a luminescent agent and a minimum content of 70% by weight of ethanol and/or isopropanol, in addition to other products such as thickeners, emulsifiers, etc.

The luminescent agent comprises a luminescent reagent (preferably fluorescein) in an amount between 0.1 and 10% by weight with respect to the total weight of the luminescent agent and a polymeric and/or inorganic matrix (preferably SiO<sub>2</sub> nanoparticles and/or TiO<sub>2</sub>) in an amount between 90 and 99.9% by weight with respect to the total weight of the luminescent agent, and where the luminescent reagent is embedded and/or bound to the matrix. This matrix –of a polymeric or inorganic nature– is capable of embedding and/or joining the luminescent reagent to i) render the luminescent reagent inert, preventing its solubility and limiting its ability to interact with the human body, ii) preventing the reagent from permeating inside of the human body through the skin due to the size it acquires, iii) improving the efficiency and stability of its luminescence by including a matrix with a high refractive index.

The luminescent agent, which is in the form of particles or aggregates of particles, has a particle size greater than 200 nm, thus guaranteeing that both the sanitizing agent and the sanitizing product derived from it will present practically zero skin permeability, which implies the total dermatological safety of the composition.

### BUSINESS APPLICATIONS

- Manufacturers of hydroalcoholic gels to sanitize hands (cosmetic, chemical companies...), either for the retail (domestic) or industrial channel (hand disinfection in the health, food, public centers, etc.).
- Companies producing compositions for domestic and/or professional cleaning (restaurants, industry, etc.).

### TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- It allows monitoring the correct hand/surface washing technique while disinfecting them.
- The product can be used routinely for hand disinfection since there is no skin absorption of toxic elements for the user.
- It allows monitoring and ensuring the correct cleaning of floors, walls and other surfaces in establishments, hospitals and health centers, large surfaces, etc.

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### STATE OF TECHNOLOGY DEVELOPMENT

The developed gel has been validated on a laboratory scale where the effectiveness of the luminescent agent has been demonstrated for the correct control of washing hands and/or other surfaces. The necessary tests are currently being carried out to certify that the product is safe and that there is no skin absorption of the luminescent agent.

### INDUSTRIAL PROPERTY RIGHTS

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