



# Tolomeo INTEGRALIS®

INTEGRALIS® is a revolutionary lighting technology that sanitizes spaces to bring people back to enjoy them together.

Light has a positive effect on humans, it can improve the quality of the environment and our well-being, supporting the rhythm of our activities.

Today, thanks to the innovative INTEGRALIS® technology, it can also make spaces safer and protect one of our most precious assets, health.



## The technology

INTEGRALIS® is the result of scientific and technological research as well as Artemide's humanistic and social vision, it is an expression of "Human & Responsible Light".

The iconic Tolomeo, designed in 1987 by Michele De Lucchi, now incorporates INTEGRALIS® technology that makes our spaces safer by sanitizing the illuminated surfaces.

# Battling bacteria with light

Tolomeo INTEGRALIS® incorporates the Pure INTEGRALIS patent of invention light technology developed by Artemide which helps to counteract pathogenic microorganisms such as bacteria, fungi and molds present on illuminated surfaces, inhibiting their growth and spread.

Only certain wavelengths of visible light, within violet-blue range, contain the right energy to inhibit the growth of pathogens. INTEGRALIS® calibrates the visible spectral range in an innovative formula capable of regenerating the environmental qualities of the lit spaces. This emission is not harmful for people, pets or plants and does not damage furniture, objects and surfaces.

## VISIBLE LIGHT



## LABORATORY TEST RESULTS ON *STAPHYLOCOCCUS AUREUS*

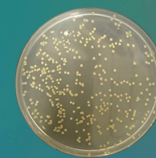
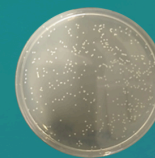


### ABSENCE OF LIGHT

Petri dish  
in absence of light for 12h

Petri dish  
irradiated with INTEGRALIS® light for 12h

Incubation time  
Temperature: 37°C



12 h

20 h

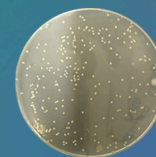
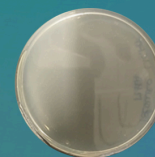


### PURE INTEGRALIS



DAY MODE

Microbial growth control



Results of microbiological tests on *Staphylococcus aureus* irradiated with Tolomeo INTEGRALIS®: microbial growth slows down in the hours following irradiation. Scientific findings carried out in collaboration with the Department of Biotechnology and Life Sciences of the University of Insubria.

# The right light wavelengths

The active effect against microbial pathogens is achieved by a special light spectrum.

This is perceived as a neutral white with correlated color temperature of 3600K and high color rendering index. The result is a perfect light quality that meets all the lighting requirements for workplaces.

INTEGRALIS® technology offers a greater safety both in home office and in the professional working environment as well.

Open-plan offices and co-working spaces are often subjected to many visitors, which could increase the microbiological contamination of the environment. This is where the antimicrobial effect of INTEGRALIS® has an important role in satisfying the latest technical and hygienic requirements, while maintaining the best light quality.



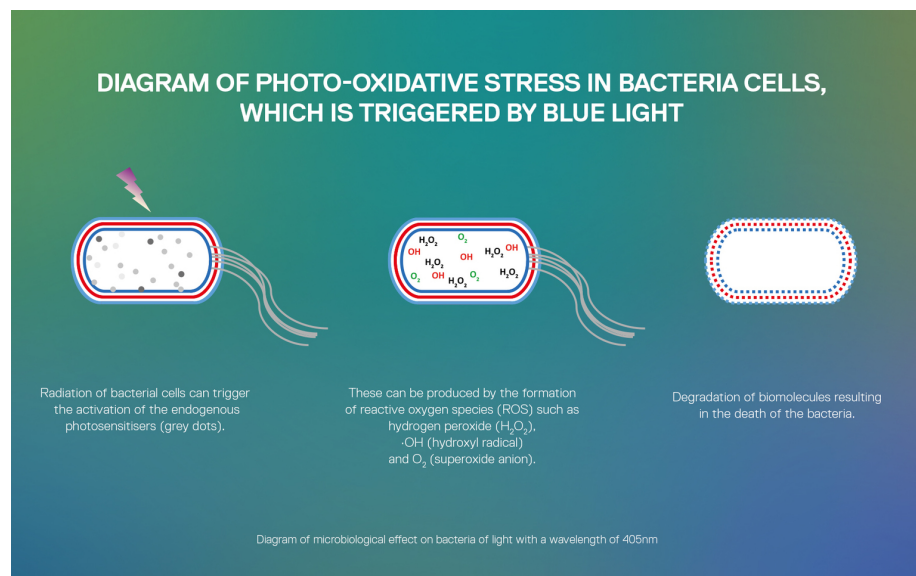
As every Tolomeo is absolutely transversal in its use in every public and private space, of life or work, in particular in the INTEGRALIS® version is perfect especially where people get in touch with each other.



## Scientific know-how

Estimates suggest that the dust in a household can contain up to 500 or even 1000 different types of microbes, which form a complex microbial world in indoor spaces. In turn, these microbes affect human microbiota and thus our health and illnesses (Shan et al., 2019).

The INTEGRALIS® radiation causes photooxidative stress in bacteria cells. Endogenous bacteria molecules are stimulated and can trigger the formation of reactive oxygen species (ROS) such as hydrogen peroxide and  $\cdot\text{OH}$  (hydroxyl radicals). These destroy macromolecules such as DNA, RNA, proteins and lipids and have a negative effect on cellular integrity, causing the bacteria to die off.



When researching the action mechanism of light, Artemide was supported by specialist research institutes such as the University of Insubria and the University of Padua. Alongside the scientific tests on the effect of light on microbial pathogens, these collaborations contributed to translate the scientific findings into applied research to develop and verify the INTEGRALIS® technology.



## Further options for INTEGRALIS<sup>®</sup> technology

INTEGRALIS<sup>®</sup> ecosystem can be integrated in a multitude of lamps and lighting systems in the Artemide Collection. Lamps such as Ilio, Mimesi, Pipe, Athena, Nur, Nur Acoustic, A.39, Tagora, Sharp, Vector and Discovery combine exceptional design with optimal visual comfort and hygienic wellbeing.

INTEGRALIS<sup>®</sup> is an open and versatile platform that combines four independent lighting solutions of different intensities and can include an optional UV technology, which reliably kills viruses. The various methods can be applied individually or in combination, and can be adapted to suit the relevant purpose, performance, time and results required.

INTEGRALIS<sup>®</sup> is a pioneering solution for many applications, including hotels and restaurants, office buildings, shops, medical facilities, public buildings, schools, sports studios, wellness areas etc.