

# ADINS Protection by Tolsa

**High Performance Biocides** based on natural silicate patented technology with active substances.

Broad spectrum of activity and applications such as construction, paints and coatings or plastics and rubbers.



Microbial activity has a big impact on the durability of materials.

We need biocides to reduce costs of cleaning, painting and repairs.

## WHY DO WE NEED BIOCIDES ADDITIVES?

ADINS is a proprietary and patented technology based on natural silicates (sepiolite), that is surface modified, providing new functionalities to materials and reinforcing specific properties in organic and inorganic systems.



## ADINS Protection

ADINS PROTECTION products are high performance additives based on different active substance. These biocides are active in a broad spectrum (bacteria, algae and fungi).

ADINS PROTECTION products can be used in different materials for several applications, such as Construction, Paint & Coatings, Plastics and Rubbers.

All of these products are based in a needle-like special Clay called Sepiolite, with an specific active substance which allow a high dispersion in the material incorporated.

ADINS PROTECTION technology will make your products safer as the market demands.

Good Biocides Conditions	Adins Protection
Broad spectrum of activity (bacteria, algae and fungi)	✓
Effective at low concentration	✓
Effective in a wide range of PH	✓
Chemically inert	✓
High protection in the final product	✓

## Product grades

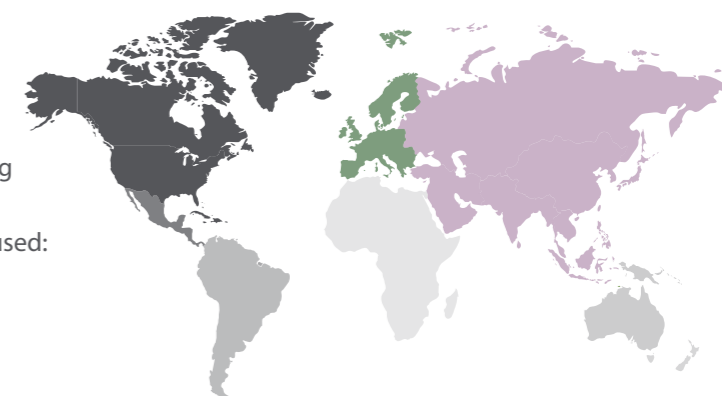
**Adins Protection S10**

**Adins Protection S4**

Because of their composition, both can be used in the same applications. Its use is related to the regulation of each region.

All active substances used in the manufacturing of these products comply with the legal regulations of each country in which they are used:

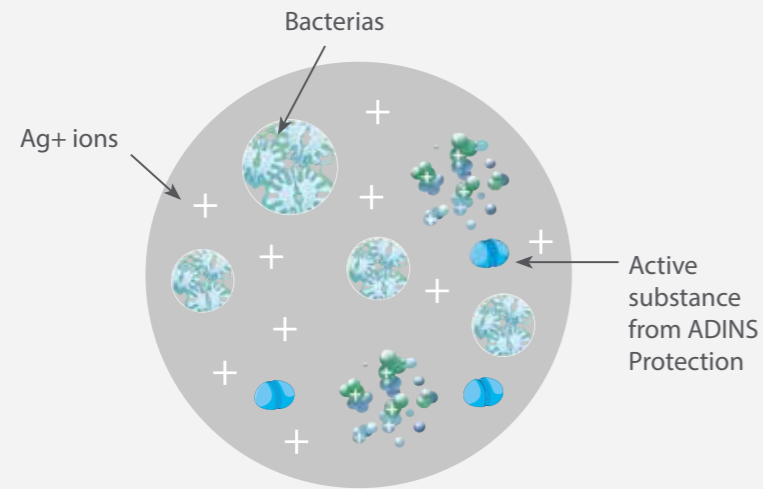
- Full compliance in most EU
- Registration processes under request
- EPA registration in progress



Region	Biocide regulatory organism
Europe	European Chemical Agency (ECHA) (Regulation (EU) N° 528/2012) Directive 98/8/EC on the placing on the market of biocidal products)
USA	Environmental Protection Agency (EPA) (Section 3 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA))
Mexico	No needed
Asia	Some countries regulate, for example The Philippines. Others don't - for example China.

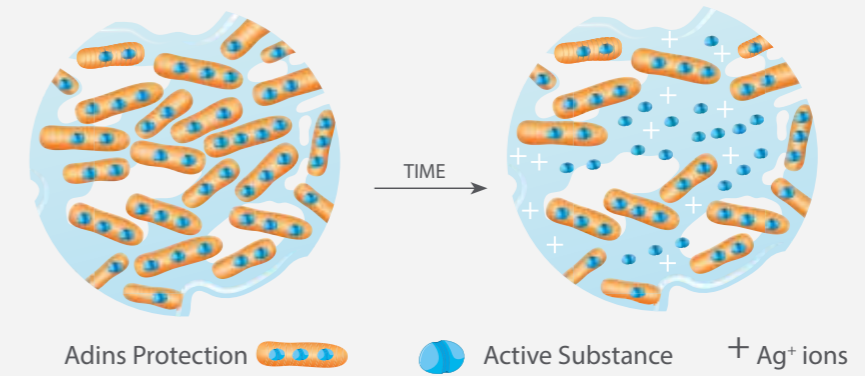


## How ADINS Protection acts?



- Antimicrobial Activity of ADINS Protection comes from the formation of silver ions. Silver ions interact with the microbial cell membrane, preventing the entry of nutrients, blocking the respiration and finally inducing the loss of cellular components and avoiding the replication of genetic material

## Advantages



- ADINS PROTECTION S10 and ADINS PROTECTION S4 are active against Gram-positive, Gram-negative bacteria and Fungi.
- ADINS technology allows to incorporate different active substances on the surface of the clay, obtaining a uniform distribution of these species throughout the additive. In addition, this technology allows an optimal dispersion in the matrix in which it is incorporated, which translates into a high antimicrobial activity.
- Due to its stability, ADINS technology allows to reduce the amount of active substance obtaining the same antimicrobial activity, increasing its durability, reducing costs and its environmental impact.



## How to use them?

Process Antimicrobial activity	Construction materials	Thermoplastics/ Thermosets	Coating/paints
<b>Step 1</b>	Mix directly with the material in a Planetary Mixer	Insert into the extruder through the side feeder	High Speed Mixer Cowles Type
<b>Step 2</b>	Aging treatment of specimens 50x50x10 mm	Specimens of 50x50x10 mm	Apply on an inert surface
<b>Step 3</b>	Antimicrobial Activity Evaluation		

## Application and Dosing recommended\*

Product	Construction materials	Thermoplastics/ Thermosets	Coating/paints (Solvent and water based)
<b>ADINS PROTECTION S10</b>	0,05-0,1%	1-3%	0.25-1%
<b>ADINS PROTECTION S4</b>	0,05-0,1%	1-3%	0.25-1%

\*Dosing depend on the formulation

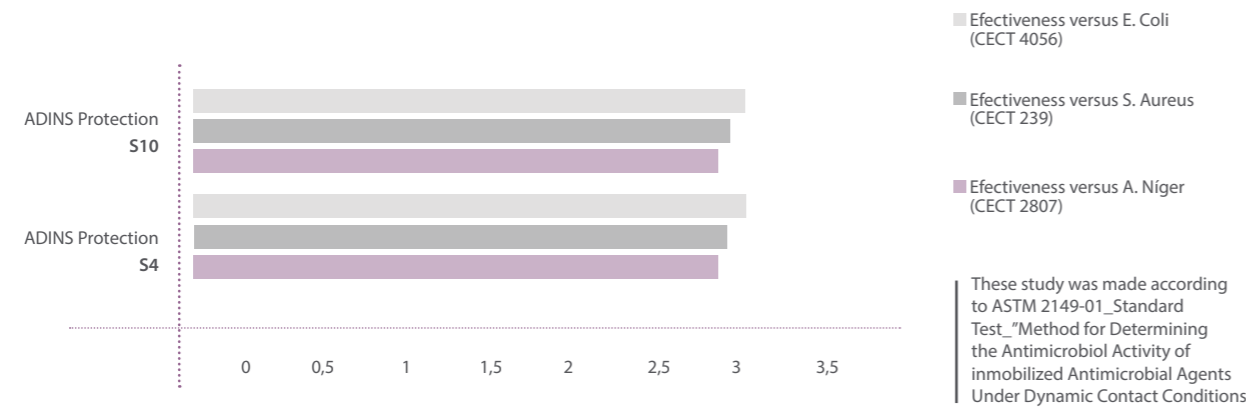
\*\*New applications and products are continuously developed

\*\*\*Do not hesitate to ask for information about your specific system

## Antimicrobial Activity for Additives

In the following graph we can see the antimicrobial activity of ADINS Protection S10 and S4 versus a Counter Type and versus the Inorganic Carrier used in ADINS Protection products.

A material is considered a biocide when it has antimicrobial activity  $\geq 2$ .

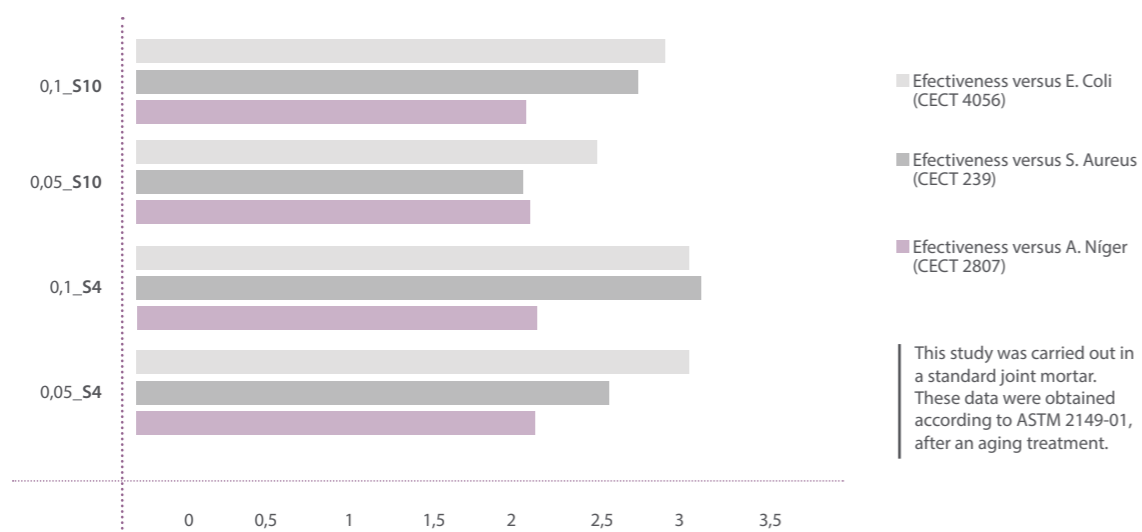


According to these results, ADINS Protection S4 and ADINS Protection S10 are Biocides and their antimicrobial activity is similar to the counter-type activity.

## Some Results: Antimicrobial Activity in Joint Mortars

- Many construction products are susceptible to degradation and spoilage by mold, mildew, algae and bacteria.
- Growth of harmful organisms can have serious health risks for consumers in close contact.
- Our biocides are used in a wide range of construction products to inhibit the growth of bacteria or mold.

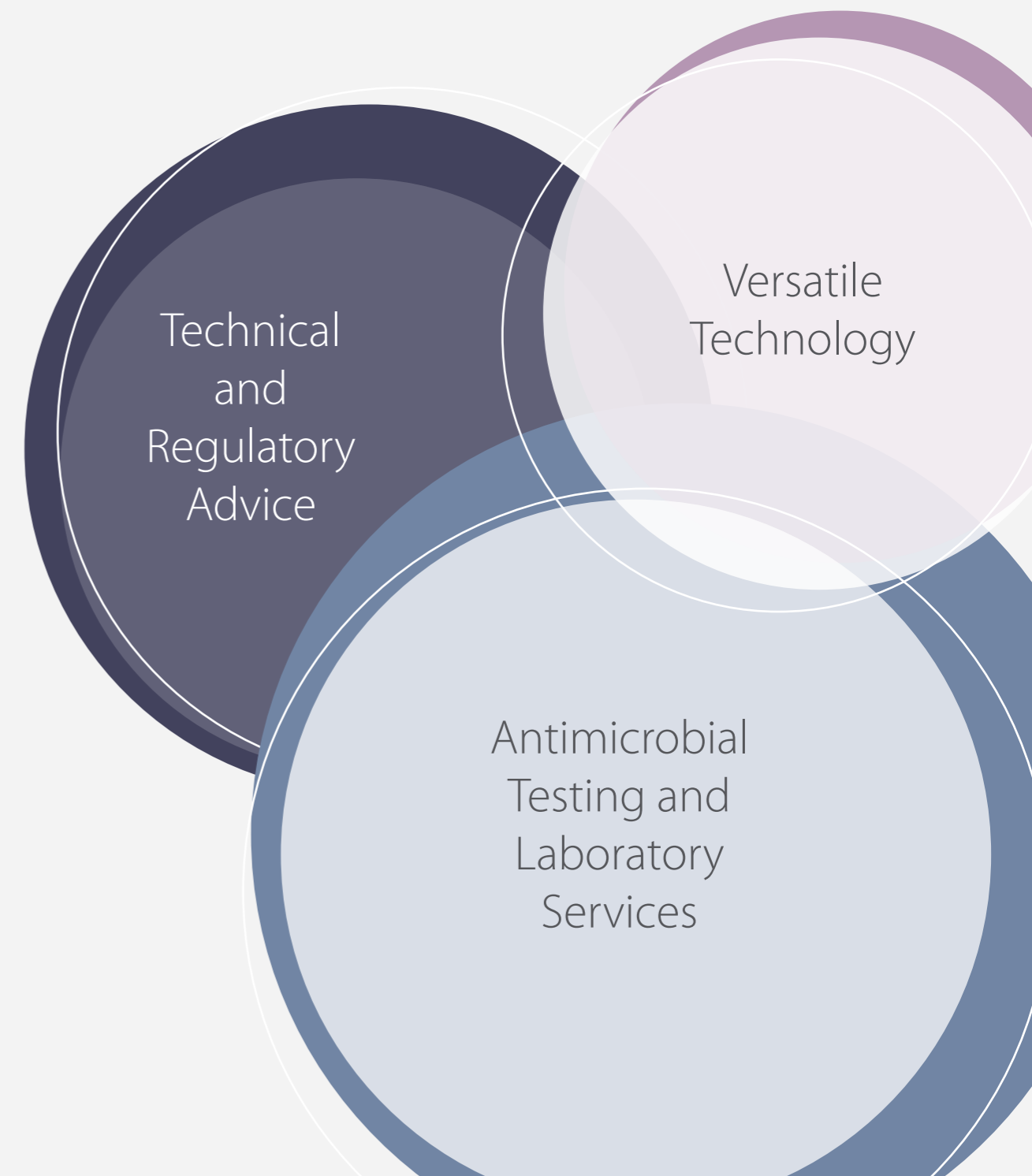
In this picture, we can see the antimicrobial activity of ADINS Protection S10 and ADINS Protection S4 in two different dosage (0.05% and 0.1%).



- Both additives ADINS Protection S4 and ADINS Protection S10 are active versus E. Coli., S. Aureus and A. Níger.
- The results with 0,05% are similar to those 0,1%.
- ADINS technology allows to reduce the amount of active substance obtaining the same antimicrobial activity, reducing costs and its environmental impact.

## Why choose ADINS Protection Products?

Because Tolsa is a FULL SERVICE PROVIDER



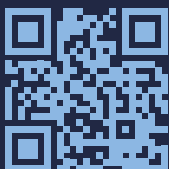
# About Tolsa

TOLSA, based in Madrid, Spain, has one of the most extensive and differentiated range of special clays worldwide, offering a broad range of additives and industrial products that provide high added value and improve the performance and efficiency of materials.

TOLSA has more than 20 mining operations to produce the highest quality sepiolite, bentonite and atapulgite, which generate more than 100 million tons of raw materials. The acquisition of new deposits is a key priority in order to renew reserves as well as to offer each customer other types of raw materials to meet their needs.

TOLSA focuses on intelligent production that is modern, efficient, precise, flexible, punctual, safe, and respectful of the environment. Each process is subjected to stringent quality controls and the company is certified under ISO 9000 and ISO 14000. TOLSA has a production capacity of more than 1 million tons, and its factories are located near mining operations, or in port areas near end users. For more information, visit:

[www.tolsa.com/adins](http://www.tolsa.com/adins) or contact directly [adins@tolsa.com](mailto:adins@tolsa.com).



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