



POLYDEF
LINE OF BIOCIDAL ADDITIVES FOR POLYMERS



about the company

Smart Nanotechnologies focuses on research and production of specialized chemical components with unique properties. We are inspired by nanotechnology, thanks to which we produce specific structures in nanometric scale, which has great potential for many industrial uses.

The main goal of the company is the production of high-quality products that enable the use of nanomaterials in many industrial sectors.





nanomaterials

Small particle sizes, and thus a strongly developed specific surface, contribute to obtaining materials with unique properties, different from the properties of the same substances on a micro and macro scale, for example:

- better mechanical properties,
- better optical properties,
- increased chemical activity,
- increased antibacterial effect,
- less environmental burden.

Problem

Increasingly frequent hospital infections, and at the same time the limited possibilities of combating them, contributed to the growth of antibiotic-resistant pathogenic microorganisms.

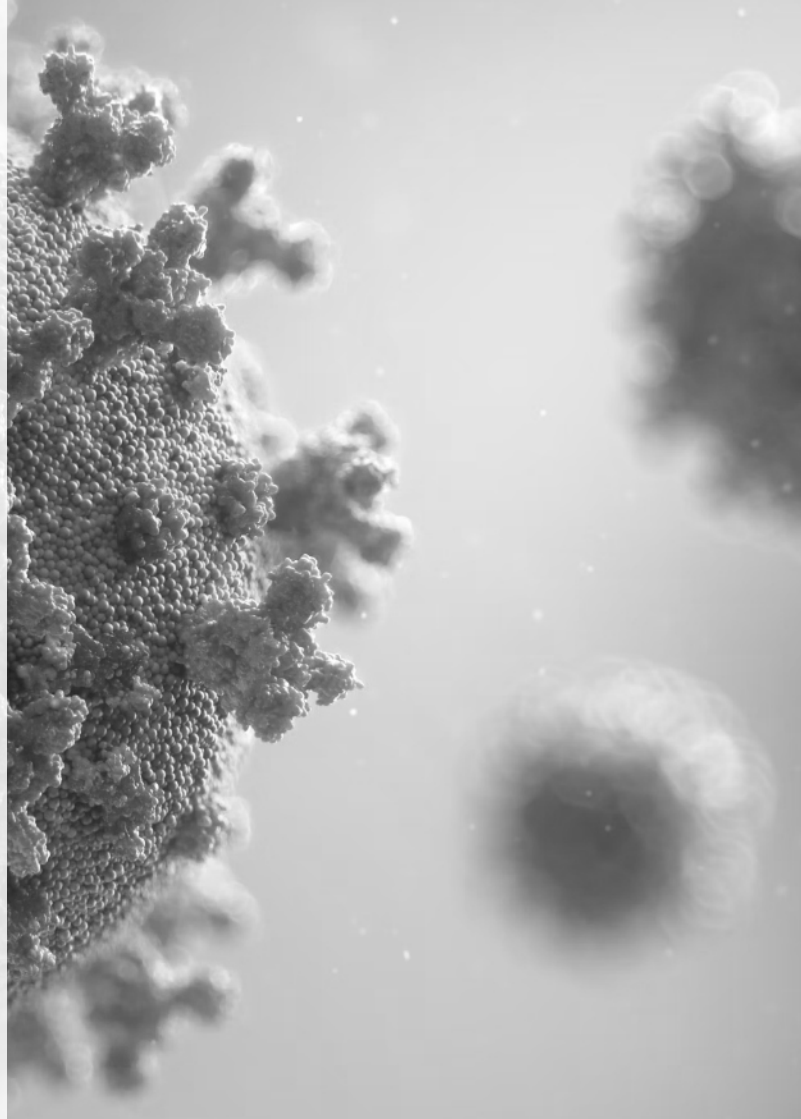
Modern medicine focuses on post-factum action, trying to combat the effects of pathogen-induced diseases.

Solution

The solution is to use technologies that ensure self-disinfecting surfaces that are used not only in the medical and public sectors, but also in our home.

Challenges

The challenge is prevention, leading to the reduction of the number and inhibition of the migration of pathogenic microorganisms, thus minimizing the effects of infections.



polydef technology

POLYDEF are specially developed polymer components containing silver nanoparticles, which give plastics antibacterial and antifungal properties.

The presence of nanosilver in the protected polymer provides a biocidal effect by inhibiting the metabolic pathways of microorganisms, contributing to the elimination of sources of unpleasant odors and extending the life of the material.

The additive is environmentally friendly, does not change the physical properties of polymers and does not degrade the protected material.

The component provides long-term microbiological protection (at the level of <99.98%) and increases the safety and attractiveness of the product.

why is it worth it?



MODERN
TECHNOLOGY



SAFE
FOR HEALTH



EXTENDED
SERVICE LIFE



MANY POSSIBLE
APPLICATIONS

thermoplastic polymers

POLYDEF is a component for polymers which contains silver nanoparticles (Ag), which gives plastics antibacterial and antifungal properties.

- the additive is environmentally friendly,
- does not change the physical properties of polymers,
- does not degrade the protected material,
- provides long-term microbiological protection,
- it is characterized by higher stability at high temperatures and high humidity in relation to traditionally used biocides.

The additive is dedicated to a wide group of thermoplastic polymers, such as LDPE, HDPE, PP, ABS, EVA, PET, PMMA and others.





In case of thermoplastic polymers, POLYDEF allows for a completely new biocidal quality and a guarantee of health safety.

This is especially important for all products with which we have direct contact. We are talking not only about the packaging itself, but also all building materials, interior furnishings, personal products or household appliances / electronics.

The same properties will also be appreciated by manufacturers of components for the medical industry, where the restrictions on antibacterial and antifungal standards are equally high. In both cases, the POLYDEF technology provides effective and long-lasting microbiological protection.



antibacterial nano-additive for 3D printing filaments

An additive containing silver nanoparticles for the production of filaments used for three-dimensional printing in FDM technology.

The product may be offered in the form of a powder additive containing nanosilver, which the manufacturer will dose on the line for creating a "vein" or in the form of a ready-made polymer granulate.

Nanoparticles can be used in a wide variety of polymers used in 3D printing.

PLA • PETG • ABS • ASA • PA



MEDICINE



SPORT



AUTOMOTIVE



AVIATION



EDUCATION



antibacterial nano-additive for epoxy resins

An additive containing silver nanoparticles as a component for epoxy resins in thin-layer and self-leveling floors in order to obtain microbiological purity, e.g. in hospitals.

The addition of nanosilver deposited on a silica support is dosed at the expense of standard silica to regulate the rheology of the resins.

Application: hospital floors, hall floors.

Can be used in thin-layer and self-leveling floors.

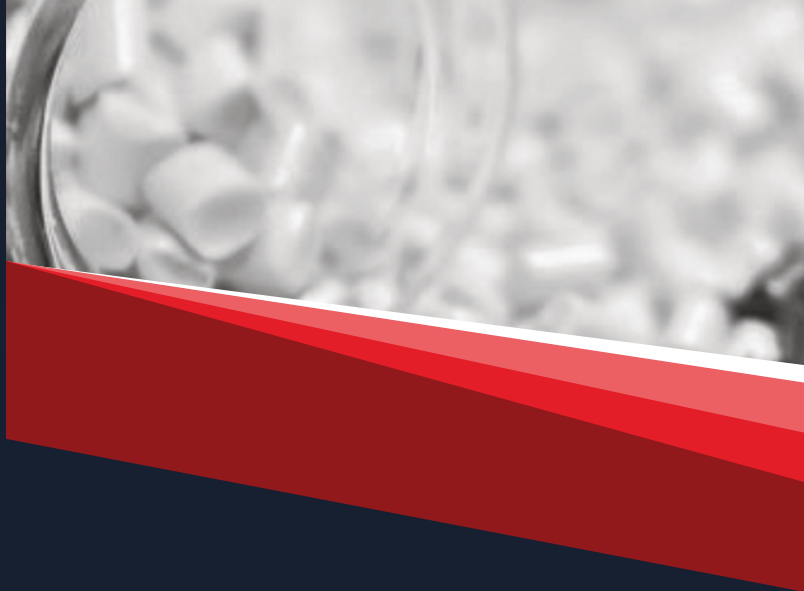
antibacterial nano-additive for polyurethanes

Addition of nanosilver to the polyol component (A) of the polyurethane system for the production of soft, stiff and viscoelastic polyurethanes. Additive in the form of concentrated colloid dosed through the mixing head to component A in a used amount based on the weight of the total blend.

Application: anti-bedsore, viscoelastic mattresses, pillows for allergy sufferers, insoles for sports shoes, pumice, polyurethane adhesives.

Can be used in a wide range of soft, viscoelastic and hard polyurethanes.





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