

NanoSilver for Anti-Microbial Applications



ABOUT US

- ❖ **Reinste Nano Ventures Pvt. Ltd.** is one of India's premier Nanotechnology based solutions and material supplier.
- ❖ Work's with different industry segments like Textiles, Paints, Oil and Gas, Energy, Filtration, Electronics etc.
- ❖ Part of major events and forums across India in the areas of specialty and innovative materials.
- ❖ Top management and key staff are very well qualified and experienced in Nanotechnology materials and specially marketing of highly technical and latest innovative products to Industry.
- ❖ Catering to Clients from across India, across all Industries and providing handholding to companies developing innovative products.
- ❖ Top management is associated with major Industry associations like CII, FICCI, ASSOCHAM & Nano Vision Group.

OUR EXPERTISE



Construction



Polymers



AUTOMOBILES



**Pharma &
Healthcare**



**Paint &
Coatings**

OUR PARTNERS



Antimicrobials : Active Against Microbes

NanoSilver

- The word antimicrobial was derived from the Greek words anti (against), mikros (little) and bios (life) and refers to all agents that act against microbial organisms.
- Silver all known metal, is a chemical element with symbol Ag and atomic number 47. A soft, white, lustrous transition metal which possesses the highest electrical conductivity, thermal conductivity and reflectivity of any metal. Beside that, silver has one most powerful property named as “antimicrobial”
- Silver has very good natural antibacterial properties originated at nanoscale. Now, everyone has a question in their mind what is nanoscale.

Nanoscale: 1nm-100nm measurement

- Silver nanoparticles are nanoparticles of silver having size in between 1 nm and 100 nm.
- Since ancient period, silver has been used to kill bacteria and remove red swelling due to its remarkable properties. In olden days, people stored food in storage boxes containing silver to prevent bacterial growth. During early times in South Europe, the silver lining was used to stitch up wounds and accelerate the healing process.

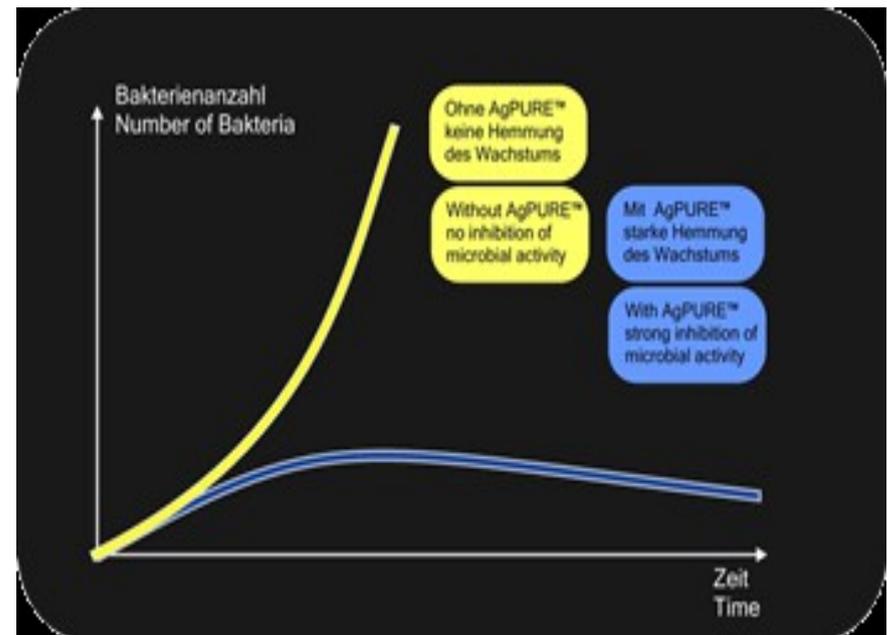
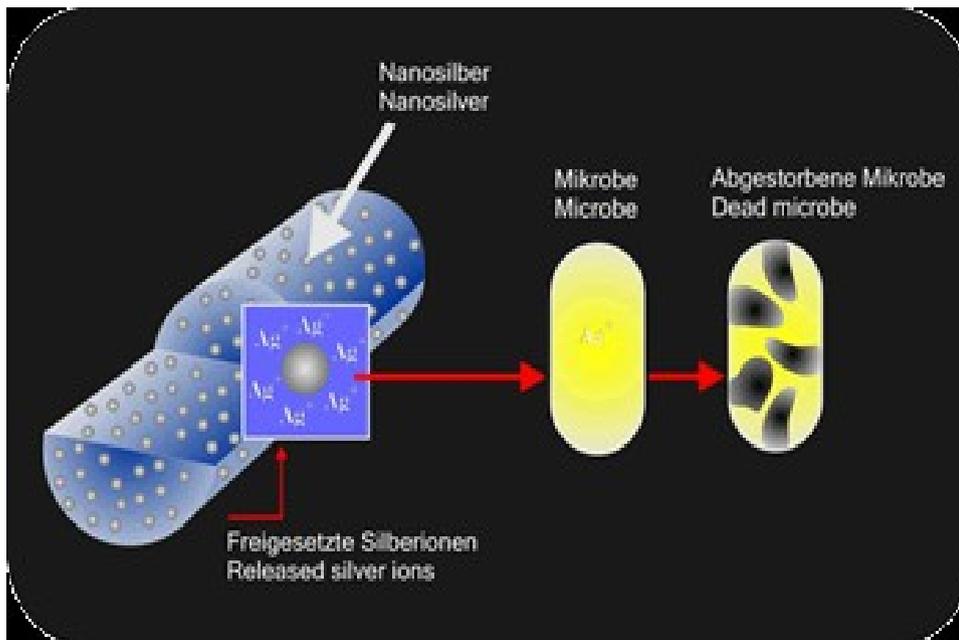
NanoSilver Grades

NanoSilver	Ag Conc.	Water Content & Others	State	Color	Density (kg/dm ³)	Area Use
W10	10.0± 0.50%	75%	Liquid	Orange	1.1	Lacquer, coating
W50	45.0± 1.50%	<5%	Liquid	Brown	2.7	Medical
W3	3.0± 0.10%	<0.5%, 97% emulsifier	Liquid	Brown	1.1	Resins, varnish & sol-gel coatings
W20	20.0± 0%	<5	Solid	Yellow	0.12	paints, Resins
W2	2.0± 0.10%		Solid	Silver Brown	0.3	Polymers, Resins

Properties of Nanosilver

- **Controlled release**
- **Resistant to cleaning or washing**
- **Long lasting / permanent antimicrobial effect**
- **Constant antimicrobial activity**
- **Excellent leach-resistance**
- **High efficacy with low additive dosage**

Tolerance at High Temperature: even at temperatures above 300°C.



Testing Standards

Proven efficacy of Nanosilver Agar diffusion test is not suitable
Antimicrobial efficacy verified and certified by in-house
microbiology methods according to International standards:

Rigid Surfaces: JIS Z 2801:2000, ISO 22196:2007

Textiles: DIN EN ISO 20743:2007-10, JIS L 1902:2002,

SN 195921 is a method to check the anti-fungal activity.

ASTM G 21 – 96,

JIS Z 2911:1992

Company Testing Results

Application	R-Value	Strain
PP staple fiber	2	E. coli
PET-Microfiber Cloth	3 3 >4 2	S. aureus K.pneumonia E. coli C. albicans
Soft PVC	3	E. coli
Silicone Laquer	> 3	S. aureus
Silvercoating for Med.	>4	S. epidermidis

Recommended Dosage

To achieve final concentration of nanosilver in the product (g/kg)

Nanosilver Grade	W10	W50	W3	W20
100 ppm	1.0	0.22	3.3	0.50
250 ppm	2.5	0.55	8.3	1.25
500 ppm	5.0	1.11	16.7	2.5
1000ppm	10.0	2.22	33.3	5.0

Recommended Dosage

To achieve final concentration of nanosilver in the product (%w/w)

Nanosilver Grade	W10	W50	W3	W20
100 ppm	0.10	0.02	0.33	0.50
250 ppm	0.25	0.06	0.83	0.13
500 ppm	0.50	0.11	1.67	0.25
1000ppm	1.00	0.22	3.33	0.50

Applications

❏ **Textile and Apparel**

Nanosilver can be applied in various ways ranging from coating, finishing and fiber compounds.

❏ **Paints and Coatings**

Non sensitizing, permanent active fungicidal mineral fillers containing paints are best formulated with Nanosilver grades W20 or W2.

❏ **Health Care**

Nanosilver enhanced antimicrobial medical devices & formulations and antimicrobial health care products actively inhibit bacterial growth and show a 99+% reduction in test microbes and common bacteria.

❏ **Plastics and Polymer**

Currently using compounding technique in polymer industry, use of nanosilver dispersion into polymer master-batches is a good opportunity to make their plastics with antimicrobial additives safe to handle and easy to use.

❏ **Footwear**

For odorless with antimicrobial effect in shoes, nanosilver additive is a simple & easier method for manufactures.

❏ **Household**

Use of Nanosilver in Consumer products like sanitizers, soaps, hand wash & home cleaners is a good idea to keep family healthy & in safe environment.



For More Information



Reinste Nano Ventures Pvt Ltd

CSC Market, Mayur Vihar, Phase-II
New Delhi-110091

Technical Queries:

+91-120-4781213, 231,227
M: 9810662669

VIST US:

www.reinste.com
www.agsterilized.com
www.smartcoatings.in