

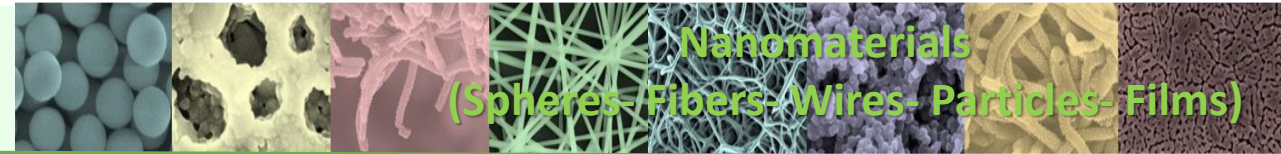
# Transparent Antimicrobial / Antiviral Coating for Domestic and Industrial Applications

Nanomaterials for Industrial Applications



- Introduction
- Concept
- Properties
- Technical Features
- USP of Water based Hand Sanitizer
- Applications
- Applications sectors

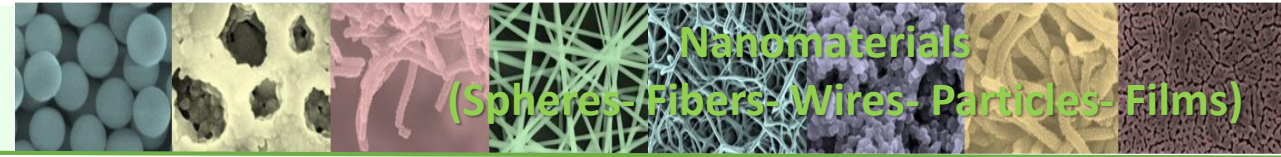




## Advantages of Transparent Antimicrobial / Antiviral Coating

- ✓ Solvent Based (Nano-Silver) Coating
- ✓ Kills all kinds Virus, Bacteria & Fungi
- ✓ Odourless (pH 7)
- ✓ Non corrosive
- ✓ Easy to carry, No spillage
- ✓ Dries fast on coated surface (15 min)
- ✓ Contains pleasant aroma
- ✓ Certified by NABL accredited Lab, Sri Ram Industrial Research Institute, Bangalore, Karnataka State, India
- ✓ Tested at Rajeev Gandhi Center for Biotechnology, Trivandrum, Kerala state, India



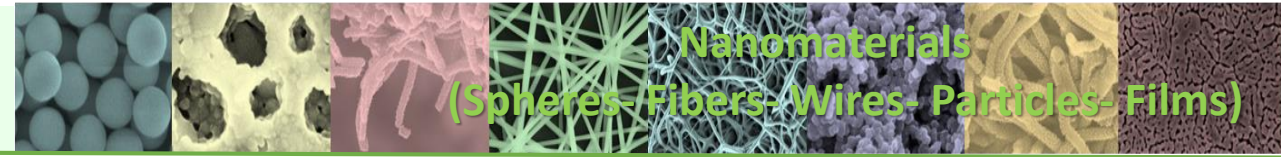


## Unique Selling Proposition

### Transparent Antimicrobial / Antiviral Coating (TiO<sub>2</sub>-Ag) – Germ Pro-Coat

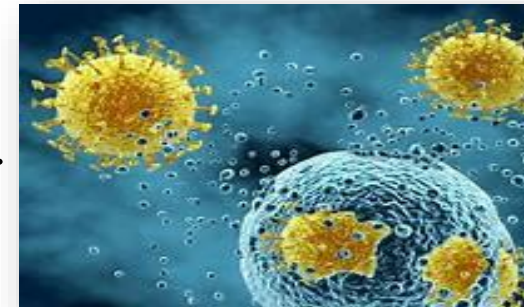
- ✓ Applicable to all types of surfaces (sofas, metals, office furniture, etc.,)
- ✓ Effective against spores like Candida species unlike alcohol based solution
- ✓ Offers residual antimicrobial activity for 6 to 8 weeks
- ✓ Safer for use in closed areas like automobiles
- ✓ Environmental-friendly
- ✓ No storage restrictions
- ✓ Pleasant Aroma after application and dries fast in 20 secs (Sandal wood, Jasmine or Mint)

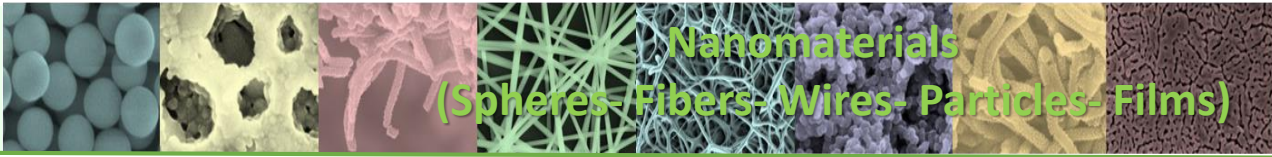




# Introduction

- ❑ In our daily lifestyle, the rampant spread of diseases and contagious infections has been a major issue associated with human health via media of physical objects and consumables.
- ❑ Infection control is of extreme importance, hence generating a growing need of hygiene in living habitats and work spaces.
- ❑ For such problems the anti-fungal and anti-bacterial coatings are expected to be an important technological breakthrough so as to control the growth of pathogenic fungi and bacteria to reduce the risk of infections in dynamic environment.
- ❑ By applying our coating on various metal, glass or fabric surfaces will can reduce the rate of bacterial/fugal/viral infections.
- ❑ The coating does not change the appearance of the surface.





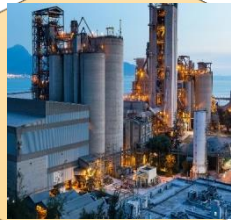
## Applications of Antimicrobial / Antiviral Coating ( Germ-Pro- Coat)

Hospitals – ICU walls, Beds, Surgical Instruments



metals, concrete, glass or painted surfaces helps in deteriorating the species

Helpful in Industries where infection spread rate is more



**Anti Bacterial/Fungal Coating**



Reduces the rate of infection

Fungus growth is less on walls



**Delays Fungus**



Can be applied on PPE's

Nanomaterials for Industrial Applications

## Anti Bacterial/ Fungal– Surface Applications

**Fabric**



**Interior Walls**



**Metals**



**Surfaces**



**Glass**

**Wood**



**Cardboard**



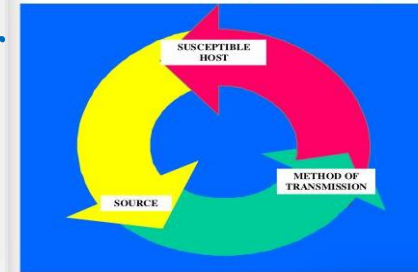
## Facts about Germs

- ❑ Germs can survive for up to three hours on your hands
- ❑ There are between 2 to 10 million bacteria on your fingertips and elbows
- ❑ The number of germs on your fingertips doubles after you use the toilet
- ❑ When you don't wash your hands, you transfer germs to the food and drinks you eat
- ❑ One germ can multiply into more than 8 million germs in one day

### Where do germs come from?

- Environment
  - surfaces
  - floors
  - gardens
- People
  - skin
  - intestines
- Equipment
  - Water
  - Flowers/plants

#### Chain of Infection



All links must be complete for an organism to spread from one place to another. Our goal is to break the chain in one or more links.

Places

We

Touch

every day

### 6 Hotspots for Germs

**COMPUTER KEYBOARDS**

Germs are at your fingertips when keyboards are infrequently cleaned. "Use disinfecting wipes on electronic items such as phones and computers, that are touched often," according to the U.S. Centers for Disease Control and Prevention.

**COUNTERTOPS**

Before and after every food item, wash cutting boards, countertops and utensils with hot soapy water, the CDC recommends.

**PHONES**

Holding your smartphone? Germs and bacteria are also on hold. Avoid placing phones on restroom counters and other surfaces.

**TELEVISION REMOTES**

At home or in hotels, television remotes are often used, but seldom cleaned. Clean with disinfecting wipes, if possible.

**DOORKNOBS AND HANDLES**

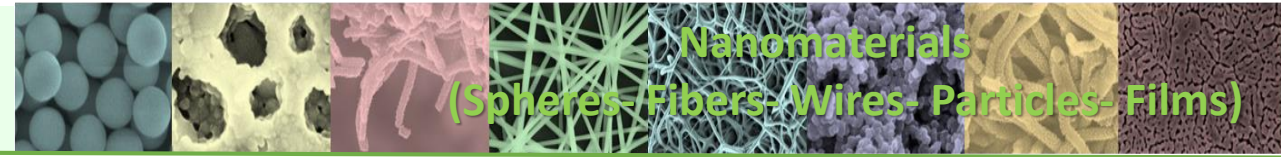
Doorknobs, elevator buttons and faucet handles are high-contact surfaces. Use caution.

**PURSES AND WALLETS**

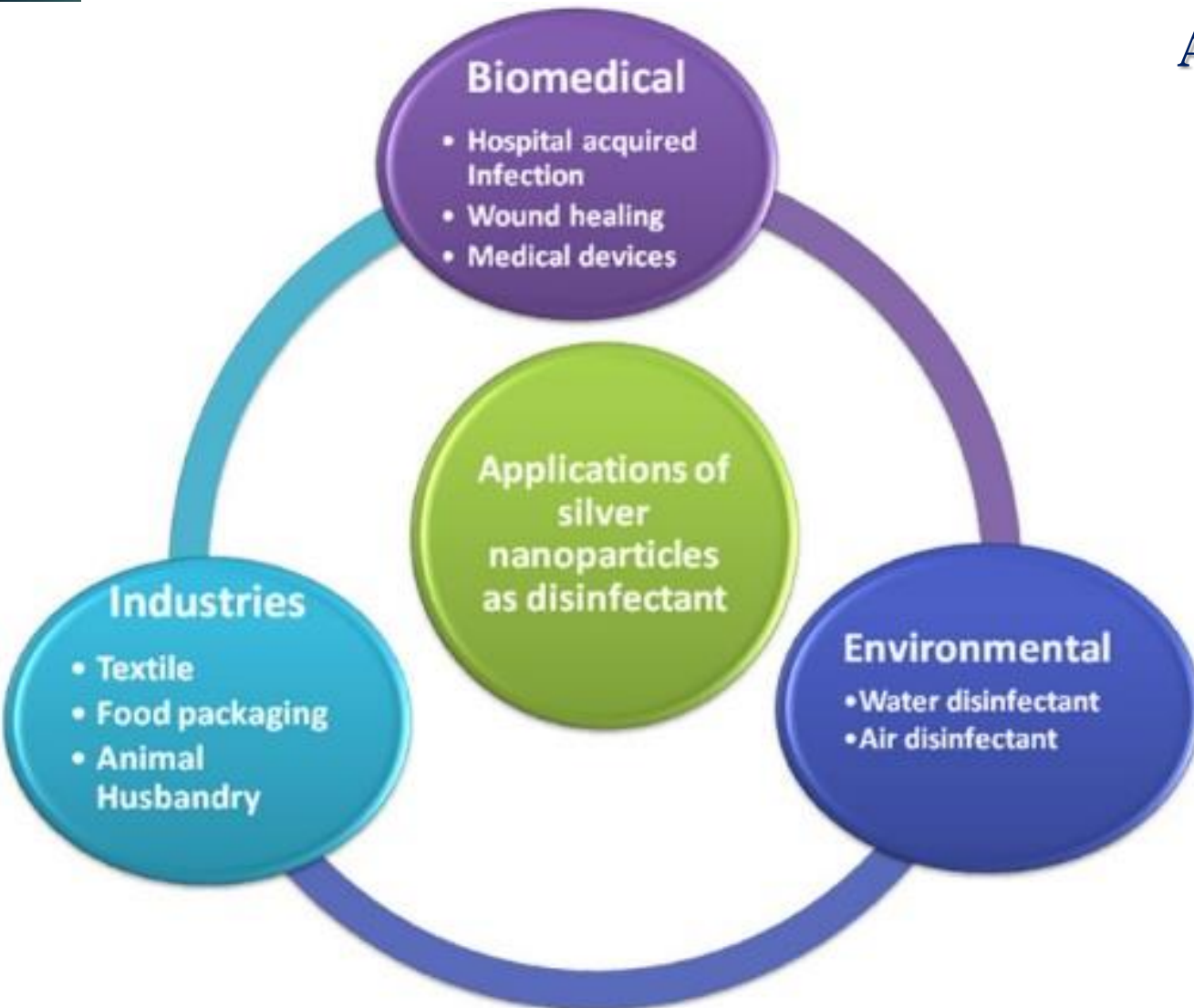
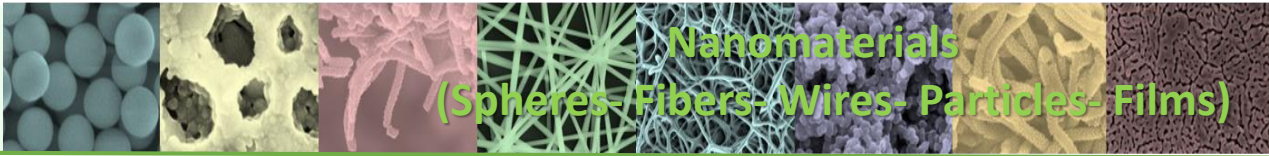
Don't place purses and bags on bathroom floors or countertops. Be cautious when in public or outdoors.

Baptist Health South Florida

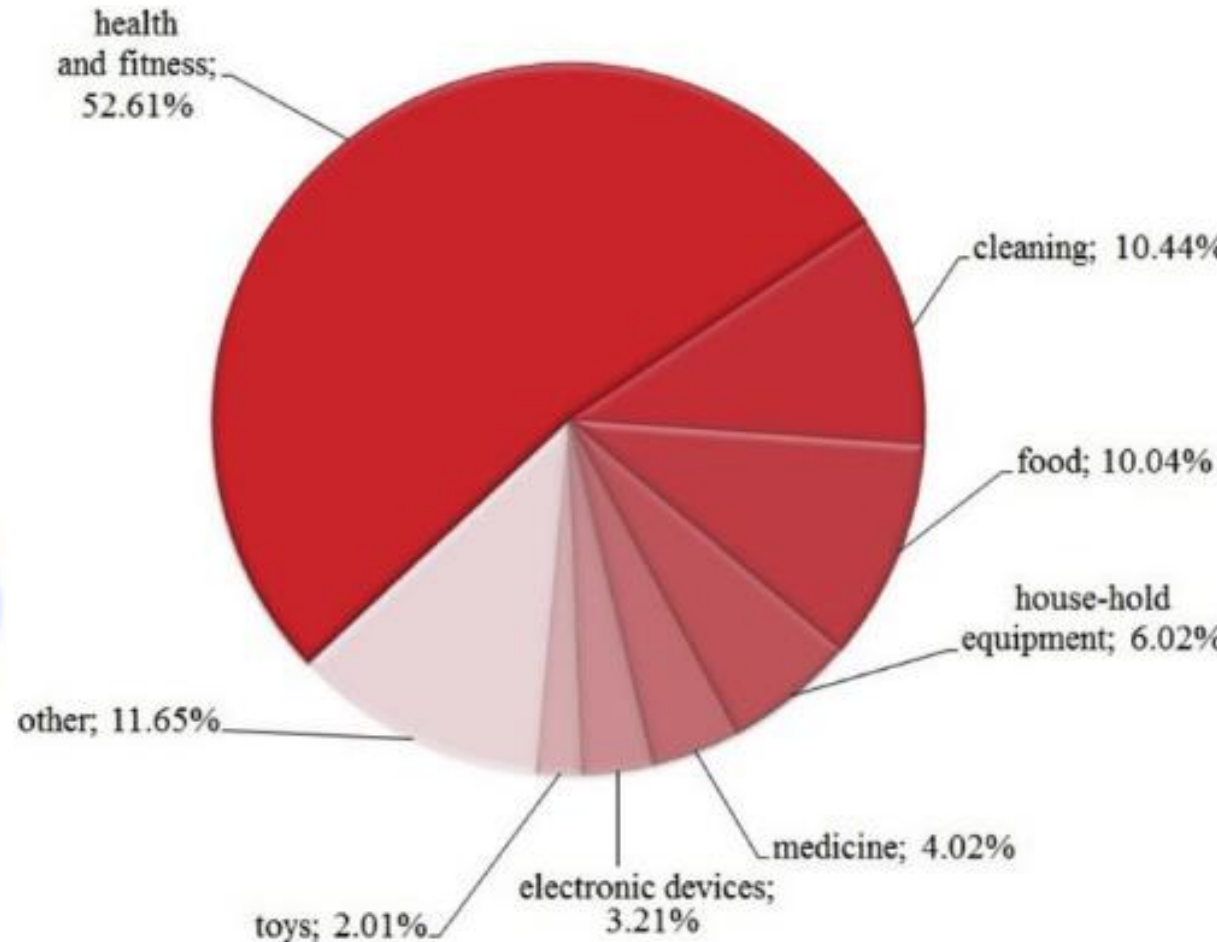




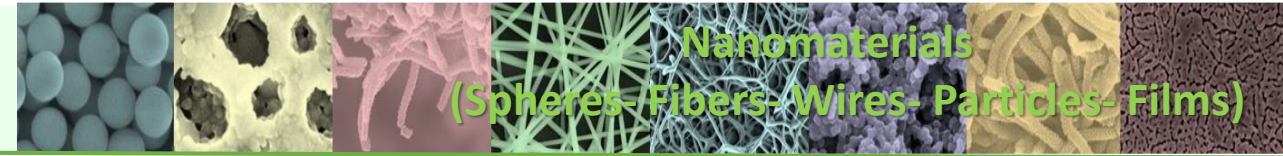
- ❑ In spite of the contemporary improvement of the hygiene in the biomedical (hospitals), education (school/colleges), surrounding environment (air/water), and industry (food/textile/animal husbandry); it is an increasingly important public health issue globally.
- ❑ In particular, the infectious diseases are the major challenges to the human being because of emerging >300 infectious diseases with a new adaptation.
- ❑ The microbial based infections are a key cause of the diverse infections because of which >50% people are dying in Africa due to a variety of infections.
- ❑ To overcome the various strategies have been used to reduce infections by using different disinfectant. The disinfectants are chemical substances applied on the surface to kill or inhibit microorganisms. It is an ideal way to disinfect various surfaces in hospitals, kitchens and in clinics. They are useful in our daily life because they particularly kill microorganisms without causing health hazards to human beings.
- ❑ In addition to that, they are abundant in quantity, efficient, a cheaper antimicrobial agent in short periods and unable to generate toxic compounds after their use. The various chemical compounds such as alcohols, quaternary ammonium cation, aldehydes, oxidizing agents such as sodium hypochlorite, hydrogen peroxides, iodine etc. have been used as disinfectant effectively.



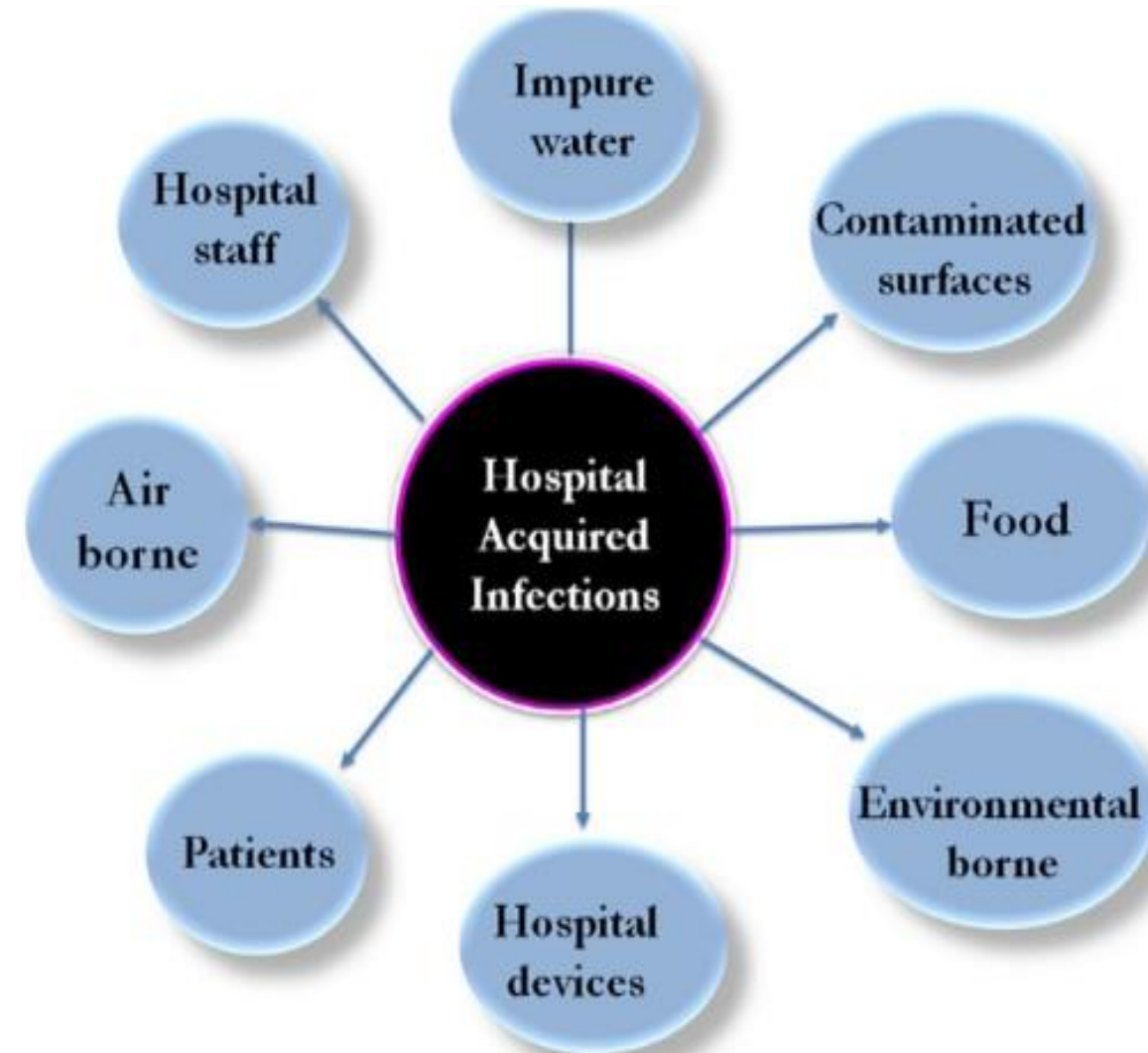
## Applications of silver nanoparticles

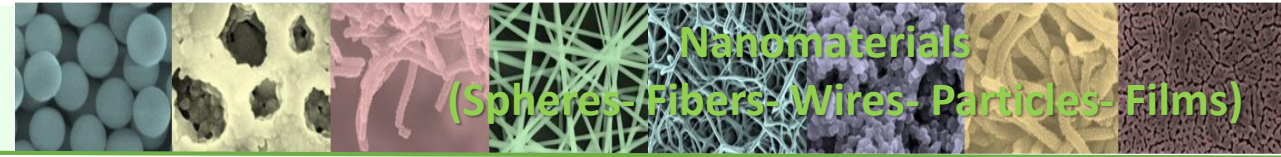


**Contribution of silver nanoparticles in different sectors.**



- ❑ Ag NPs are playing the crucial role in the air/water purifications, in biomedical fields as a therapeutic agent, textile consumer products as well as wound dressing.
- ❑ Its bactericide effects are observed on *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Bacillus cereus*, *Listeria innocua*, *Salmonella choleraesuis* bacteria due to higher toxic effect to the bacterial cells.
- ❑ Ag NPs have imparting broad scope to enhance efficiency by optimizing its physicochemical parameters, which also leads to greater binding capability with sulphur and phosphorous functionalized biomolecules of bacteria for killing the cells





## Aqua Sil- San (Water based Hand Sanitizer) – Specification

### PROPERTIES

Appearance

Solid content

Application Method

Surface dry time, minutes

Kills germs (bacterial/fungal/viral)

Packaging Size

### RESULTS

Transparent Solution

500 ppm of silver + TiO<sub>2</sub>

Spray

15 min

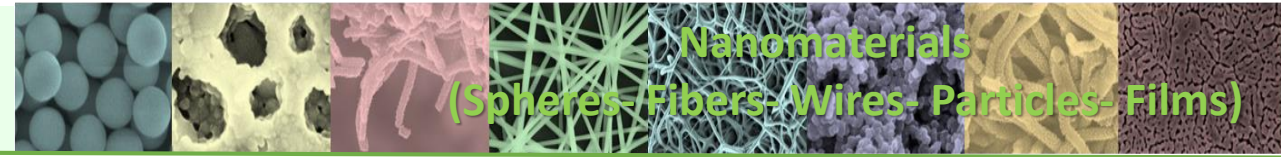
99.9% in 60 seconds

50 ml – Spray bottle

## Germ-Pro Coat (TiO<sub>2</sub>-Ag Solution)

- Easy to spray
- Forms a very thin uniform long lasting film (6 to 8 weeks)
- Dries within 15 mins
- Does not change aesthetic sense of the area
- Pleasant aroma (sandalwood / Jasmine / Mint)
- Handy and portable
- One of its kind product





## Applications of Germ-Pro Coat (Antimicrobial / Antiviral Coating) in various sectors:

**Sector-1:** Individual Homes, Apartments, Villas, Resorts, Hotels, Restaurants, Temples (Government / Private)

**Sector-2:** Industrial sheds, Chemical / Pharma / Biotech companies solvent tanks, Cold storage sheds, Hospitals from various states, Ashrams, Schools (both Government and Private from different states)

**Sector-3:** Aquaculture, Horticulture, Poultry sheds, car show room sheds, Rice mills, brick industry sheds

**Sector-4:** Industrial roof shed Coil manufacturers, Asbestos Sheet manufacturers, Seeds storage sheds,

**Sector-5:** Middle east countries, African Countries, Turkey, Iran, Egypt, Australia, USA (southern part) and North American countries, Sri Lanka, Bangladesh, Burma, Thailand, Malaysia, Singapore, Philippines, etc.,

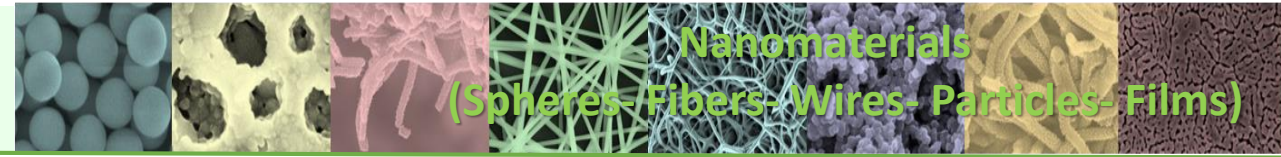
**Sector-6:** Direct approach of MSME (from different states)

**Sector-7:** Ceramic association, Metal association, Pharma parks, Industrial parks, Biotech parks, Malls roof tops

**Sector-8:** Containers in Harbour, Containers carrying cold items (prawns fish etc.,)

**Sector-9:** Defence, Air force, Naval – sheds, tents and other areas etc.,

**Sector-10: Government:** Airports roofs, Railways Sheds, compartments, Food corp. India (FCI) sheds, Buses and bus stands



**Make your space Germ Free.....by using  
Antimicrobial / Antiviral Coating Spray**

**Thank You for Your Kind Attention**

**Looking forward for fruitful Business...**

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