MACSEN LABS

APIs • Specialty & Fine Chemicals • Dyes

Pioneers in Chemistry since 1952

# About Us

Macsen Labs is a pharmaceutical and chemical manufacturing organization with its origin dating back to 1952. Headquartered in the city of Lakes, Udaipur (Rajasthan, India) we presently have various manufacturing units in and around Udaipur. Macsen is engaged in the manufacturing of niche Active Pharmaceutical Ingredients, Pharmaceutical application Dyes, compounds of precious and rare earth metals and other speciality inorganic compounds.

We are the only cGMP manufacturer of a complete range of pharma applications and injectable dyes. Macsen has also started new verticals of Contract Research and Custom Synthesis.

# Our Business Units



### Active Pharmaceutical Ingredients

We manufacture niche and rare-to-find API molecules.



### Specialty Dyes & Biological Stains

We manufacture specialty dyes of very high purity for several specialized applications.



### Inorganic fine chemicals & Metal Salts

Manufacturers of inorganic chemical compounds of rare earth & precious metals for more than 50 years.



### Silver Nano Materials

We offer fully customized Silver Nanoparticles-based antimicrobial solutions to meet the specific needs of your product and its application.



### Cosmetic Ingredients

Our specialty includes ingredients used in skincare for skin-whitening, antifungal, hyperpigmentation, & other cosmetic products.



### Custom Synthesis

We have the ability to synthesize organic and inorganic compounds from lab to plant scale as per customer requirements

# Advanced Antimicrobial Silver Solutions

## Precisely Engineered Silver-Based Additives & Nanomaterials for Antimicrobial Applications

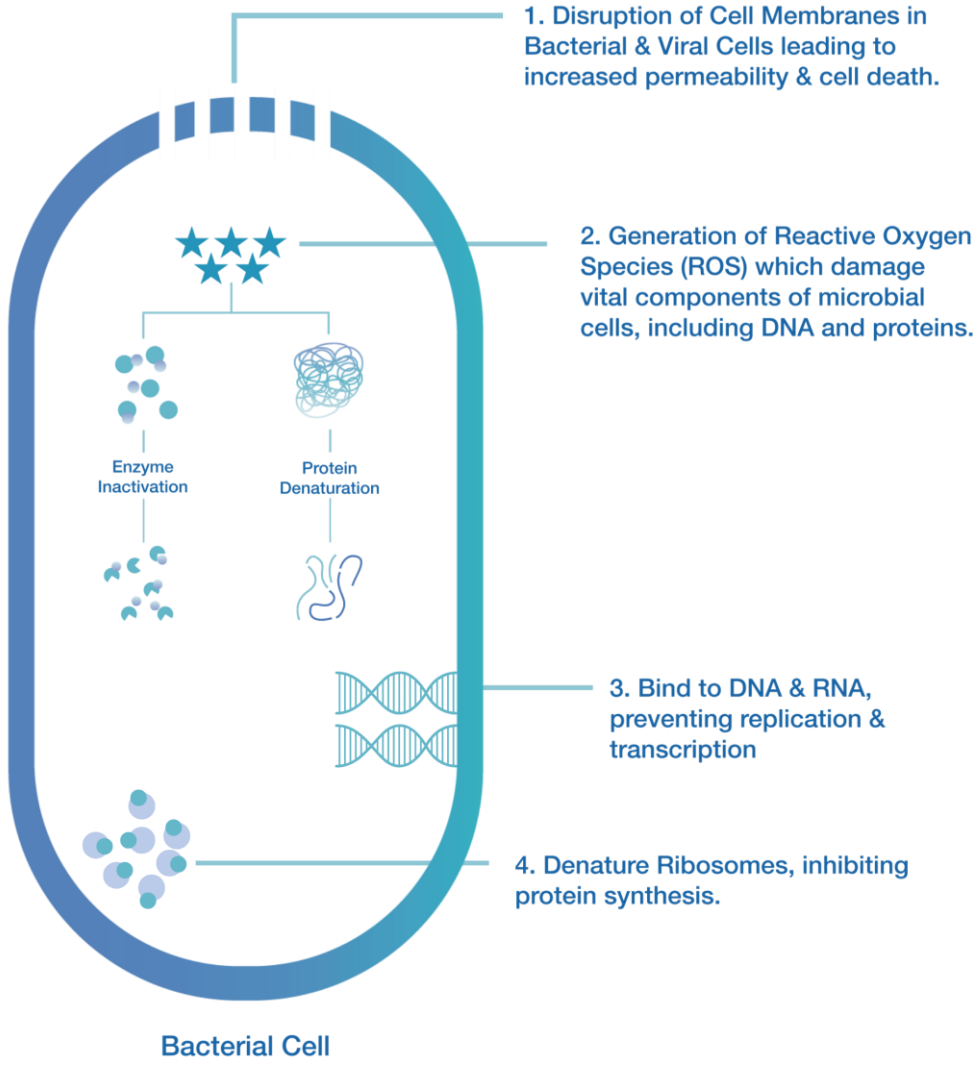
Macsen manufactures a comprehensive range of advanced silver based antimicrobial solutions, including colloidal silver dispersions, silver protein complexes and additive systems designed for pharmaceutical, cosmetic, home care, and industrial applications. Our formulations feature controlled particle size, high silver purity, and optimised stabiliser and carrier systems to ensure reliable and consistent performance.

# Silver's Mechanism of Action

**Silver has been used as an antimicrobial agent for more than six millennia**, from ancient Egyptian wound care and Greek vessels for water preservation, to 19th-century treatments for burns and battlefield infections. Before antibiotics, silver was the most widely used antimicrobial in medicine. Today, with rising antimicrobial resistance, it has re-emerged as a trusted solution across healthcare, hygiene, and material science.

Silver is a noble metal recognized for its broad-spectrum antimicrobial and antiviral activity and well-established safety profile when used appropriately. Its effectiveness comes from multiple simultaneous pathways.

**As illustrated, silver ions disrupt cell membranes, generate reactive oxygen species, bind to DNA and RNA, and denature ribosomes. This multi-pronged mechanism delivers rapid, durable action against bacteria, viruses, and fungi, and makes microbial resistance far less likely than with conventional antibiotics.**



# Product Portfolio

## Liquid Colloidal Silver Dispersions

| Product | Silver Concentration | Solvent/Base | Stabilizer | Nanoparticle Size Range |
|---|---|---|---|---|
| SILNAN-50 | 50 ppm | Distilled Water | NA | 10–50 nm |
| SILNAN-500 | 500 ppm | Distilled Water | PVP | 10–50 nm |
| SILNAN-1000 | 1000 ppm | Distilled Water | PVP | 5–20 nm |
| SILNAN-2500 | 2500 ppm | Distilled Water | PVP | 10–50 nm |
| SILNAN-4000 | 4000 ppm | Distilled Water | PVP | 10–50 nm |
| SILNAN-32000 | 32000 ppm | Distilled Water | Gelatin | 10–50 nm |




**Key Characteristics:**

• Silver purity: 99.99% • Optimised stabiliser systems for enhanced dispersion and stability • Available in a wide range of silver concentrations (50 ppm to 32000 ppm)
• Nanoparticle size range: 5–50 nm
• Nanoparticle morphology: Spherical • Highly stable, well-dispersed colloidal system

**Applications**

Liquid colloidal silver dispersions are designed for use in liquid-based formulations, surface treatments, and textile finishing applications. They are suitable for products such as sprays, home care & cosmetic formulations, hygiene and cleaning formulations, and textile treatment solutions, ensuring uniform nanoparticle distribution and effective antimicrobial performance.

# Dispersible Silver Products (Protein Complexes)

| Product | CAS No. | Key Specifications |
|---|---|---|
| Colloidal Silver Powder (Collargol), Ph. Eur. Grade | 9007-35-6 | Silver content 70–80%, Water dispersible |
| Silver Vitellinate (Mild Silver Protein) | 9015-51-4 | Silver content 19–23%, Water dispersible |
| Silver Proteinate (Strong Silver Protein) | 9008-42-8 | Silver content 7.5–8.5%, Water dispersible |

**Key Characteristics:**

- Water-dispersible silver products suitable for aqueous formulations
- Controlled silver release through protein binding and colloidal stabilisation
- Available across a wide range of silver concentrations (7.5% to 80%)
- Stable and compatible with pharmaceutical, cosmetic, and specialty formulation
- Manufactured in GMP-compliant facilities suitable for pharmaceutical applications
- Regulatory and documentation support available for pharmaceutical and cosmetic products

**Applications**

Dispersible silver systems are designed for use in pharmaceutical, cosmetic, and specialty formulations where water compatibility and controlled silver release are required. They are commonly used in topical preparations, antiseptic and hygiene formulations, and personal care products, providing effective antimicrobial performance across a range of applications.

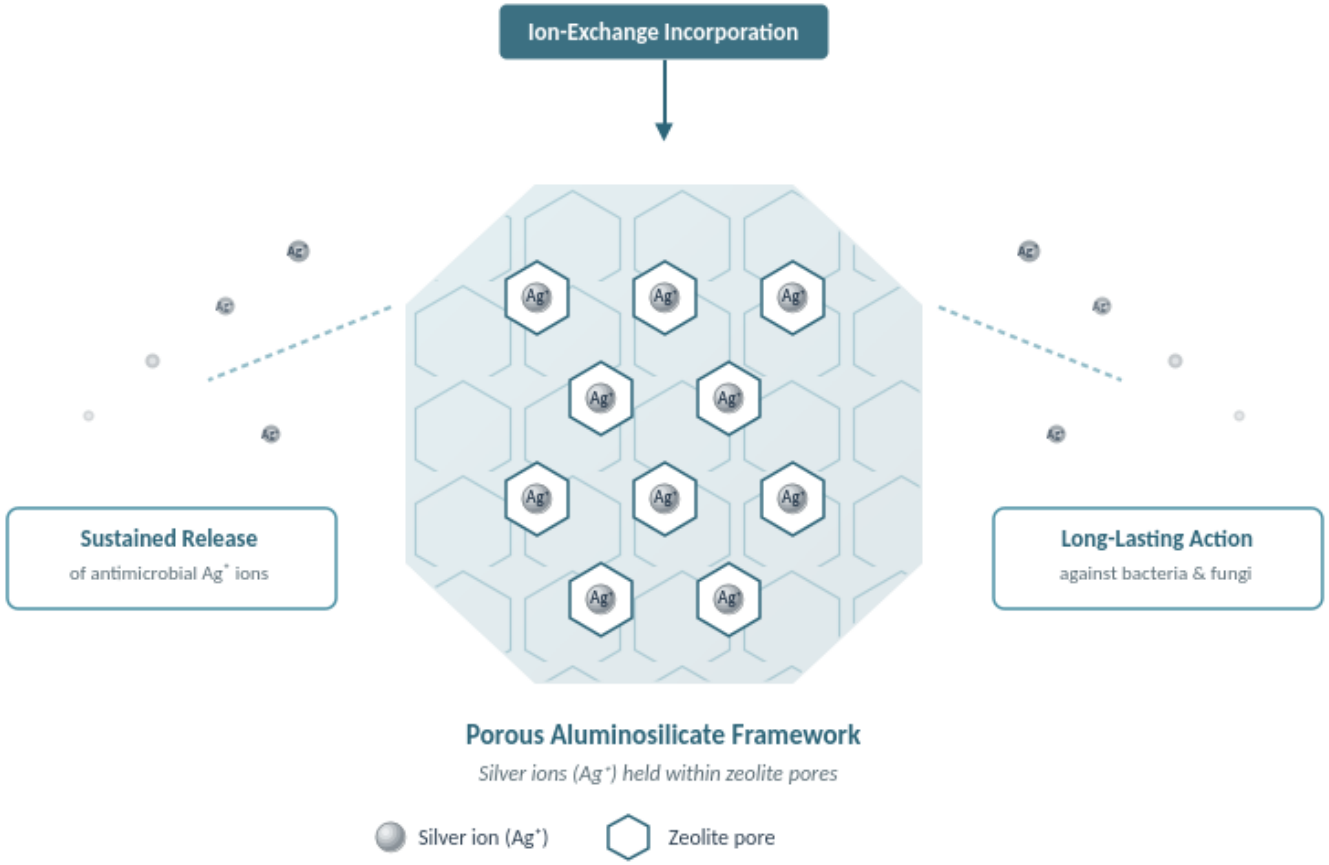
# Silver-Functionalized Insoluble Inorganic Carriers - Silver Zeolite

Silver zeolite is a porous crystalline material in which silver ions are incorporated within the zeolite structure. It is an insoluble carrier suitable for incorporation into material systems and enabling controlled and sustained release of antimicrobial silver over time.

**Key Specifications**

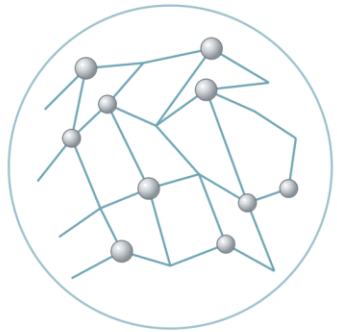
- White Powder
- Insoluble in Water
- Silver Content 2.3-2.7%
- Mean Particle Size 3-5 µm

**Applications:**
Polymer and plastic additives | Textiles & Footwear | Food packaging & food contact materials | Paints & powder coatings | Water filtration systems | HVAC & air filtration



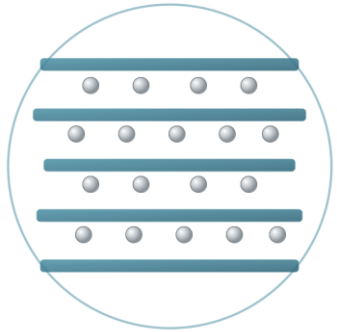
# SILICOSIL™ Series – Advanced Silver Based Antimicrobial Additives

SILICOSIL™ is a range of advanced silver-based antimicrobial additives in which silver is incorporated within an engineered inorganic carrier. The carrier architecture governs how silver is released into the host material delivering sustained antimicrobial action when SILICOSIL is compounded into polymers, coatings, ceramics, and other industrial systems.



**Amorphous Carrier Matrix**

*Silver ions distributed across a non-crystalline network*



**Layered Mineral Carrier**

*Silver ions intercalated between structured layers*

**Applications:**
Polymer & plastic compounds | Paints, coatings & surface finishes | Ceramics & sanitaryware | Composites & construction materials | Rubbers, silicones & foams | Films & packaging substrates | Textiles & technical fabrics

## Silver embedded in Engineered Organic Carriers

Two carrier architectures available selected to match the host material and processing route.

- Sustained Silver Ion Release
- High Thermal Stability
- Broad antimicrobial activity
- Ready Integration

# Custom Development Capabilities for Antimicrobial Silver Solutions




01 Physical Form

02 Silver Concentrations

03 Particle Size & Morphology

04 Stabilizers, Solvents & Special Additives

05 Other Physical and Chemical Parameters
(pH, Viscosity, etc)

# Macsen offers customized silver solutions based on

**Physical Form:**

- Powdered form with silver nanoparticles coated on a suitable substrate loaded on a suitable polymer, readily dispersible in your chosen solvent to form a stable dispersion for subsequent
- Redispersible powder form
- Liquid Dispersions/Colloids in choice of solvent as per the application

**Silver Concentrations:**
From parts per million (like 50 ppm) to percentage levels (like 1%)

**Particle Size & Morphology:**
Particle size ranging from 5-10 microns to 100-200 microns and particle shape such as spherical, rod, or prism-shaped as per the requirement of the application.

**Stabilizers, Solvents & Special Additives:**
Product formulated with appropriate stabilizers (*such as PVP, Gelatin, Casein, Egg Albumin & Aloevera*) and solvents tailored to suit the unique requirements of your applications with expertise extending to choose specialized additives that achieve the desired surface functionalization for optimal performance.

**Other Physical and Chemical Parameters** (pH, Viscosity, etc.)

# Our R&D

## Advanced R&D Capabilities

We have a state-of-the-art and highly equipped in-house R&D division led by experienced scientists & chemists. Our R&D team possesses the capability to synthesize a diverse array of organic and inorganic molecules from milligram to kilo scale, employing a wide spectrum of chemical reactions. Our advanced analytical techniques allow us to precisely characterize and validate the quality of our products.

### R&D Equipments

- Multiple Benchtop Fume Hoods for Synthesis
- Walk-in Fume Hoods
- Rotary Evaporators
- Autoclave and Hydrogenator
- Ball Mill
- Muffle Furnaces
- Vacuum Oven
- Retrosynthesis Softwares
- HPLC
- Preparative HPLC
- LC-MS/MS with PDA
- GC-MS/MS with Headspace
- UV-Vis SPECTROPHOTOMETER
- ICP -OES
- ICP-MS
- FTIR
- Argon Glove Boxes

# Units Located at:

## Macsen Drugs

F-261,262,263, RIICO Industrial Area, Gudli, Udaipur, Rajasthan, 313024, India.

## Macsen Laboratories

Amba Mata ki Ghati, Village Titerdi, Tehsil - Girwa, Udaipur, Rajasthan, 313002, India.

## Macsen Fine Chem

B-142, G-RIICO Industrial Area, Gudli, Udaipur, Rajasthan, 313024, India.

## Macsen Labs Ltd

Khasra No. 4570/2018, 315, Moti Khera, Gudli, Udaipur, Rajasthan, 313024, India.

# Thank You!

Visit us at
www.macsenlab.com

Contact
+91-93240-58823 | +91-72968-66111

Email
sales@macsenlab.com

Office
**Correspondence -** 303, 3rd Floor, Shivam Residency, Durga Nursery Road, Udaipur, Rajasthan, 313001, India.
**Sales Office -** 305, Corporate Centre, Nirmal Lifestyle, Lal Bahadur Shastri Marg, Moti Nagar, Mulund West, Mumbai, Maharashtra, 400080, India.

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