

ECOFRIENDLY
GRAMICID[®]

GRAMICID : MULTICOMPONENT BIOCIDES

PRODUCT DESCRIPTION :

GRAMICID is a complex formulation of processed Silver, a noble metal and highly concentrated Hydrogen Peroxide. The Hydrogen Peroxide component ensures a rapid germ killing effect and the silver component ensures that the effect is long-lasting. Silver is well known for its oligo – dynamic action (cold sterilization). The effect of the two components is multiplied by a special manufacturing process of **GRAMICID** giving a synergistic effect.

The germ killing effect of **GRAMICID** is rapid and thorough, even from low to high temperatures. **GRAMICID** generates neither smell nor taste, has no toxic effect, does not effect the pH value and causes no corrosion. **GRAMICID** when used as per the guidelines causes no irritation to the eyes, skin or mucous membranes. **GRAMICID** is nonpolluting. Its main component Hydrogen Peroxide does not pollute the effluent, as only Oxygen and water are formed. $H_2O_2 \rightarrow H_2 + O$ (nascent form). In other words, no harmful by-products are produced when it decomposes. The silver level is well below **180** micrograms / person / day permitted by **W.H.O.** Therefore it is safe for both human as well as animal life.

SALIENT FEATURES :

- Totally Chlorine free.
- Can be used universally.
- Rapid sterilization.
- No alteration to taste of food/ substance.
- Non-pollutant and bio-degradable.
- Non-carcinogenic and non-mutagenic.
- Good stability in storage.
- LD₅₀ value is greater than 2854 mg/kg of animal weight.
- Odourless.
- Remains effective even at high Temperatures.
- Excellent Industrial Biocide.
- Non-staining.
- Non-inflammable.
- Does not change pH.
- Long lasting effect.
- No toxic effect reported.
- No resistance developed.
- Effective over wide pH range.

U. S. STERILES

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**The World is a Dangerous Place to live without
GRAMICID**

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RANGE OF APPLICATION OF GRAMICID :

GRAMICID has a very wide range of application and can be used wherever halogens, aldehydes, phenols, quats are being used. Additionally, it can be used in cases where halogenous substances have previously been feared to add their peculiar flavour, change in taste and the formation of chemical compounds with the basic elements amongst others. **GRAMICID** has been found very effective.

The following are the most common applications for disinfectant effect in:

DRINKING WATER :

- All Drinking & bathing water
- Well water
- Emergency Water Rations

ANIMAL FARMS :

- Poultry Farms
- Cattle Farms
- Fish Docks, Sweet Water Fish Farms
- Horse Stables
- Zoo

HOSPITALS / CLINIC :

- Sterilization of Surgical Instruments
- Sterilization of Linen, etc.
- Disinfection of wall & floor
- Diagnostic & Research Labs, Operation Theatre, Sterile Rooms and Dispensaries.
- Blood Banks
- IAQ (Indoor Air Quality)
- Dental Products / Mouth Wash.

AGRICULTURE :

- Vegetables and Fruits preservation
- Prevents spoilage of Fruits, vegetables Flowers & Stems.
- No Symptoms of Aspergillus & Sclerotium.
- Gramicid increases shelf life of fruits & vegetables.

THE FOOD & BEVERAGE INDUSTRY

- Breweries
- Canneries
- Distilleries & Wineries
- Bottling Plants
- Food Preservation
- Fish & Meat Processing
- Bakeries
- Essence Manufacturers
- Mineral Water/packageged drinking water

SWIMMING POOLS & WATER PARKS

- Public Swimming Pools.
- Thermal Baths.
- Sauna Pools, Indoor / Outdoor Pools.

PHARMACEUTICAL :

- Formulations, Liquids, Ointments, Tablets
- Bulk Drugs, Fermentation.
- Parenteral Preparations

DAIRIES :

- Cheese Production.
- Ice Cream Manufacturing.
- Retail Milk Sales
- Milk Packing Units.

ANY INDUSTRY WHERE WATER BASED BIOCIDAL ACTION IS REQUIRED

ECOFRIENDLY GRAMICID®

RECOMMENDED DOSAGES FOR GRAMICID

SUBSTANCE BIOCIDIC :

| | | |
|---|-------------------|-----|
| Drinking Water | 10 - 25 mg/1 lt. | ppm |
| Packaged drinking water | 10 - 25 mg/1 lt. | ppm |
| Public Swimming | 10 - 50 mg/1 lt. | ppm |
| Water Parks | 20 - 50 mg/1 lt. | ppm |
| Beverage Industry | 10 - 20 mg/1 lt. | ppm |
| Aerosol Products | 05 - 20 mg/1 lt. | ppm |
| Aquariums, Sweet Water Fish Farm | 10 - 25 mg/1 lt. | ppm |
| As additives in Washing-up | 20 - 25 mg/1 lt. | ppm |
| Liquids, Cleaning Agents,..... | 10 - 20 mg/1 lt. | ppm |
| Cooling towers / Heat Exchangers/ Air Humidifiers | 10 - 30 mg/1 lt. | ppm |
| Waste Water | 50 - 100 mg/1 lt. | ppm |
| Cyanide Detoxification (per ppm of cynide) | 4- 6 mg/1 lt. | ppm |
| Sulphide Detoxification (per ppm of sulphide) | 3 - 5 mg/1 lt. | ppm |

SURFACE BIOCIDIC :

| | |
|---|--------------------|
| Equipment in food & Beverages Industry | 0.1 - 0.5% |
| Beverages Industry, Bottle Washing, Jar, Cap etc. | 0.1 - 0.5% |
| Cisterns, Pipe, Wells | 0.2 - 1.0% |
| Smooth Surfaces (Walls & Floors) | 0.5 - 1.0% |
| Laundry Sterilization | 200 ppm to 500 ppm |
| Filter sterilization (Incl.Reverse Osmosis Filter) | 0.1-0.5% |
| Baskets Storage areas, Conveyor Belts Protective | 0.5 – 1% |
| Clothing, Surgical Instruments, Tubes Tec. | 0.5 – 1% |
| Indoor Air Quality (As spray Fumigation) | 2 – 5% |
| Post Harvest Preservation..... | 0.1 – 0.5% |
| Filtration Plants | 0.1 – 0.2% |
| Vegetables washing | 200 ppm to 500 ppm |
| Transport Containers / vehicles | 0.5 – 1% |
| Air conditioning (Filters, humidifiers, ventilating shafts) | 0.1 – 0.5% |

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AS A SPRAY FUMIGANT / IAQ (INDOOR AIR QUALITY) :

e.g. Use 30 ml of Gramicid with 970 ml. of water for approx. 1500 Cu. Ft. area. The room is ready in just thirty to sixty minutes time (using ultra low volume sprayer).

FOR HAND DISINFECTION :

Make 0.1% solution of Gramicid, dip hand in a solution or moisture. Do not wash. Germs are removed & killed as soon as hand dries up.

FOR DISPOSING CONTAMINATED MEDICAL WASTES :

Make 0.5 – 1% solution of Gramicid. The solution formed can be filled in a large vessel / container wherein all disposable surgical instruments, syringes, blood bags, bottles, catheters, etc. can be disinfected and made ready for disposal. Cotton wastes, wound dressing and similar items can be disinfected by spraying. Gramicid can be used for several other applications in hospitals.

DOSING IS ALSO DEPENDENT ON FOLLOWING PARAMETERS :

- Initial bacterial count
- Contact Time
- PH of the liquid
- Temperature
- Material & nature of the surface (in case of surface disinfection)
- Thoroughness of cleaning
- Presence of organic matter

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ADVANTAGES :

BIOCIDAL EFFECT

Gramicid possesses a very broad spectrum of biocidal activity.

It is highly effective on :

- Bacteria like species of Escherichia Coli, Mycobacterium tuberculae, Klebsiella Pneumonia, Enterobacter, Salmonella, Shigella, Pseudomonas, Achromobacter, Bacillus, Staphylococcus, Streptococcus, Diplococcus, Clostridium, Vibrio, Meningococci, Corynebacterium, Desulfovibrio, Proteus Mirabilis and spores.
- Ligeonella Pneumophila.
- Bacillus Anthracis (being used as a means of biological weapons).
- Yeasts & Fungi like species of saccharomyces, Candida, Penicillium, Asperigillus, Rhizopus, Mucor, Cladosporium etc.
- Virus like AIDS (HIV), Herpes, Hepatitis – B, Infantile Paralysis / Polio), Bacteriophages, Influenza, Newcastle's Disease. Vaccine-Viruses, FMDV (Cattle Virus)
- Poultry Virus :- NDV, IBDV, IBHV, etc.
- Blue-Green Algae and Green Algae.
- Protozoa like Entamoeba Histolytica.
- The Larvaecidal effect of Gramicid will help in mosquito control and hence vector control.
- It acts as a powerful Deodorant.
- It acts as a Biocorrosion preventive.
- Effective over a wide pH range.
- Gramicid is non foaming.
- Gramicid can destroy **Biofilms** within which microorganism are trapped. Gramicid uses nascent Oxygen to destroy the Biofilms & follows it up with Silver which destroys the microorganisms within the biofilms. This double action makes **GRAMICID** far more powerful.

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TECHNICAL DATA :

- State of aggregation** : Liquid
- Colour** : Clear as water
- Odour** : Odourless
- Taste** : When diluted it is tasteless
- Weight** : 1.160 kg/dm³ (at 35°C)
- Boiling Point** : 114.0 °C at 1013 mbar
53.5 °C at 80 mbar
41.0 °C at 40 mbar
- Freezing Point** : -50 °C
- pH-Value** : Gramicid has a pH-value of approx. 1.0 to 1.5 It does not alter the pH-value of the treated water. It should be used in a pH range of 2 to 9, biocidal action being most effective at pH 7.
- Acid-value (SH)** : The Soxhlet – Henkel acid value is the number of millimeters of 0.25 Sodium Hydroxide solution required to neutralize 100 ml. Of solution using phenolphthalein as indicator (pH 8.3).

| Concentration % | Acid Value (SH) | |
|--------------------|-----------------|-----------------|
| | Tap Water | Distilled Water |
| 0.25 | 0.11 | 0.33 |
| 0.50 | 0.14 | 0.06 |
| 1.00 | 0.19 | 0.11 |

- Surface Tension** : (Nouy Ring Method, 20 °C)

| Concentration | m N / m. |
|---------------|----------|
| 0.25% | 72 |
| 0.50% | 71 |
| 1.00% | 71 |

- Bleaching** : When used in prescribed dosages and at a temperature of below 50 °C, no bleaching should occur.

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Foam Behaviour : Gramicid does not foam.

Discoloration : In the case of coating of paint of other lining materials commonly found for e.g. in swimming pools and storage tanks, preliminary tests should preferably be carried out at suitable sites.

Corrosive Property : The following material are corrosion resistant against Gramicid.
: Fe, Cu, S.S., Aluminum 99.5% (iron free), Chromium – nickel steel
i.e. 1.4301, 1.4401, Titanium, PP, PVC, PE.

Corrosion Study : Concentration..... 1%
Duration..... 24hr
Temperature 50°C

| Material | Actual loss of weight in mass g/M ² /24 hr. | Permissible loss of wt. in mass g/M ² /24h |
|--------------------|---|--|
| Aluminum 99.5 | 0.37 | 10 |
| Anticorodal | 0.53 | 10 |
| Tin plasted Iron | 0.04 | 30 |
| Cr-Ni-Steel (18/8) | 0.06 | 0.5 |
| Iron | 0.06 | 20 |

Toxicity : Classified as “relatively harmless” according to IDRL, Pune
LD₅₀ = > 2854 mg / kg.

Biodegradation : Gramicidis not harmful to the environment. Its principal constituent, Hydrogen Peroxide, does not have any detrimental effect on waste water, as only water & oxygen are liberated, i.e. no harmful by-products occur as a result of decomposition.

Inflammability : Gramicid is non-inflammable. However, spontaneous combustion may occur if it is placed in contact with cotton, wool, wood, straw, paper, oil, coal, textiles etc. such a contact should be avoided.

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| COMPARISON OF VARIOUS DISINFECTANT | | | | | |
|---|--|--|---|---|---|
| EVALUATION CRITERIA | QUATS | PHENOLS | ALDEHYDES | HALOGENS | GRAMICID |
| Spectrum of Activity | Gram pos. bacteria, fungi yeasts, sheathed viruses. | Gram pos, bacteria, Gram eng. Bacteria, fungi, yeasts, sheathed viruses. | Gram pos, bacteria, Gram,eng Bacteria, fungi, yeasts, spores sheathed & unsheathed viruses. | Gram pos, bacteria, fungi, yeasts, spores sheathed viruses. | Gram pos, bacteria, Gram neg, nacteria, fungi, yeasts, spores sheathed & unsheathed viruses, amoebae, protozoa, biofilms. |
| Gaps in Spectrum of Activity | Gram neg, bacteria, mycobacteria, Spores, unsheathed viruses, amoebae, protozoe, iofilms | Spores, unsheathed viruses, amoebae, protozoa, biofilms | Amoebae protozoa, biofilms | Amoebae protozoa, biofilms and unsheathed viruses | |
| Albumin Turbidity and decreased Frothing in contact with Beer | Strong | Not used, Because of risk of alteration of colour and taste. | Not used, because of risk of alteration of colour and taste. | Strong | None |
| Reaction to water Hardness | Poor | Very Good | Good | Good | Very Good |
| Albumin Loading Capacity | Poor | Very Good | Poor | Poor | Very Good |
| Surface behaviour | Surface residue | Absorebd on rubber and plastic | High vapour pressure, loading of ambient air | Surface residue | Very Good |
| Odour | Odourless | Strong | Pungent | Strong | Odourless |
| Tolerance to skin | Good | Good in recommended concentration | Irritant to skin and eyes, risk of sensitization | Irritant to skin and eyes, toxic in gaseous form. | Very good in recommended concentration |
| Carcinogenecity | None | Yes, proven | Yes proven | Yes (Chloroform) | None |
| LD ₅₀ oral, rats | 350-900 mg/kg | 1830-3000 mg/kg | 800-1700 mg/kg | | Greater than 2854 mg/kg |
| LD ₅₀ by inhalation | | | 0.59 mg/l air | | Greater than 59.9 mg/l |
| General Stability after dilution | Only short-term, not reusable. | Only short-term, not reusable. | Only short-term, not reusable. | Only short-term reusable under certain conditions. | Very good reusable |
| Stability to Temp. | Moderate | Poor | Poor | Very Poor | Very Good |
| Biodegradability in Water Treatment Plants | 90% after 5 days | 100% after 3-7 days neutralization necessary. | Good, but neutralization necessary. | Very Poor neutralization necessary | 100% after 24 hours |
| Universal Use | Limited | Limited | Limited | Moderate | Very Good |



TEST REPORTS :

MAKING TALL CLAIMS IS NOT OUR BUSINESS, THE REPORTS FROM VARIOUS REPUTED LABORATORIES SAY IT ALL.

- N.C.L. (National Chemical Laboratories), Pune.
- State Public Health Laboratory, Maharashtra Govt.
- Bombay Veterinary College, Parel, Mumbai.
- Municipal Corporation of Greater Bombay, By Municipal Analyst.
- Indian Drugs Research Laboratory, Pune.
- FDA approved.

(Our executive will be pleased to send you above certificate copies on your request.)

ECONOMICS :

GRAMICID can be compared with other biocides, disinfectant, antiseptic solution, available in the market and when compared, it is observed that Gramicid is almost **FIVE TIMES** more economical than most of the disinfectant that are commonly used, apart from this being far more effective.

PACKING:

30 Kg., 50 Kg., in vented carboy.

CONCLUSION :

GRAMICID is a powerful sterilizing agent, effective against bacteria, virus, fungi, algae and spores. What is more important is that **GRAMICID** is equally effective against bacterial species, which are normally resistant to other biocides.

In addition to its strong biocidal action, which is long lasting, Gramicid is also non – toxic, non-mutagenic, non – polluting, non – residual and an environmental friendly biocide. In fact, it is the biocide which is suitable for all industries.



SAFETY MANUAL:

1. When working with **GRAMICID** protective goggles must be worn at all times. It is advisable to use rubber gloves, which after use can be rinsed with water.
2. If spilled, **GRAMICID** must be washed away immediately with plenty of water, (Effluents containing **GRAMICID** products entails no hazards for sewage system or ground water.)
3. **GRAMICID** is nonflammable. However, spontaneous combustion may occur, if it is placed in contact with oxidizable organic substances. Hence contact between Gramicid and cotton, wool, straw, paper, oil, coal, textiles, etc., should be avoided.
4. In the case coatings of paint or other lining materials commonly found, for example, in swimming pools and storage tanks, preliminary test should preferably be carried out as suitable sites.
5. **GRAMICID** should only be stored in the original containers supplied by us, with the corresponding original seals. Gramicid removed from the container, may not under any circumstances, be returned to the container.
6. Keep in a cool place with close lid.

