CONFIDENTIAL PRODUCT PROFILE

AQUCAR GA 50

GENERAL DESCRIPTION

AQUCAR GA 50 is an EPA registered Microbiocide containing 50% Glutaraldehyde as the active ingredient. It is effective in controlling bacteria and slime forming bacteria, sulfate reducing bacteria and algae in a wide variety of water systems.

APPLICATION

AIR WASHERS AND INDUSTRIAL SCRUBBING SYSTEMS/RECIRCULATING COOLING AND PROCESS WATER SYSTEMS

This product may be used only in industrial air washers and air washer systems which have mist-eliminating components. AQUCAR GA 50 should be added at the application rates described below to a water treatment system at a convenient point of uniform mixing such as the basin area. Addition may be made intermittently (SLUG DOSE) or continuously. Badly fouled systems can be shock treated with AQUCAR GA 50. Under these conditions, blowdown should be discontinued for up to 24 hours.

AQUCAR GA 50 can be used in industrial process water systems that contain ultra filtration units and non-medical reverse osmosis membranes (where approved for compatibility by the membrane manufacturer) and associated distribution systems.

INTERMITTENT (SLUG DOSE) METHOD Initial Dose: When the system is noticeably fouled, apply 11.3 to 22.7 fluid ounces (100 to 200 ppm product) of AQUCAR GA 50 per 1,000 gallons of water in the system, or 89 to 177 mL of AQUCAR GA 50 per 1,000 liters of water in the system. Repeat until control is achieved. Subsequent Dose: When microbial control is evident, add 4.5 to 11.3 fluid ounces (40 to 100 ppm) of AQUCAR GA 50 per 1,000 gallons of water in the system weekly, or 35 to 89 mL of AQUCAR GA 50 per 1,000 gallons of water in the system weekly, or as needed to maintain control. Badly fouled systems must be cleaned before treatment is begun.

CONTINUOUS FEED METHOD Initial Dose: When the system is noticeably fouled, apply 11.3 to 22.7 fluid ounces (100 to 200 ppm product) of AQUCAR GA 50 per 1,000 gallons of water in the system, or 89 to 177 mL of AQUCAR GA 50 per 1,000 liters of water in the system. Subsequent Dose: Maintain this treatment level by starting a continuous feed of 2.3 to 11.3 fluid ounces (20 to 100 ppm product) of AQUCAR GA 50 per 1,000 gallons of water in the system per day or 17.7 to 88.6 mL of AQUCAR GA 50 per 1,000 liters of water in the system per day. Badly fouled systems must be cleaned before treatment is begun.

SERVICE WATER AND AUXILIARY SYSTEMS

AQUCAR GA 50 should be used at the same application rates, and in the same manner as described above. It should be added to the system at a point that will allow for uniform mixing throughout the system.

HEAT TRANSFER SYSTEMS

(Evaporative Condensers, Dairy Sweetwater Systems, Hydrostatic Sterilizers And Retorts, And Pasteurizers And Warmers) AQUCAR GA 50 should be used at the same application rates, and in the same manner as described above. It should be added to the system at a point of uniform mixing such as a basin area, sump area, or other reservoir or collecting area from which the treated water will be circulated uniformly throughout the system.

INDUSTRIAL WASTEWATER SYSTEMS

(Wastewater systems, wastewater sludge and wastewater holding tanks) AQUCAR GA 50 should be added to a wastewater system or sludge at a convenient point of uniform mixing such as the digester. Add 0.4 to 2.0 gallons (450 to 2,250 ppm product) of AQUCAR GA 50 per 1,000 gallons of wastewater or sludge or 399 mL to 1,994 mL of AQUCAR GA 50 per 1,000 liters of wastewater or sludge.

PAPER MILLS AND PAPER MILL PROCESS WATER SYSTEMS

AQUCAR GA 50 should be added to the paper making system at a point of uniform mixing such as the beaters, broke chest pump, save-all tank, or white-water tank. Initial Dose: When the system is noticeable contaminated, add 0.5 to 3.0 lbs of AQUCAR GA 50 per ton of pulp or paper (dry basis) as a slug dose. Repeat until control is achieved. Heavily fouled systems should be boiled out prior to initial treatment. Subsequent Dose: When microbial control is evident, add 0.3 to 2.0 lbs of AQUCAR GA 50 per ton of pulp or paper (dry basis) as a slug dose as necessary to maintain control.

PIGMENTS AND FILLER SLURRIES FOR PAPER AND PAPERBOARD

(For use in food and non-food contact pigments and filler slurries) Use from 0.1 to 0.6 lbs. of AQUCAR GA 50 per 1,000 lbs. of dry powder to produce a concentration from 100 to 600 ppm as product (based on slurry solids) in the mixed slurry.

WATER BASED COATINGS FOR PAPER AND PAPERBOARD NOTE: For use in non-food contact coatings only. Use from 0.1 to 0.6 lbs. of AQUCAR GA 50 per 1,000 lbs. of dry powder to produce a concentration from 100 to 600 ppm as product (based on slurry solids) in the mixed slurry. WATER FLOODS AQUCAR GA 50 should be added to a water flood system at a point of uniform mixing. Initial Treatment: When the system is noticeably contaminated, add 100 to 5,000 ppm AQUCAR GA 50 to the system (0.09 to 4.4 gallons AQUCAR GA 50 per 1,000 gallons flood water). Repeat until control is achieved. Subsequent Dose: When microbial control is evident, add 20 to 5,000 ppm AQUCAR GA 50 (0.02 to 4.4 gallons AQUCAR GA 50 per 1,000 gallons flood water) to the system weekly, or as needed to maintain control.

FRAC FLUIDS

NOTE: As of 2016, this product not registered for this use in the State of California.

AQUCAR GA 50 reduces bacterial contamination and degradation of fracturing fluids and gels used in oil and gas well stimulations. Add AQUCAR GA 50 to the frac water storage tanks or directly into the well

head injection pipeline as the water is being pumped down -hole. Dose Range: AQUCAR GA 50 should be added at a rate of 100 to 5000 ppm (0.9 – 44.3 gals per 10,000 gallons) depending on the degree of bacterial fouling in the source water.

DRILLING, COMPLETION, AND WORKOVER FLUIDS

AQUCAR GA 50 should be added to a drilling fluid system at a point of uniform mixing such as the circulating mud tank. Initial treatment: Add 50 to 1,000 ppm AQUCAR GA 50 (0.2 to 3.7 gallons 7421 per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination. Maintenance dosage: Maintain a concentration of 50 to 1,000 ppm AQUCAR GA 50 by adding 0.2 to 3.7 gallons of AQUCAR GA 50 per 100 barrels of additional fluid, or as needed, depending on the severity of contamination.

PACKER FLUIDS

AQUCAR GA 50 should be added to a packer fluid at a point of uniform mixing such as a circulating holding tank. Add 50 to 600 ppm AQUCAR GA 50 (0.2 to 2.2 gallons AQUCAR GA 50 per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination. Seal the treated packer fluid in the wall between the casing and production tube.

OIL PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS

NOTE: As of 2016, this product not registered for this use in the State of California.

AQUCAR GA 50 should be added to an oil production or transmission line via direct injection. The application should be conducted to ensure maximum distribution of AQUCAR GA 50 throughout the entire internal pipeline surface by adding a sufficient amount of biocide to detect/measure a residual concentration at the back end of the pipeline system. Criteria for success of the treatment will be a reduction in bacterial counts and/or reduced corrosion rates. To facilitate application, it may be desirable to dilute the AQUCAR GA 50 with an appropriate solvent immediately before use. The concentration in the solvent should not fall below an active concentration range of 500 to 5,000 ppm based on the volume of water in the pipeline. Injections to the system should be weekly, or as needed to maintain control.

GAS PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS

AQUCAR GA 50 should be added to a gas production or transmission pipeline via direct injection. The application should be conducted to ensure maximum distribution of AQUCAR GA 50 throughout the entire internal pipeline surface by adding a sufficient amount of biocide to detect/measure a residual concentration at the back end of the pipeline system. Criteria for success of the treatment will be a reduction in bacterial counts and/or reduced corrosion rates. To facilitate application, it may be desirable to dilute the AQUCAR GA 50 with an appropriate solvent immediately before use. The concentration in the solvent should not fall below an active concentration range of 500 to 5,000 ppm based on the volume of water in the pipeline. Injections to the system should be weekly, or as needed to maintain control.

GAS STORAGE WELLS AND SYSTEMS

Individual injection wells should be treated with a sufficient quantity of AQUCAR GA 50 to produce a concentration of 500 to 5000 ppm AQUCAR GA 50 when diluted by the water present in the formation. Injection should take place before gas is injected (during the summer). Injections should be repeated yearly, or as needed to maintain control. Individual drips should be treated with a sufficient quantity of AQUCAR GA 50 to produce a concentration of 200 to 2000 ppm AQUCAR GA 50 when diluted by the present in the drip. Injections should be repeated yearly, or as needed to maintain control.

HYDROTESTING

Water used to hydrotest pipelines or vessels should contain 100 to 4,000 ppm AQUCAR GA 50 (0.09 to 3.5 gallons AQUCAR GA 50 per 1,000 gallons water), depending on water quality and length of time the equipment will remain idle.

PIPELINE PIGGING AND SCRAPING OPERATIONS

Add AQUCAR GA 50 to a slug of water immediately following the scraper (ideally this water volume can be kept to a minimum and contained between the scraper and a trailing pig). Sufficient AQUCAR GA 50 should be added to produce a concentration of 0.1 to 1% (0.09 to 0.9 gallon AQUCAR GA 50 per 100 gallons water), depending on the length of the pipeline and the severity of biofouling.

AQUCAR GA 50 is an effective biocide, which is effective to control a broad spectrum of microorganisms over a wide pH and temperature and pH range. It is compatible with all types of corrosion and scale inhibitors and is effective on aerobic and anaerobic organisms.

For air washers and industrial scrubbing systems, recalculating cooling and process water systems it can be fed intermittently (slug dose) at an initial dose of 14.2 to 28.2 fluid ounces of AQUCAR GA 50 Microbiocide per 1000 gallons of water for fouled systems. A subsequent dose of 5.7 to 14.2 fluid ounces of AQUCAR GA 50 Microbiocide per 1000 gallons of water is recommended to keep control of the system.

For continuous feed an initial dose of 14.2 to 28.2 fluid ounces of AQUCAR GA 50 Microbiocide per 1000 gallons of water and a subsequent dose of 2.8 to 14.2 fluid ounces AQUCAR GA 50 Microbiocide per 1000 gallons of water are recommended.

For Service Water and Auxiliary Systems and Heat Transfer Systems (Evaporative Condensers, Dairy Sweetwater Systems, Hydrostatic Sterilizers and Retorts, and Pasteurizers and Warmers and Once-Through Cooling Water systems) the same dosage as detailed above is recommended.

For Industrial Waste Water Systems (Wastewater Systems, Wastewater Sludge and wastewater holding Tanks) AQUCAR GA 50 microbiocide should be added to a wastewater system or sludge at a convenient point of uniform mixing such as the digester. Add 0.5 to 2.5 gallons (500 to 2500 ppm) AQUCAR GA 50 Microbiocide per 1000 gallons of wastewater or sludge.

AQUCAR GA 50 Microbiocide can be used in industrial process water systems that contain ultrafiltration units and non medical reverse osmosis membranes (where approved by the membrane manufacturer for compatibility and associated distribution systems.

With all applications it is important to feed the product at a point in the system where uniform mixing can be achieved. In cooling tower applications it is recommended that the system be reduced in cycles prior to the addition and then the blowdown be discontinued for up to 24 hours after the application. This increases the contact time and reduces the time for depletion of the product.

CONTROL LIMITS

The application dosages are detailed in the applications section. AQUCAR GA 50 Microbiocide at the recommended the dosage prescribed above requires 6 to 8 hours of contact time for optimum performance as a general-purpose biocide.

BENEFITS

1. Reduces Maintenance Costs for cleaning and equipment replacement.
2. Effective over a wide pH range and compatible with all commonly used corrosion inhibitor/dispersant programs.
3. Cost effective program for all applications
4. Available in all sizes from 5 gallons up for customer convenience
5. Can be easily deactivated in case of a spill.

PHYSICAL DATA

Density	9.3 lbs./gal
Vapor Pressure @ 20°C	0.20 mm Hg
Specific Gravity	1.118
Density (lbs./gal.)	9.3
Product pH	3.1 to 4.5
Freeze Point	1.4 °F

DOSAGE / USE CALCULATIONS

AQUCAR GA 50 Microbiocide should be added to a water treatment system at a point of uniform mixing such as the basin area. Application may be continuous or intermittent slug dose. The dosages for each application are detailed in the applications section.

FEEDING

It is recommended that AQUCAR GA 50 Microbiocide be fed directly from the container to the system using a chemical feed pump and timer if intermittently fed. AQUCAR GA 50 Microbiocide should be added to a point in the system where rapid mixing can be achieved.

HANDLING AND PRECAUTIONS

AQUCAR GA 50 Microbiocide solutions are corrosive to many commonly used construction materials such as steel, galvanized iron, aluminum, tin and zinc. They may be stored and handled in polyethylene, baked-phenolic-lined steel, stainless steel, or reinforced epoxy plastic equipment. It should be stored at a temperature above its freezing point and ideally at a maximum storage temperature of 80°F. For short time (up to a month) it can tolerate temperatures of up to 100°F. A stainless steel centrifugal pump is recommended for transfer service.

AQUCAR GA 50 Microbiocide is corrosive and can cause burns eye damage and skin irritation. Avoid breathing vapors and do not allow to contact skin, eyes or on clothing. Glutaraldehyde can be absorbed through the skin. Wear rubber goggles or face shield and rubber gloves when handling. May be harmful or fatal if swallowed. Avoid contamination of food.

For storage and disposal avoid contamination of water or food. Open dumping is prohibited. Any product that need to be disposed should be neutralized with ammonium hydroxide, ammonia or other ammonium salt and disposed of by a certified hazardous waste disposal company. Consult Federal, State or local disposal authorities for approved alternate procedures.

PACKAGING

AQUCAR GA 50 Microbiocide is available in the following container sizes:

5 gallon pails ..... net weight 45 lbs.

30 gallon drums ..... net weight 275 lbs.

55 gallon drums ..... net weight 505 lbs.