

September 30, 2002

Roger E. Etherington  
Vulcan Performance Chemicals  
1200 Urban Center Drive  
Birmingham, AL 35242

Subject: Atka Klor 25  
EPA Registration No. 21164-6  
Amendment Dated: July 8, 2002  
EPA Receipt Date: July 19, 2002

Dear Mr. Etherington:

This amendment was submitted in response to labeling conditions set forth by the Agency in a letter dated May 8, 2002.

The following amendment, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted with the conditions listed below.

- to improve use directions describing chlorine dioxide generators
- to correct instruction for food plant process water to be consistent with 21 CFR 173.300
- to clarify use directions for potable water and food processing applications
- to address PR Notice 2001-1

**Conditions**

1. The first sentence under the "Potable Water and Wastewater Disinfection" directions for use must read as follows:

"For most municipal and public potable water systems, a chlorine dioxide residual concentration up to 2.0 ppm is sufficient to provide adequate disinfection."

2. Place a period after the word **acid** under "Mechanical Generation of Chlorine Dioxide" option number 2.

CONCURRENCES

SYMBOL	75100							
SURNAME	M. J. ...							
DATE	9-30-02							

- 3. Delete the first unsubstantiated sentence under "Feed Requirements" which reads as:

*Generally, for water treatment, the chlorine dioxide solution is applied to achieve residual concentration of 10 ppm or less.*

- 4. Under the "Food Processing Plants, Dairies, Bottling Plants, and Breweries"

- a. Delete the phrase "... and other water systems" which is too vague.
- b. Revise first sentence in the second paragraph to read "Water containing up to 3 ppm residual chlorine dioxide may be use for washing fruits and vegetables **that are not raw agricultural commodities** in accordance with 21 CFR §173.300."

*A stamped copy of the accepted labeling is enclosed. Submit three (3) copies of your final printed labeling before distributing or selling the product bearing the revised labeling.*

*Should you have any questions or comments concerning this letter, please contact Wanda Mitchell at (703) 308-6345.*

Sincerely,



Robert S. Brennis  
Product Manager - Team 32  
Regulatory Management Branch II  
Antimicrobials Division (7510C)

# AKTA KLOR 25

CHLORINE DIOXIDE PRECURSOR FOR MICROBIAL CONTROL IN WATER AND WASTEWATER AND ON HARD SURFACES

ACTIVE INGREDIENTS:	
Sodium Chlorite.....	25%
INERT INGREDIENTS.....	75%
TOTAL.....	100%

**KEEP OUT OF REACH OF CHILDREN**  
**DANGER**

**FIRST AID**

**If in eyes:**

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.

**If on skin or clothing:**

- Call a poison control center or doctor immediately for treatment advice.
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice if burning or irritation of the skin persists.

**If swallowed:**

- Drink large quantities of water.
- DO NOT induce vomiting.
- Call a poison control center or doctor immediately for treatment advice.
- Do not give anything by mouth to an unconscious person.

**If inhaled:**

- Move person to fresh air and monitor for respiratory distress.
- If cough or difficulty in breathing develops, consult a physician immediately.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration.
- Call a poison control center or doctor for further treatment advice.

**NOTE TO PHYSICIAN**  
Probable mucosal damage may contraindicate the use of gastric lavage.

**ACCEPTED**  
**with COMMENTS**  
EPA Letter Dated:  
SEP 30 2002

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act as  
amended, for the pesticide,  
registered under EPA Reg. No. 21164-6

MANUFACTURED BY:



**Performance Chemicals**

P. O. Box 385015, Birmingham, AL 35238-5015

EPA Reg. No. 21164-6

EPA Est. No. 5382-KS-01  
70547-IL-01

Net Contents: \_\_\_\_\_ gal ( \_\_\_\_\_ liters)

# PRECAUTIONARY STATEMENTS

4 8 6

## HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**DANGER: Corrosive. Causes eye and skin damage.** Harmful if swallowed. Irritating to nose and throat. Avoid breathing vapor. Do not get in eyes, on skin or clothing. Wear goggles or face shield, rubber gloves and protective clothing when handling. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

## ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

## PHYSICAL OR CHEMICAL HAZARDS

DO NOT mix with acids or other chemicals except as indicated for the activation of this compound. Mixing with acid or other chemicals may cause evolution of chlorine dioxide gas, which is poisonous and explosive.

## STORAGE AND DISPOSAL

**Do not contaminate water, food or feed by storage or disposal.**

Storage: Store this product in a cool, dry area away from direct sunlight and heat to avoid deterioration. In case of spill, flood area with large quantities of water.

Pesticide Wastes: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Triple rinse (or equivalent) all containers. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

The efficacy of AKTA Klor 25, when activated as directed with Foam Add 10, was demonstrated to be equivalent to that of  $\geq 200$  ppm NaOCl when tested against *Salmonella typhi*.

## SANITIZATION OF FOOD CONTACT SURFACES

The only activation method that can be used in conjunction with food contact surfaces is FOAM ADD 10.

Use AKTA Klor 25 in combination with FOAM ADD 10 to generate chlorine dioxide containing foam solution for use as a terminal no-rinse sanitizer for food contact surfaces, food processing equipment and utensils. Prior to application of the sanitizing foam, remove gross food particles and soil by a pre-flush or pre-scrape, and when necessary, a pre-soak treatment. Then thoroughly wash all equipment, surfaces and utensils with a suitable detergent or cleaner, followed by a potable water rinse.

Application of the foam sanitizing solution can be accomplished by manually combining 15 oz. of FOAM ADD 10 with 0.75 oz. of AKTA Klor 25, gently mixing for ten minutes and then immediately diluting with water to ten gallons. Alternatively, use the *Rio Linda Chemical Portable Foamer* or a centrally located installed system to mix the components, at the use levels noted above. Cover the entire area being treated with the foam sanitizer to a depth of ¼-1". A contact time of at least one minute is required for sanitization. Allow the foam sanitizer to thoroughly drain and dry from all equipment and surfaces prior to recontact of the sanitized surface with food or feed items.

## MECHANICAL GENERATION OF CHLORINE DIOXIDE

AKTA Klor 25 may be used in the mechanical generation of chlorine dioxide for use in controlling microorganisms in water and wastewater systems. AKTA Klor 25 is fed to chlorine dioxide generation equipment, which produces an aqueous solution of chlorine dioxide by one of the following methods of generation:

- (1) The chlorine method, which uses AKTA Klor 25 and chlorine gas; or
- (2) The hypochlorite method, which uses AKTA Klor 25 and a combination of a hypochlorite solution, and an acid,

Your Vulcan Performance Chemicals representative can guide you in the selection, installation and operation of generation systems. Consult the instructions on the chlorine dioxide generation system before using AKTA Klor 25.

**FEED REQUIREMENTS**

Feed rates of AKTA KLOR 25 will depend on the severity of contamination and the degree of control desired. The exact dosage will depend on the size of the system and residual necessary for effective control. Depending on the generator type, AKTA KLOR 25 may be diluted at the point of use to prepare a 3% to 7.5% active aqueous solution for use in chlorine dioxide generators.

In all cases, generated chlorine dioxide solution should be applied in such a manner to ensure adequate mixing and minimal volatilization. The water stream to be treated may either be passed directly through the chlorine dioxide generator or treated via side stream injection point. The generation system employed should be in good working order and capable of achieving chlorine dioxide solutions free from chlorine contamination.

Generally, for water treatment, the chlorine dioxide solution is applied to achieve residual concentrations of 10 ppm or less. Because of the variability of demand in water and process systems, the dosage of chlorine dioxide required to achieve the target residuals is normally lower for continuous feed systems than for slug or timed feed applications. The minimum acceptable residual for chlorine dioxide, as determined by a verified procedure, is 0.1 ppm for a minimum one minute contact time.

Residual determination procedures should be substantiated methods and should also be specific for chlorine dioxide or used in systems where no chlorine contamination is possible. Do not add AKTA KLOR 25 directly to process water.

**APPLICATIONS**

**POTABLE WATER AND WASTEWATER DISINFECTION:** For most municipal and other potable water systems, a chlorine dioxide residual concentration up to 2.0 ppm is sufficient to provide adequate disinfection. Residual disinfectant and disinfection byproducts must be monitored as required by the National Primary Drinking Water Regulations (40 CFR Part 141) and state drinking water standards. For wastewater and sewage applications, residual chlorine dioxide concentrations up to 5.0 ppm are generally adequate.

**FOOD PROCESSING PLANTS, DAIRIES, BOTTLING PLANTS, AND BREWERIES:** For microbial control in typical food processing water systems, such as flume transport, chill water systems, hydrocoolers, beverage and brewery pasteurizers and bottle rinsing and other water systems, apply AKTA KLOR 25 through a chlorine dioxide generation system to achieve a chlorine dioxide residual concentration ranging from 0.25 to 5.0 ppm.

Water, containing up to 3 ppm residual chlorine dioxide may be used for washing fruits and vegetables. Treatment of the fruits and vegetables with chlorine dioxide must be followed by a potable water rinse, or by blanching, cooking or canning.

**POULTRY PROCESSING WATER:** Use AKTA KLOR 25 to generate chlorine dioxide for use as an antimicrobial agent in water used in poultry processing in an amount not to exceed 3 ppm residual chlorine dioxide as determined by an appropriate method.

**AQUEOUS DISINFECTION SYSTEMS FOR CIP CLEANING:** If the concentration of chlorine dioxide generated from AKTA KLOR 25 exceeds 5.0 ppm, a potable water rinse should follow treatment. Care should be taken to ensure the biological and chemical quality of the potable water.

**GENERAL INDUSTRIAL PROCESS WATER TREATMENT (OILFIELD INJECTION WATER, WHITE WATER PAPER MILL SYSTEMS, AND RECIRCULATING COOLING TOWERS):** For control of microbial slime, these systems will require a chlorine dioxide residual concentration ranging between 0.25 and 5.0 ppm. The AKTA KLOR 25 dosage needed to achieve these levels will vary widely depending on the exact application.

**CHLORINE DIOXIDE GENERATION BY ACTIVATION-IN-PLACE**

AKTA KLOR 25 may be used in combination with MicroBiox Activator to generate small quantities of chlorine dioxide solutions of known concentration for use in controlling microorganisms in cooling towers and wastewater systems.

**ACTIVATION**

Akta Klor 25 must be activated prior to use. Follow mixing instructions exactly. Properly measured quantities of Akta Klor 25 solution and MicroBiox Activator must be used in their entirety to produce the desired chlorine dioxide concentration. Hazardous gas may evolve if less than the required quantity of water is used.

To prepare a STOCK solution containing 3,000 mg/L chlorine dioxide, fill a clean container with a measured quantity of water. Meter Akta Klor 25 into the water at a rate of 14.8 ml per liter of water. Add 13.8 g of MicroBiox Activator per liter of water and mix thoroughly until all solids are fully dissolved. Avoid breathing vapors, mix in a well-ventilated area.

MicroBiox Activator is prepackaged in quantities to activate a specific quantity of diluted AktaKlor 25 solution. See table below for standard volumes.

DILUTION/ACTIVATION TABLE		
Water	AktaKlor 25	MicroBiox Activator
1 L	14.8 ml	13.8 g
1 gal (3.785 L)	56. ml	52.2 g
5 gal (18.925 L)	280. ml	261.1 g
10 gal (37.85 L)	560.2 ml	522.3 g
25 gal (94.625 L)	1400.4 ml	1305.8 g
30 gal (113.55 L)	1680.5 ml	1567. g
50 gal (189.25 L)	2801 ml	2611.6 g

The chlorine dioxide STOCK solution produced using this table contains 3,000 mg/L chlorine dioxide, and must be diluted prior to use following the feed rate calculations below.

**APPLICATIONS**

**RECIRCULATING COOLING TOWERS:** For control of microbial slime and algae, these systems will require a chlorine dioxide residual concentration ranging between 0.05 and 5.0 ppm. The dosage needed to achieve these levels will vary widely depending on the exact application and the degree of contamination in the cooling tower. To determine the feed rate of the chlorine dioxide STOCK solution use the following formula:

For continuous feed applications:

STOCK solution feed rate (gal/min) =

$$\frac{\text{chlorine dioxide target dose (ppm)} \times \text{cooling tower recirculation rate (gal/min)}}{\text{STOCK solution chlorine dioxide concentration (ppm)}}$$

For slug dose feed applications:

STOCK solution feed rate (gal) =

$$\frac{\text{chlorine dioxide target dose (ppm)} \times \text{cooling tower system volume (gal)}}{\text{STOCK solution chlorine dioxide concentration (ppm)}}$$

**WASTEWATER DISINFECTION:** For wastewater and sewage applications, residual chlorine dioxide concentrations up to 5.0 ppm are generally adequate. The dosage needed to achieve these levels will vary widely depending on the exact application. To determine the feed rate of the chlorine dioxide STOCK solution use the following formula:

For continuous feed applications:

$$\text{STOCK solution feed rate (gal/min)} = \frac{\text{chlorine dioxide target dose (ppm)} \times \text{water flow rate (gal/min)}}{\text{STOCK solution chlorine dioxide concentration (ppm)}}$$

For slug dose applications:

$$\text{STOCK solution feed rate (gal)} = \frac{\text{chlorine dioxide target dose (ppm)} \times \text{volume of water to be treated (gal)}}{\text{STOCK solution chlorine dioxide concentration (ppm)}}$$

**Please consult your Vulcan Performance Chemicals representative for assistance in determining the correct dosage level.**