

EFFICACY EVALUATION AND TECHNICAL MANAGEMENT SECTION
EFFICACY REVIEW

ANTIMICROBIAL PROGRAM BRANCH

IN 10/11/92 OUT 02/05/93
EPA Reg. No. or File Symbol 21164-~~8~~9
Date Division Received 09-08-92
MRID No (s) 424666-01 & 424666-02
Product Manager PM 32 (Douglas)
Product Name AKTA KLOR 7.5
Company Name Rio Linda Chemical Co., Inc.
Submission Purpose Amendment to add food and non-food contact surface sanitizing claims with data and label
Type Formulation Liquid
Active Ingredient (s):
Sodium Chlorite.....7.5

Recommendations

Efficacy Not Supported by the Data:

- ① The submitted food-contact surface Sanitizing data (MRID No. 424666-02) are not acceptable because:
 - a. The activators, FOAM ADD 10 and CHLORINE, are not cleared by the FDA.
 - b. Chemical analysis data to show that dilution of germicide tested provides at least 100 parts per million and not more than 200 parts per million available chlorine dioxide determined by the method, "Iodometric Method for the Determination of Available Chlorine Dioxide (50-250 ppm available ClO₂)," was not submitted.
 - c. The label recommended use dilution (15 oz. Foam Add 10 + 2 oz AKTA KLOR 7.5 + 10 gallons water) and the dilution employed in the test (7.4 gm. Foam Add 10 + 1.25 gm. AKTA KLOR 7.5 + 1000 ml. water) do not correspond.
 - d. The components of FOAM ADD 10 activator employed in the test differ from components listed in the submitted FOAM ADD 10 activator CSF dated 8/1/92.
- ② No Confirmatory efficacy data were submitted to support the use of alternate activators, CHLORINE and RIOCIDE HP37. Refer to Item d of DIS/TSS-5 enclosure. Also, no directions for use of the alternate activators, CHLORINE and RIOCIDE HP37 were provided. Refer to DIS/TSS-17 enclosure.
- ③ Also, the submitted non-food contact surface sanitizing data (MRID No. 424666-01) are not acceptable because:
 - a. The label recommended use dilution (15 oz. Foam Add 10 + 2 oz AKTA KLOR 7.5 + 10 gallons water) and the dilution employed in the test (7.4 gm. Foam Add 10 + 1.25 gm. AKTA KLOR 7.5 + 1000 ml. water) do not correspond.
 - b. The components of FOAM ADD 10 activator employed in the test differ from components listed in the submitted FOAM ADD 10 activator CSF dated 8/1/92.

Labeling: Delete food and non-food contact surface sanitizing claims.

Reviewed by Srinivas Gowda Date 02/05/93

Srinivas Gowda
S. Vaitings

file

ATTACHMENT 1: EFFICACY RESPONSE

A. Incomplete Application

Agency Comments A.1, A.2, A.3:

No activator CSF and activator labels were included. No further action can be taken until you submit the following information:

1. EPA Form 8570-4, Confidential Statement of Formula for reporting ingredients used in the Chlorine Dioxide Foam Activator (Foam Add 10). Documentation to show that **Chlorine Dioxide Foam Add 10 Activator** is cleared for use on food contact surfaces.
2. EPA Form 8570-4, Confidential Statement of Formula for muriatic acid activator.
3. EPA Form 8570-4, Confidential Statement of Formula for chlorine gas activator (chlorine dioxide generator equipment).
4. All three activators labels.

Rio Linda Response:

Confidential Statements of Formula and labels for Foam Add 10 and muriatic acid (Riocide HP37) activators are attached. A label for chlorine gas activator is unavailable since Rio Linda does not market chlorine gas. Please note that sources of chlorine gas must conform to the ANSI/AWWA standard for liquid chlorine, a copy of which is attached. The manual for the Rio Linda chlorine dioxide generator is attached.

A food additive petition requesting the approval of the ingredients in Foam Add 10 for use in terminal no-rinse sanitizing solutions has been submitted to FDA. Please note that the ingredients in the AKTA Klor products (sodium chlorite and water) are currently approved for use in terminal no-rinse sanitizers [see 21 CFR Part 178.1010 (b)(34)].

B. Sanitizing (FCS) Efficacy Not Supported by the Data

"GERMICIDAL AND DETERGENT SANITIZING ACTION AKTA Klor 7.5" by Lucyna Kurtyka, MicroBioTest, Inc. (MBT), 14280 Sullyfield Circle, #200, Chantilly, Virginia 22021, dated 09/28/91 (MRID No. 420608-01)

Agency Comment 1:

The submitted Food Contact Surface Sanitizing data are unacceptable because:

1. The sanitizing data developed by the AOAC Germicidal and Detergent Sanitizing Test Method are not acceptable to support sanitizing efficacy for sanitizing rinses formulated with chlorine bearing chemicals. Data must be developed by AOAC Available Chlorine Germicidal Equivalent Concentration Method as indicated in Pesticide Assessment Guidelines Subdivision G, Product Performance § 92-2 (k)(1) for all sanitizing rinses formulated with chlorine bearing chemicals.

Rio Linda Response:

Prior to conducting efficacy studies with the subject product, a telephone conference call (7/17/91) was arranged between representatives from Rio Linda, Dr. V.P. Shah of FDA and Dr. Z. Vaituzis of EPA. During the conference call it was agreed that AOAC method 960.09 (AOAC Germicidal and Detergent Sanitizer Test Method) would satisfy both EPA and FDA.

Agency Comment 2:

Chlorine dioxide foam activating agents (acid solutions combined with surfactants, scale sequestrants, lubricants, detergent salts, and/or corrosion inhibitors) are not cleared by the Food and Drug Administration for use on food contact surfaces.

Rio Linda Response:

The AKTA KLOR labels have been revised to specify the use of Foam Add 10 in conjunction with AKTA KLOR (7.5, 15 or 25) for food plant sanitation application. Please note that the use sites for which the AKTA KLOR products are recommended are specified on the amended labels and food sanitation plant use has been separated into both food and non-food contact treatments. A food additive petition covering the use of Foam Add 10 ingredients in a terminal no-rinse sanitizer solution has been submitted to FDA (see attached acknowledgment from FDA).

Specific Agency Comments on MRID# 42060801:

Also, the submitted Food Contact Surface Sanitizing data is unacceptable because it failed to include the following Pesticide Assessment Guideline requirements:

1. Test Start Date and Completion Date.

Rio Linda Response:

The correct dates for study initiation and study completion have been added to the revised study, which is being submitted concurrent with this letter.

2. Preparation Date of Each Product Batch and Number of Replicates Tested.

Rio Linda Response:

The manufacturing date and purity analysis for each batch used in the study was provided in MRID# 42107001.

3. How Dilution of Product Prepared [e.g. actual volume (mL or ounce of product) (sodium chlorite solution) added to the actual volume (mL or ounce) of foam activator any further dilution with water to provide the recommended concentration (ppm) of available chlorine dioxide]. Was it sampled from a batch of commercial use material or was it synthesized or manufactured for the specific testing?

Rio Linda Response:

A description of the preparation of the test material can be found on page 5 of the revised study. All three batches of test material were from commercial use solutions produced in Sacramento, CA by Rio Linda Chemical Company.

4. Parts per Million of Chlorine Dioxide Provided by the Use Solution (1.25 gm of AKTA Klor 7.5 + 7.4 gm Foam Add + 1000 mL Deionized water). This Information is Required to Verify at what Concentration (ppm) of Available Chlorine Dioxide the Data was Developed.

Rio Linda Response:

The titration data is provided in the revised study at the bottom of page 5. Sodium chlorite (NaClO_2) is related to available chlorine dioxide (ClO_2) by the ratio of molecular weights (67.45/90.45). For example:

$$87.8 \text{ ppm NaClO}_2 = 87.8 * \frac{67.45}{90.45} \text{ ppm ClO}_2$$

The parts per million of available chlorine dioxide was determined in accordance with 21 CFR 178.1010 (b)(34)(c)(29) - *Sanitizing solutions*. The referenced procedure "Iodometric Method for the Determination of Available Chlorine Dioxide (50-250 ppm available ClO_2)" is attached.

5. Source of Supply of Test Cultures/Date Obtained and Procedure for Identification of Test Cultures.

Rio Linda Response:

This information is provided in the revised study at the bottom of page 4, under B1.

6. Neutralizer Employed and Control Data (Neutralization/procedure/data).

Rio Linda Response:

The neutralizer used for testing was 0.5% sodium thiosulfate. MicroBioTest will supply data on neutralizer effectiveness.

7. Complete Report of Results Obtained for Each Individual Replication (actual dilution Plate Counts at Various Dilutions).

Rio Linda Response:

There were no organisms recovered from any individual dilution plate.

8. Phenol Resistance of Test Microorganisms (Actual Test Results).

Rio Linda Response:

Data on phenol resistance of the test organisms is provided on page 7 of the revised study.

9. Culture Suspension was not Filtered through Whatman No. 2 Paper Prior to Standardization.

Rio Linda Response:

According to the testing laboratory, filtering the suspension removes a great deal of the test organism and leaves little for inoculum preparation. Furthermore, no clumping was observed.

10. References to Method Employed for the Determination of Available Chlorine Dioxide and Copies or Reprints of Such Method.

Rio Linda Response:

The parts per million of available chlorine dioxide was determined in accordance with 21 CFR 178.1010 (b)(34)(c)(29) - *Sanitizing solutions*. The referenced procedure "Iodometric Method for the Determination of Available Chlorine Dioxide (50-250 ppm available ClO₂)" is attached.

11. On page 8 of 8, ATCC No. for S. aureus is incorrectly listed as 11229.

Rio Linda Response:

The ATCC number for the challenge organism has been corrected in the revised study.

C. Sanitizer (NFCS) Efficacy Not Supported by the Data

"SANITIZER TEST" by Lucyna Kurtyka, MicroBioTest Inc. (MBT), 14280 Sullyfield Circle, #200, Chantilly, VA 22021.

Specific Agency Comments on MRID# 42060802:

The submitted Non-Food Contact Surface Sanitizing data is unacceptable because it failed to include the following Pesticide Assessment Guideline requirements:

1. Test Start Date and Completion Date.

Rio Linda Response:

The correct dates for study initiation and study completion have been added to the revised study, which is being submitted concurrent with this letter.

2. Preparation Date of Each Product Batch and Number of Replicates Tested.

Rio Linda Response:

The manufacturing date and purity analysis for each batch used in the study was provided in MRID# 42107001.

3. How Dilution of Product Prepared [e.g. actual volume (mL or ounce of product) (sodium chlorite solution) added to the actual volume (mL or ounce) of foam activator any further dilution with water to provide the recommended concentration (ppm) of available chlorine dioxide]. Was it sampled from a batch of commercial use material or was it synthesized or manufactured for the specific testing?

Rio Linda Response:

A description of the preparation of the test material can be found on page 5 of the revised study. All three batches of test material were from commercial use solutions produced in Sacramento, CA by Rio Linda Chemical Company.

4. Parts per Million of Chlorine Dioxide Provided by the Use Solution (1.25 gm of AKTA KLOR 7.5 + 7.4 gm Foam Add + 1000 mL Deionized water). This Information is Required to Verify at what Concentration (ppm) of Available Chlorine Dioxide the Data was Developed.

Rio Linda Response:

The titration data is provided in the revised study at the bottom of page 5. Sodium chlorite (NaClO_2) is related to available chlorine dioxide (ClO_2) by the ratio of molecular weights (67.45/90.45). For example:

$$87.8 \text{ ppm NaClO}_2 = 87.8 * \frac{67.45}{90.45} \text{ ppm ClO}_2$$

The parts per million of available chlorine dioxide was determined in accordance with 21CFR 178.1010 (b)(34)(c)(29) - *Sanitizing solutions*. The referenced procedure "Iodometric Method for the Determination of Available Chlorine Dioxide (50-250 ppm available ClO_2)" is attached.

5. Source of Supply of Test Cultures/date Obtained and Procedure for Identification of Test Cultures.

Rio Linda Response:

This information is provided in the revised study at the bottom of page 4, under B1.

6. Neutralizer Employed and Control Data (Neutralization/procedure/data)

Rio Linda Response:

The neutralizer used for testing was 0.5% sodium thiosulfate. MicroBioTest will supply data on neutralizer effectiveness.

7. Complete Report of Results Obtained for Each Individual Replication (actual dilution Plate Counts at Various Dilutions).

Rio Linda Response:

There were no organisms recovered from any individual dilution plate.

8. References to Method Employed for the Determination of Available Chlorine Dioxide and Copies or Reprints of Such Method.

Rio Linda Response:

The parts per million of available chlorine dioxide was determined in accordance with 21 CFR 178.1010 (b)(34)(c)(29) - *Sanitizing solutions*. The referenced procedure "Iodometric Method for the Determination of Available Chlorine Dioxide (50-250 ppm available ClO₂)" is attached.

9. Failed to Use one of the Recommended Culture/Subculture Media in the AOAC Official Methods of Analysis, 15th Edition (1990), Chapter 6 Section 955.11A.

Rio Linda Response:

Other subculture media can be used as AOAC only recommends certain media but does not prohibit the use of others. In addition, MicroBioTest has found TSB to be a superior subculture and recovery medium for recovering small numbers of damaged bacterial cells, which often occurs during exposure to disinfectants.

10. Inadequate Drying Time (shall be dried for at least 40 minutes).

Rio Linda Response:

The Agency's guidance document - DIS/TSS10 - states a drying time of 20 - 40 minutes.

11. Inadequate Volume of Subculture Medium was Employed (10 mL/tube instead of 20 mL).

Rio Linda Response:

The use of 10 mL/tube instead of 20 mL/tube should have no bearing on the performance or results of the study.

12. PBS + 0.5% Sodium Thiosulfate was Employed as a Control Solution instead of Test Formulation with the Active Ingredient Omitted or Distilled Water + 0.01% Isooctylphenoxyethoxyethanol (with 9-10 moles oxyethylene, e.g., Triton X-100).

Rio Linda Response:

The control used provides adequate data and would show any evidence of neutralizer toxicity.

13. Relative Humidity Conditions for Drying Microorganisms on the Carrier.

Rio Linda Response:

Determination of relative humidity during drying is not part of the AOAC method and was not recorded. The lack of a relative humidity measurement should not have any impact on the performance of the study.

14. Plate Count Agar Employed

Rio Linda Response:

As indicated in the revised study, Trypticase Soy Agar was the agar employed.

GLP Issues

Also, the submitted Non-Food Contact Surface Sanitizing data is unacceptable because it failed to include the following GLP requirements:

1. Failed to Conduct Inspection During the Course of the Study. Refer to 40 CFR, Part 160.35.
2. Characterization Data (Identify, Strength, Purity and Composition of Test Substances, AKTA K LOR 7.5, Lot No. 3039, DS No. 1097, AKTA K LOR 7.5, Lot No. 3030, DS No. 1098, and AKTA K LOR 7.5, Lot No. 2480, DS No. 1099) to Ensure Quality and Integrity of Data to Verify if the Efficacy Data were Developed at the Lower Certified Limit.
3. The Title Page was not Formatted in Accordance with PR Notice 86-5, D.1, Attachment 2/40 CFR Part 158.32(c) (e.g. Incomplete Data Requirements, incorrect Study Completion Date).

Rio Linda Response:

Documentation of the in-process audit has been included in the revised studies. Test sample characterization data is covered in MRID# 42107001. The title page in the revised study has been reformatted to include the correct study completion date.