

FOR FORMULATION OF INDUSTRIAL ALGICIDES, FUNGICIDES, AND/OR BACTERICIDES

DIRECTIONS FOR USE

Microbicide 886 is sold for formulation of industrial algicides, fungicides, and/or bactericides. See Microbicide 886 Technical Bulletin for physical and chemical properties.

NOTE: Formulators are responsible for providing supporting data for their formulations.

This product is toxic to fish and wildlife. Treated effluent should not be discharged where it will drain into lakes, streams, ponds, or public water. Do not contaminate water by cleaning of equipment, or disposal of wastes. Apply this product only as specified on this label.

DANGER!
CORROSIVE, CAUSES EYE DAMAGE AND SKIN BURNS. MAY CAUSE ALLERGIC SKIN REACTION. HARMFUL IF INHALED. HARMFUL OR FATAL IF SWALLOWED OR BROUGHT IN CONTACT WITH SKIN.

Do not get in eyes, on skin, on clothing. Wear goggles or face shield and rubber gloves when handling. Avoid breathing vapor or dust. Avoid con-

MICROBICIDE 886

INDUSTRIAL MICROBICIDE

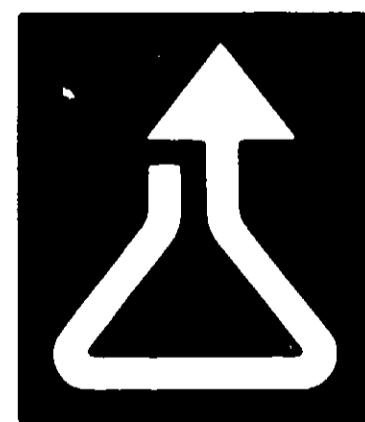
DANGER!
KEEP OUT OF REACH OF CHILDREN
 SEE FIRST AID STATEMENT AND OTHER PRECAUTIONS ON SIDE PANEL.



ACTIVE INGREDIENTS
 5-chloro-2-methyl-4-isothiazolin-3-one calcium chloride 55.0%
 2-methyl-4-isothiazolin-3-one calcium chloride 15.0%
INERT INGREDIENTS 30.0%
 Total 100.0%

EPA Reg. No. 707-117
 EPA Est. No. 707-PA-1

NET CONTENTS



ROHM AND HAAS
 PHILADELPHIA PA 19105

8284-R1

tamination of food. Do not take internally. Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before re-use.

If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

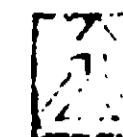
NOTICE: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use, storage or handling of this product contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.

PRINTED IN U.S.A.

TED
 73
 INSECTICIDE
 ANTICIDE ACT
 IN REGISTER
 7-117

ROHM AND HAAS COMPANY

INDEPENDENCE Mall WEST
PHILADELPHIA, PENNSYLVANIA 19103



TECHNICAL BULLETIN

Microbicide 886

INTRODUCTION

Microbicide 886 is a new, broad spectrum antimicrobial product offered for the formulation of industrial algicides, fungicides, and/or bactericides. It is effective at low concentrations and is highly resistant to the inhibitory effects of most organic and inorganic compounds.

PHYSICAL AND CHEMICAL PROPERTIES

- Appearance - White to tan solid
- Odor - Mild
- Solubility - Highly soluble in water and the lower alcohols and glycols, insoluble in other organic solvents (e.g., ethers, esters, ketones, aliphatic and aromatic hydrocarbons)
- Compatibility - Biologically and physically compatible with anionics, nonionics and cationic surfactants, proteins, halogens in use solutions, and most organic and inorganic compounds normally used in chemical specialty products. The compound is inhibited by primary and secondary amines, mercaptans, and sulfides through a chemical reaction mechanism.
- Stability - Darkens at 180°C. Decomposes above 250°C.
- pH (50% aqueous) - 3.5 to 5.0

ACCEPTED

SEP 8 1975

U.S. PATENT AND TRADEMARK OFFICE
PHILADELPHIA, PENNSYLVANIA 19106
REG. NO. 767-117

Microbicide 886, as supplied, is stable for at least one year at 50°C.

These suggestions are based on data obtained under laboratory conditions and are not intended to constitute a warranty of performance. The user should consult the product literature for complete details. The user should also consult the appropriate regulatory agencies for information on the use of this product. The user should also consult the appropriate regulatory agencies for information on the use of this product. The user should also consult the appropriate regulatory agencies for information on the use of this product.

OCT 8 1975

UNDER THE FEDERAL INSECTICIDE
FUNGICIDE AND RODENTICIDE ACT
FOR ECONOMIC POISON REGISTERED
NO. UNDER NO. 707-117

solutions, and most organic and inorganic compounds normally used in chemical specialty products. The compound is inhibited by primary and secondary amines, mercaptans, and sulfides through a chemical reaction mechanism.

Stability - Darkens at 180°C. Decomposes above 250°C.

pH (50% aqueous) - 3.5 to 5.0

Microbicide 886, as supplied, is stable for at least one year at 50°C.

Cameraman's Note
Poor Copy

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale.

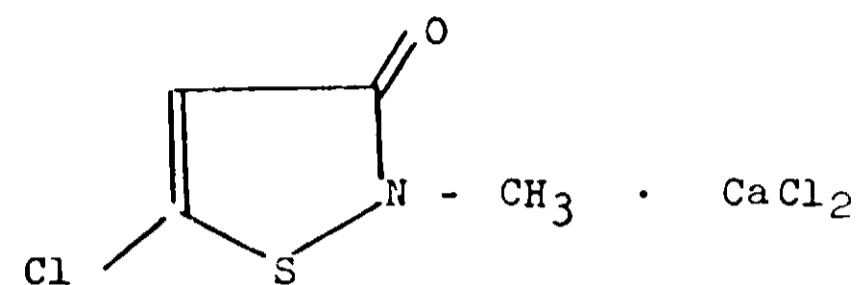
Suggestions for uses of our products or the inclusion of descriptive material from patents and the citation of specific patents in this publication should not be understood as recommending the use of our products in violation of any patent or as permission or license to use any patents of the Rohm and Haas Company.

Chemical Identification:

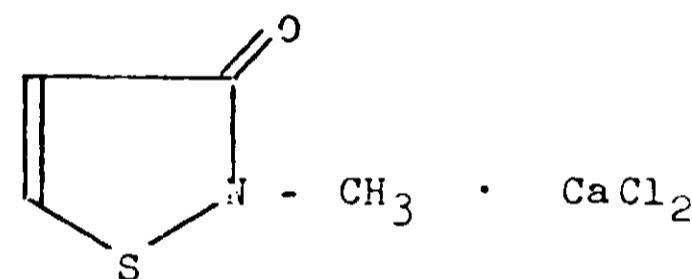
The active ingredients in Microbicide 886 are the compounds identified according to Chemical Abstract Nomenclature as 5-Chloro-2-methyl-4-isothiazolin-3-one calcium chloride and 2-methyl-4-isothiazolin-3-one calcium chloride.

Structural Formulae:

5-Chloro-2-methyl-4-isothiazolin-3-one calcium chloride:



2-methyl-4-isothiazolin-3-one calcium chloride:



Chemical Composition:

The composition of Microbicide 886 as supplied is:

5-Chloro-2-methyl-4-isothiazolin-3-one calcium chloride55.0%
2-methyl-4-isothiazolin-3-one calcium chloride15.0%
Inert Ingredients30.0%

Note: All of the following toxicological and microbiological data are based on Microbicide 886 as supplied.

TOXICITY

The toxicity and sensitizing characteristics of Microbicide 886 are as follows:

- 1) Acute Oral LD₅₀ of Microbicide 886 administered as a 1.0% solution in water to rats.

Males - 105 mg/kg
Females - 112 mg/kg

- 2) Acute dermal LD₅₀ of a 10% W/V solution of Microbicide 886 applied as a 24 hour occluded patch to rabbits:

Intact skin - 100 mg/kg
Abraded skin - 108 mg/kg

- 3) Acute dermal LD₅₀ of a 0.1% W/V solution of Microbicide 886 applied as a 24 hour occluded patch to rabbits:

Intact skin - 800 mg/kg

- 4) Acute inhalation LD₅₀ of Microbicide 886 applied to rats as an aqueous aerosol is 1.2 mg/liter.
- 5) Primary skin irritation on rabbits from a 24 hour, occluded patch test.

Concentrations (W/V) of Microbicide 886 in Water	Irritation Index
1.0%	6.3 (severe)
0.5%	3.16 (moderate)
0.1%	0 (None)

At levels of 0.5% and greater Microbicide 886 is considered a primary skin irritant.

- 6) Primary Eye Irritation in Rabbits. Treated eyes washed 2 seconds after instillation of 100 mg of solution - Draize Test.

Concentrations (W/V) of Microbicide 886 in Water	Response
10%	Severe corneal, iridial and conjunctival effects
0.5%	Slight irritation
0.1%	No effect

- 7) Fish Toxicity - Dynamic Test on Bluegills

LC₅₀ (6 days) = 0.96 mg/L

- 8) Human Patch Test

Tests were conducted with formulations containing three levels of Microbicide 886, 50 ppm, 100 ppm and 1000 ppm. The formulations were applied respectively to one site of the subjects arms every other day until completion of the studies. The sites were covered with plastic strips (water barrier) and allowed to remain for 24 hours. The sites were rates for irritation on a scale of 0 (no irritation) - 4 (severe irritation) after each 24 hour exposure.

The results show that, at the 100 ppm and 1000 ppm levels, repeated 24 hour exposure of Microbicide 886 were required to produce a response. The most rapid reaction was a 2 rating (0-4 scale) after 7 applications. Six of the remaining 7 subjects elicited a reaction after six 24 hour exposures.

All the subjects were rechallenged with the formulation containing Microbicide 886 8 days later. At a concentration of 100 ppm, Microbicide 886 causes essentially the same reaction as before. These results indicated that Microbicide 886 is a sensitizer at a concentration of 100 ppm in 2 of 10 subjects.

At the 50 ppm level repeated 24 hour exposures of Microbicide 886 produced some irritation in 5 out of 10 individuals. In none of these subjects was the irritation of a sensitizing phenomena.

HANDLING PRECAUTIONS

The following handling precautions are included on the Microbicide 886 label:

DANGER!

KEEP OUT OF REACH OF CHILDREN



Corrosive

Causes severe eye damage and skin burns.

May cause allergic skin reaction.

Harmful if inhaled.

Harmful or fatal if swallowed or brought in contact with skin.

Do not get in eyes, on skin, on clothing. Wear goggles or face shield and rubber gloves when handling. Avoid breathing vapor or dust. Avoid contamination of food. Do not take internally. Wash thoroughly after handling.

FIRST AID

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse.

If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

NOTE TO PHYSICIAN

Probably mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

This product is toxic to fish and wildlife. Treated effluent should not be discharged where it will drain into lakes, streams, ponds, or public water. Do not contaminate water by cleaning of equipment, or disposal of wastes. Apply this product only as specified on this label.

DISSIPATION OF MICROBICIDE 886

Radioassay studies were conducted to follow the dissipation of Microbicide 886 in natural river water, soil and in activated sludge. Results of these studies are given below.

Dissipation in One Type of River Water

Percent 5-Chloro-2-methyl-4-isothiazolin-3-one calcium chloride Remaining

Concentration Tested

Days 0.01 ppm 0.1 ppm 1.0 ppm

1	15%	87%	96%
2	0%	67%	92%
4	-	24%	83%
7	-	0%	72%
14	-	-	61%
35	-	-	25%

Percent 2-methyl-4-isothiazolin-3-one calcium chloride Remaining

Concentration Tested

1.0 ppm

96%
98%
52%
28%
0%
-

Dissipation in Activated Sludge Unit

The level of Microbicide 886 in the standard soap and detergent activated sludge unit was increased gradually to 10 ppm. The recovery of the charged C14 activity during the seven week test is given below.

Percent of Total C14 Added

C14-5-Chloro-2-methyl-4-isothiazolin-3-one calcium chloride

Effluent	55.1%
Carbon Dioxide	23.6%
Sludge	22.5%
TOTAL	101.2%

C14-2-methyl-4-isothiazolin-3-one calcium chloride

59.6%
18.3%
19.3%
97.2%

The effluent contained no detectable amount of either parent compound according to GLC analysis.

Dissipation in One Type of Soil

In biometry flask studies, 25% of the C14 activity applied as 1 ppm of C14-5-Chloro-2-methyl-4-isothiazolin-3-one calcium chloride was evolved as C14O₂ in 21 days from non-sterile Hagerstown silt loam. There was negligible evolution from sterilized soil.