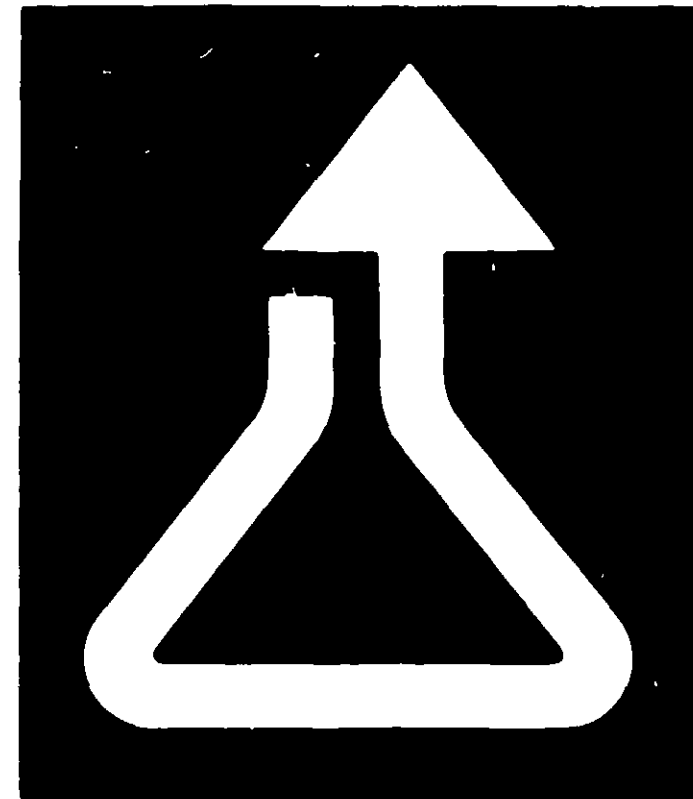


MICROBICIDE 4200



**ROHM
AND
HAAS**

PHILADELPHIA, PA. 19105

FABRIC MILDEWICIDE

ACTIVE INGREDIENT	
2-n-Octyl-4-isothiazolin-3-one	25%
INERT INGREDIENTS	75%
	<u>100%</u>
EPA Reg. No. 707-120	

**FOR
FORMULATION
USE ONLY**

NET CONTENTS

_____ GALLONS

DIRECTIONS FOR USE

Microbicide 4200 is for formulation use only. Use according to directions furnished by the manufacturer.

For plastic containers: Do not reuse container. Destroy when empty. For cans or drums: Do not reuse empty container. Bury or discard in a safe place away from water supplies.

This product is toxic to fish. Do not contaminate water by cleaning of equipment or disposal of wastes.

DANGER

***KEEP OUT OF REACH OF CHILDREN**

THIS CONCENTRATE:

- CAUSES EYE AND SKIN BURNS**
- MAY CAUSE ALLERGIC SKIN REACTION**
- IS HARMFUL IF INHALED**
- IS HARMFUL IF SWALLOWED**

Do not get in eyes, on skin, on clothing. Wear goggles and rubber gloves. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Do not take internally. Wash thoroughly after handling.

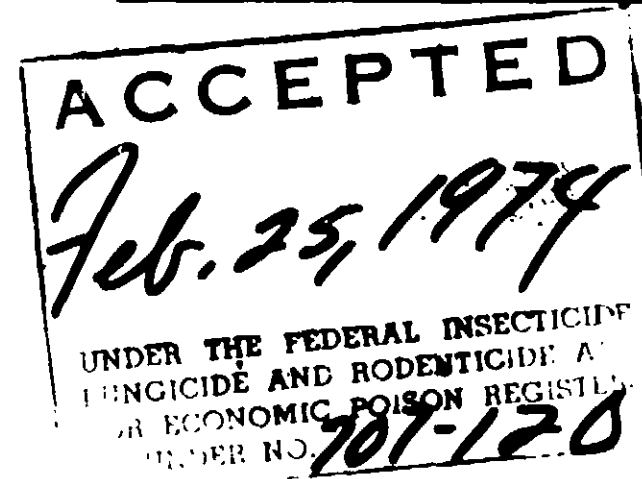
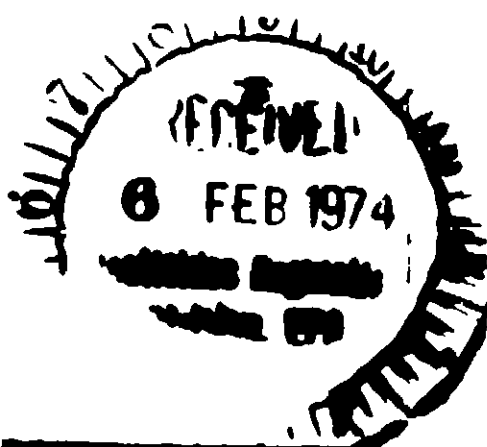
FIRST AID:

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

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Call a physician. Never give anything by mouth to an unconscious person.

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.





Microbicide 4200

Fabric Mildewcide

Microbicide 4200 is a new chemical developed for use as a fabric mildewcide. Fabrics treated with a solution containing 5.0 ppm active ingredient are mildew resistant for at least 4 weeks.

Physical Properties:

Appearance: clear amber liquid
 Active Ingredient: 25% 2-n-octyl-4-isothiazolin-3-one
 Solvent carrier: Propylene glycol
 Weight per gallon: 8.6 pounds
 Viscosity: 40 centipoise (Brookfield, #1 spindle @ 60 rpm, 25°C)

Solubility: The maximum water solubility of the active ingredient is 800 ppm (0.08% on a weight basis) which is adequate for the preparation of completely soluble fabric treatment solutions. To prepare concentrates of Microbicide 4200, the product should be extended with propylene glycol to assure a completely homogeneous concentrate. This concentrate may then be diluted in water to prepare a fabric treatment solution containing 5.0 to 10.0 ppm of the active ingredient.

Stability: Microbicide 4200 as supplied appears to be stable indefinitely at room temperature. Lower active concentrates in propylene glycol and aqueous treatment solutions are also considered completely stable. The product is not stable in the presence of ammonia, primary and secondary amines, or salts of these compounds.

Toxicity: The acute toxicity characteristics of Microbicide 4200 are summarized as follows:

- a) Acute oral LD₅₀ to rats - 2740 mg/Kg
- b) Acute dermal LD₅₀ on rabbits - < 1.25 ml/Kg (abraded skin)
 > 5.00 ml/Kg (unabraded skin)



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 should not be understood as recommendations that they be used in violation of any patents.

Eye Irritation

Microbicide 4200 is strongly irritant when applied to the eyes of rabbits. This is true even when the eyes are washed 2 seconds after application. In eyes that were not washed, the effects persisted beyond 14 days.

Skin Irritation

Microbicide 4200 is a primary skin irritant when tested according to the standard procedure of the Federal Hazardous Substances Act.

Fabric treated with a solution containing 10 ppm active ingredient produced no irritation or sensitizing effects when placed in contact with the skin of human subjects.

Acute Inhalation

Exposure of rats to a nominal concentration of 7.18 mg/liter Microbicide 4200 in air produced no immediate or subsequent signs of toxicity. Exposure of 20 rats to unformulated active ingredient at 4 mg/liter resulted in 11 deaths.

HANDLING PRECAUTIONS

Microbicide 4200 causes severe eye and skin irritation and may be harmful if inhaled or swallowed. Therefore, rigorous precautions should be taken to avoid all personal contact with it including contamination of clothing or inhalation of its vapor or mist. Wear goggles and rubber gloves. Keep container closed. Use with adequate ventilation. Do not take internally. Wash thoroughly after handling.

FIRST AID

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

BIOLOGICAL PERFORMANCE

Microbicide 4200 will inhibit the growth of a wide variety of fungi at relatively low concentrations as indicated in Table I.

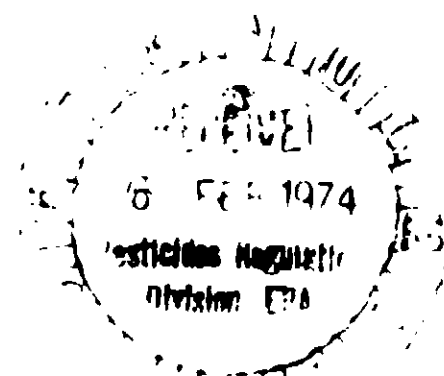


Table I

Fungistatic Activity of Microbicide
4200 by Serial Dilution Tests

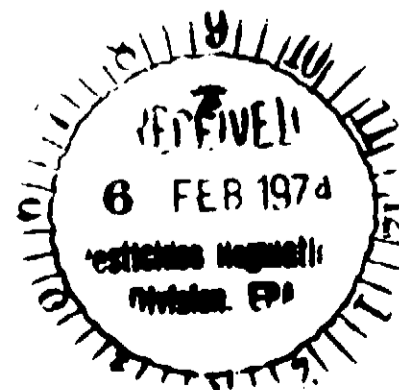
Test Fungus	Minimum Inhibiting Concentration in ppm of <u>Active Ingredient</u>
<u>Alternaria dianthicola</u> (11782)	1
<u>Aspergillus niger</u> (9642)	8
<u>Aspergillus oryzae</u> (10196-QM #1278)	<
<u>Aspergillus repens</u> (9294)	2
<u>Candida albicans</u> , yeast (11651)	2
<u>Chaetomium globosum</u> (6205)	4
<u>Cladosporium resinae</u> (11274)	0.5
<u>Mucor rouxii</u> (Rohm and Haas #82)	8
<u>Penicillium funiculosum</u> (9644)	1
<u>Phoma glomerata</u> (6735)	1 or <
<u>Phoma pigmentivora</u> (12569)	2
<u>Pullularia pullulans</u> (9348)	0.3
<u>Rhizopus stolonifer</u> (10404)	4
<u>Rhodotorula rubra</u> , yeast (9449)	4
<u>Saccharomyces cerevisiae</u> , yeast (2601)	1

The important potential of Microbicide 4200 as a fabric mildew inhibitor was determined in the Fabric Mildew Fungistatic Test Method as described in the attached appendix. According to this test, fabric treated in a solution containing 5.0 ppm active Microbicide 4200 resisted the growth of mildew for at least 4 weeks.

DIRECTIONS FOR USE

The final rinse of a laundry or fabric treatment plant should be made up to contain 5 to 10 ppm active ingredient 2-n-octyl-4-isothiazolin-3-one (equivalent to 20 to 40 ppm Mildewcide 4200). To obtain a uniform rinse, it is recommended that 1 part Microbicide 4200 be diluted with 4 parts propylene glycol to form a formulation containing 5 percent active ingredient and that 1½ to 2½ fluid ounces of this formulation be added to every 100 gallons of rinse solution. Alternatively, for laundry use, it is recommended that ¾ to 1-1/2 fluid ounces of the 5 percent active ingredient formulation be added to the final rinse solution for every 100 pounds of fabric treated.

Fabric may be retreated as necessary to effect continued mildew protection. Fabrics should be treated after every laundering.

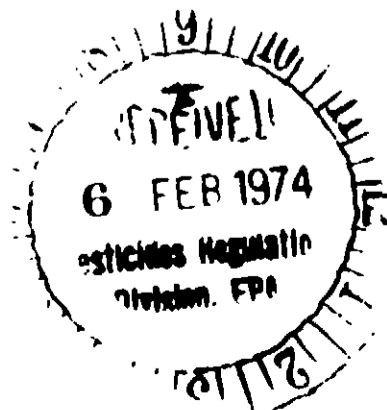


APPENDIX A

Environmental Protection Agency
Pesticides Regulation Division
Fungicides Evaluation Staff

FABRIC MILDEW FUNGISTATIC TEST METHOD
(Revised 12-1-70)

1. Introduction: Products which are shipped interstate and are intended for use to control, prevent or inhibit the growth of fungi which cause mildew on various articles or surfaces must be tested to demonstrate fungistatic effectiveness. This test method is applicable in connection with registration and enforcement procedures under the Federal Insecticide, Fungicide, and Rodenticide Act. It is designed to determine effectiveness of products (applied according to instructions on the labeling) to control mildew and non-pathogenic fungal growth on articles or surfaces composed of fabric. It also indicates the duration of protection afforded, thereby providing a basis for recommending when to repeat applications. Its use will expedite registration and minimize enforcement actions.
2. Reagents: (a) Test Organisms: 1. Aspergillus niger (ATCC 6275). Maintain stock cultures on 1 percent neopeptone - 2 percent dextrose agar. Incubate new stock cultures 7-10 days at 25°C., then store at 2-10°C. Conidia of required resistance survive 10-minute exposure at 20°C. to a phenol dilution of 1:80 (2 parts of 5 percent phenol, 6 parts of water) but not to a 1:70 dilution (2 parts of 5 percent phenol, 5 parts of water). The Use-Dilution Mildew Fungicidal Test Method is used for this determination. 2. Penicillium variable. Maintained and stored same as A. niger. (b) Fabric: 8- to 20-ounce cotton duck cut into 1- by 3-inch strips. Ten strips are needed per treatment. A hole punched near one end of each strip facilitates its suspension on a wire hook.
3. Preparation of Conidial Suspension: Place approximately 1/2 inch of neopeptone-dextrose agar into a 250 ml. Erlenmeyer flask, plug with cotton and autoclave at 15 p.s.i. for 20 minutes. Seed the desired organism (A. niger or P. variable) at the center of each flask and incubate for 7-10 days at 25°C. Prepare a diluent which contains 0.85 percent NaCl and 0.2 percent Triton X-100 in distilled water. Autoclave at 15 p.s.i. for 20 minutes. Pour approximately 100 ml. of the cooled sterile diluent over the culture surface and shake vigorously to dislodge the spores. Pour this spore suspension into a tissue grinder which has been heat-sterilized and reciprocate the piston several times to break up spore chains. Filter suspension through one-half layer sterile absorbent cotton to remove spore chains and hyphal elements. Conidial suspensions may be stored at 2-10°C. for not longer than 4 weeks. Standardize test conidial suspensions to contain 5 million conidia per ml. (determine by spore counts with a spectrometer) by adding sterile diluent.



4. Apparatus: (a) Glassware: Two 1000 ml. Erlenmeyer flasks or other flasks with cotton plugs suitable for preparing agar and for preparing the diluent. Four 250 ml. Erlenmeyer flasks with cotton plugs, heat-sterilized for use in preparing suspension of conidia (for 2 fungi). Twenty 16-ounce French square jars (10 for the treated replications, 10 for the untreated). These are prepared by center drilling the caps and inserting 1/8-inch brass bolts approximately 1/2-inch long for attaching a 2-1/2-inch piece of #22 nickel chromium wire. The wire is bent to form a hook on the end and is used for suspending the test samples in the jar. (b) Tissue grinder (Homogenizer) No. 4288B Arthur H. Thomas. (c) Atomizer, DeVilbiss #152 (or other suitable atomizer) operated at 10 p.s.i.
5. Operating Technique: (a) Treatment: Fabric strips are placed in the use-dilution of the product for 3 minutes. With pressurized products, fabric strips are placed on a perforated rubber mat where they are sprayed according to label directions on both sides with the product. Where label directions do not specify duration of spray, fabric strips should be sprayed until wet, being careful to obtain equal wetting on both sides of the test specimen. This is best done by spraying several light applications alternately to each side of the specimen. All samples are allowed to dry before proceeding to the next step. (b) Inoculation: Inoculum of A. niger and P. variable, prepared as previously described, is placed in the DeVilbiss sprayer on a 50:50 basis and thoroughly agitated, then sprayed lightly on both surfaces of the fabric test samples. (c) Incubation: The fabric samples are then suspended in individual 16-ounce jars containing approximately 1 inch of water, and incubated at approximately 28°C. The caps are tightened, then backed off 1/8 turn to allow for some ventilation. (d) Evaluation: Observations are recorded weekly for 4 weeks or until abundant growth occurs on treated fabric. Visual observation of mold or absence of mold on any of the specimens is the criterion for determining the results of the test. A low powered microscope is used in settling doubtful cases. (e) Interpretation: The results of this test must be correlated to claims to be made on the label or labeling. The directions for use must specify retreatment every 7, 14, or 21 days, as necessary, depending on the length of time that all of the test strips remained free from mildew growth. Products which do not permit growth after 4 weeks incubation may specify retreatment "as necessary".

Note: Cultures of P. variable NRRL 3765 (formerly classed as P. glaucum) are available from: ARS Culture Collection Investigations Fermentation Laboratory, Northern Utilization Research and Development Division, 1815 North University Street, Peoria, Illinois 61604.

