

**METASOL TK-100®**

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION!**  
**HARMFUL IF SWALLOWED.**

Avoid contact with skin, eyes, or clothing.  
Wear rubber gloves and protective clothing when handling.  
Wash thoroughly with soap and water after handling.

**STATEMENTS OF PRACTICAL TREATMENT**

**EYES:** In case of eye contact, flush with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

**SKIN:** In case of skin contact, wash thoroughly with plenty of soap and water. Get medical attention if irritation persists.

**INTERNAL:** If swallowed, call a physician or Poison Control Center.

**TO INHIBIT THE GROWTH  
OF MOLD AND MILDEW  
ON PAINT FILMS AND  
NATURAL AND SYNTHETIC FIBERS**

Active Ingredient:  
2-(4-thiophenyl)benzimidazole ..... 98.5%

Inert Ingredient: ..... 1.5%

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**  
See side panel for additional precautionary statements.

**ENVIRONMENTAL HAZARDS**

Do not discharge into lakes, streams, or public waters unless in accordance with an NPDES permit. For guidance, contact your Regional Office of the EPA.

For information regarding incidents involving human and environmental exposure, call (412) 777-8000 and ask for the Regulatory and Trade Affairs Department.

E.P.A. Registration No. 10445-40

- ☐ EPA Establishment No. 10445-PA-01
- ☐ EPA Establishment No. 10445-NJ-01
- ☐ EPA Establishment No. 10445-CA-01
- ☐ EPA Establishment No. 10445-TX-01
- ☐ EPA Establishment No. 10445-MO-01

U.S. Pats.: 3,017,415 & 3,370,957

**CALGON CORPORATION**

**P. O. BOX 1346, PITTSBURGH, PENNSYLVANIA 15230**

# METASOL TK-100®

TO INHIBIT THE GROWTH  
OF MOLD AND MILDEW  
ON PAINT FILMS AND  
NATURAL AND SYNTHETIC FIBERS

Approved  
for use  
in USA

OCT 6 1987

Under U.S.  
Patent  
as amended  
registered  
10445-40

## ADVANTAGES

### 1. Effective

METASOL TK-100 is extremely active against a broad spectrum of fungi which attack surface coating films so that only low levels (1/10 - 1 lb./100 gal. for interior paints) (1/2 - 2 lb./100 gal. for exterior paints) are required.

### 2. Nonmetallic

The acute oral toxicity (LD<sub>50</sub>) of METASOL TK-100 is reported for mice, 3600 mg./Kg.; rats, 3100 mg./Kg.; and rabbits at greater than 3800 mg./Kg. More extensive information on toxicity is given on a later page.

### 3. Compatible with oleoresinous and aqueous systems

METASOL TK-100 does not affect brushing, flow, leveling, grinding, viscosity, gloss, oven stability, tinting, drying, or freeze-thaw characteristics of oil and water systems.

METASOL TK-100 will not cause yellowing or pigment flocculation.

### 4. Sulfide-stain resistant

Exterior coatings containing METASOL TK-100 have been commercially tested along the Gulf Coast and southern petroleum fume areas without evidence of sulfide staining.

### 5. Thermally stable

METASOL TK-100 is thermally stable for extended periods at elevated temperatures without loss of antifungal properties. It melts at 300° C and sublimes. The unusual heat stability of METASOL TK-100 suggests its use for metal bake finishes and other high-temperature polymeric systems which are subject to fungal attack.

### 6. METASOL TK-100 is stable and active in both acid and alkaline pH ranges and does not decompose or hydrolyze on extended storage.

### 7. Easy to use

METASOL TK-100 should be incorporated with the TiO<sub>2</sub> in the pigment grind for all paint systems.

### 8. Registered with the Environmental Protection Agency

EPA Reg. No. 10445-40

### 9. Fiber Protection in Carpets and Textiles

Metasol TK-100 inhibits the growth of mold and mildew which can cause rot, deterioration and odors in natural and synthetic fibers.

## RECOMMENDATIONS

METASOL TK-100 has been extensively tested in the laboratory under accelerated weathering conditions and panels have been exposed for periods up to three years at critical mildew locations in the United States. Millions of gallons of paints have been commercially produced and used on homes and industrial installations ranging from the eastern shore to the Gulf Coast for periods up to four years. Based on successful results from these investigations, the following recommendations are made:

### Exteriors\*

PAINT SYSTEM	METASOL TK-100 (LB./100 GAL.)
PVA	1/2 - 1 lb.
Acrylic	1/2 - 1 lb.
Vinyl acrylic	1/2 - 1 lb.
Alkyd-modified latex	1 - 1 1/2 lb.
Zinc oxide pigmented latex	1/4 - 3/4 lb.
Oil house paint	1 - 1 1/2 lb.
Alkyd	1 - 2 lb.
Zinc oxide pigmented	
Alkyd and oil paint	1/2 - 1 lb.

### Interiors\*

The unique combination of low toxicity and high antifungal activity of METASOL TK-100 suggests its use as a mildewcide for interior coatings and masonry surface coatings in brewery, bakery, cannery, and food establishments as well as for other mold-resistant interior coatings. More extensive information on interior paints is given in product bulletin PL 86-02 968.

INTERIOR PAINT SYSTEMS	METASOL TK-100 (LB./100 GAL.)
TT-P-0029 latex flat	1/10 - 1/4 lb.
TT-P-650 latex primer	1/4 - 1/2 lb.
New York City Housing	
Authority coatings	1/4 - 3/4 lb.
Sanitary latex semigloss	1/2 - 1 lb.
Oleoresinous interiors	1/2 - 1 lb.

\*Note: MERBAC-35\*\* (1/2 lb to 1 lb/100 gal) should be incorporated into latex paint formulations to inhibit bacterial degradation during shelf storage.

\*\*MERBAC-35 (benzyl bromoacetate) is a trademark of March & Co., Inc.

## TO CONTROL MOLD AND MILDEW ON NATURAL AND SYNTHETIC FIBERS

Metasol TK-100 is effective in controlling mold and mildew on natural and synthetic fibers, such as nylon carpeting and canvas textiles.

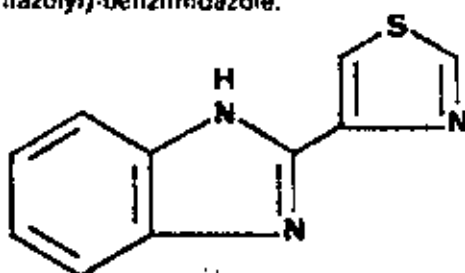
Nylon Carpeting - Using conventional methods such as spin finish application or melt blending, apply 0.05 (spin finish) to 0.5% (melt blending) of Metasol TK-100 based on total weight of the material being used.

Canvas Textiles - Prepare a trough of water at pH 3.5 (or less) by the addition of hydrochloric or other suitable acid. Add Metasol TK-100 to the trough at 500 - 3000 ppm active ingredient based on the finished fabric. The fabric is then passed through the solution until thoroughly wetted. A wetting solution may be used to aid the Metasol TK-100 solution in penetrating. The amount of Metasol TK-100 necessary to provide the desired protection against mold and mildew can then be determined. If deposition of pure Metasol TK-100 on the canvas is desired, wash the treated fabric with a 1% soda ash solution. The canvas can then be processed as normal.

## SPECIFICATIONS

Chemical name: 2-(4-thiazolyl)-benzimidazole. \*

Structure:



Melting point: 300° C. (572° F.)

Specific gravity: 1.44

Appearance: Off-white, free-flowing powder

Bulk density: 25 lb./cu. ft.

Active ingredient:

2-(4-thiazolyl)benzimidazole ..... 99.5%

Inert ingredient: .....

1.5%

\* U.S. Pat.: 3,017,415 & 3,370,957

## STABILITY

METASOL TK-100 does not decompose or hydrolyze in coatings systems, even after prolonged shelf storage. Laboratory tests and panel studies confirm that METASOL TK-100 retains complete activity as a mildewcide in coatings stored for periods in excess of two years. Paints evaluated include:

PVA	Polyvinyl acetate maleate
Acrylic	Zinc-free oil paints
Alkyd	Zinc oxide oil paints
Vinyl acrylic	Alkyd-modified PVA
Zinc oxide latex paints	Alkyd-modified acrylic
Polyurethane emulsion	Styrene butadiene

## TOXICITY

Two of the many publications which discuss the toxicity of the active ingredient (reported as thiabendazole) in animals and man are:

1. Robinson, H. J. et al.: Studies on the toxicologic and pharmacologic properties of thiabendazole, *Toxicol. & Applied Pharmacol.* 7: No. 1, Jan. 1965.
2. Franz, K. H.: Clinical trials with thiabendazole against human strongyloidosis, *Am. J. Trop. Med. Hygiene* 12:211-214, 1963.

A review of the above publications reveals the following:

1. Tolerance studies showed that doses of 0.5 - 4.0 Gm. daily were well tolerated by man.
2. Acute, subacute and chronic oral toxicity studies proved the chemical to be well tolerated by a variety of laboratory animals. Thiabendazole appears to be inert insofar as acute pharmacologic effects are concerned.
3. The acute oral toxicity (LD<sub>50</sub>) of thiabendazole is reported for mice, 3600 mg./Kg.; rats 3100 mg./Kg.; rabbits 3800 mg./Kg.
4. The treatment of dogs with 20, 100, or 200 mg./Kg. daily, seven days per week, over a two-year period resulted in no deaths or outward signs of toxicity.
5. Repeated applications of 50% material in a cold cream ointment to the skin of shaved rabbits caused no irritation.
6. No irritation to the eye sac of rabbits observed when treated with a 4% ophthalmic ointment, or a 10% saline suspension.

## SERVICE

Calgon Corporation maintains fully equipped chemical and microbiologic laboratory facilities. These services in problems of preservation and mildew prevention in your formulation are at your disposal without charge.

The METASOL Simulated Field Performance Laboratory Test, published in Official Digest Vol. 33: No. 9, September 1961, and more recently updated in the Official Digest, September 20, 1971, has been successfully used for more than 12 years by our microbiologists for a comparatively rapid evaluation of the efficacy of fungicides in paint formulations. Ladder series studies are performed on your paints to establish a level of fungicide for maximum protection at minimal cost.

Calgon Corporation also maintains a test fence installation to carry out extended studies.

## SPECTRUM OF ACTIVITY

### METASOL TK-100 VS. PHENYL MERCURY ACETATE

Fungi	Culture no.	Inhibitory concentration in ppm	
		METASOL TK-100	PMA
<i>Pullularia pullulans</i>	ATCC 9348	0.2	25
<i>Aspergillus niger</i>	ATCC 6275	10.0	10
<i>Penicillium luteum</i>	ATCC 10466	1.0	10
<i>Chaetomium globosum</i>	ATCC 6205	10.0	10
<i>Trichoderma viride</i>	ATCC 8675	10.0	10
<i>Penicillium expansum</i>	IPC 126	1.0	10

The most significant fungi responsible for mildew growth on paint films are more readily inhibited by METASOL TK-100 than by standard mercury fungicide such as PMA, and lower levels of METASOL TK-100 are required to provide effective, economic mildew control.

### SOLUBILITY OF METASOL TK-100 IN VARIOUS SOLVENTS

Solvent	% Solubility at room temp.
Acetone	0.28
Benzene	0.23
Cellosolve	3.00
N,N-Dimethylacetamide (DMAC)	6.47
N,N-Dimethylformamide (DMF)	3.90
Dimethyl sulfoxide (DMSO)	8.00
Dioxane	0.45
Ethanol	0.68
Ethylene glycol	0.77
MEK	1.25
Methanol	0.93
N-methyl-2-pyrrolidone	8.00
Mineral spirits	0.001
Morpholine	7.13
Pyridine	3.50
Water	0.003

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**STATEMENTS OF PRACTICAL TREATMENT**

**EYES:** In case of eye contact, flush with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

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**INTERNAL:** If swallowed, call a physician or Poison Control Center.

**ENVIRONMENTAL HAZARDS**

Do not discharge into lakes, streams, or public waters unless in accordance with an NPDES permit. For guidance, contact your Regional Office of the EPA.

**STORAGE AND DISPOSAL**

Keep container closed when not in use. Pesticide, spray mixture, or rinse water that cannot be used according to label instruction must be disposed of according to applicable federal, state or local procedures.

Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum cannot be raised, dispose of in the same manner.

For information regarding incidents involving human and environmental exposure, call (412) 777-8000 and ask for the Regulatory and Trade Affairs Department.

**NOTICE**

Seller expressly warrants that the product conforms to its chemical description. There are no warranties associated with the sale of this product either express or implied, including but not limited to the warranties of fitness for a particular purpose or merchantability.

METASOL is a registered trademark of Merck & Co., Inc.

**CALSON CORPORATION**

**P. O. BOX 1346, PITTSBURGH, PENNSYLVANIA 15230**

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Calgon Corporation  
Calgon Center  
Box 1346  
Pittsburgh, PA 15230

Attention: Edward M. Jones

Gentlemen:

Subject: Metasol TK-100  
EPA Registration No. 10445-40  
Your Letter Dated October 28, 1982

The amendment referred to above, submitted in connection with registration under FIFRA sec. 3(c)(7)(A), is acceptable provided that you:

1. Submit and/or cite all data required for registration/renewal of your product under FIFRA sec. 3(c)(5) when the Agency requires all registrants of similar products to submit such data.
2. Submit five (5) copies of your final printed labeling before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

A stamped copy of the label is enclosed for your records.

Sincerely yours,

Henry H. Jacoby  
Product Manager (21)  
Fungicide-Herbicide Branch  
Registration Division (TS-767)

Enclosure

TS-767;H.M.Jacoby;DCR-03887;WANG-1030C;lwy;Raven;479-2013;11/04/82