



SUBSIDIARY OF MERCK & CO., INC.

PRECAUTIONARY STATEMENTS

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION**

Do not contaminate water by cleaning of equipment or disposal of wastes. Wash hands with soap and water after handling.

ENVIRONMENTAL HAZARDS:

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

EPA Registration No. 10445-31

- 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

Information concerning human and environmental exposure may be reviewed on the Material Safety Data Sheet for this product.

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

**TK-100
LIQUID CONCENTRATE**

TO INHIBIT THE GROWTH OF MOLD AND MILDEW ON ADHESIVE FILMS,
PAINT FILMS, PAPER PRODUCTS, AND NATURAL AND
SYNTHETIC FIBERS.

**KEEP OUT OF THE REACH OF CHILDREN
CAUTION**

ACTIVE INGREDIENT
2-(4-thiazolyl)benzimidazole, as the
hypophosphite salt.....20%
INERT INGREDIENT.....80%

U.S. Pats. 3,370,957, 3,535,331 and 3,017,415

Net Weight



ACCEPTED
SEP 25 1987
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended by the FIFRA Act of 1972,
EPA Reg. No. 10445-31

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DIRECTION FOR USE:

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

The amount of product necessary for the desired level of microbiological control varies with the material being protected for best results. TK-100 Liquid Concentrate should first be tested on the particular material to assure adequate protection. Consult the Product Bulletin for specific use directions.

This product has not been cleared for use in paper or paperboard products intended for use in contact with food.

STORAGE AND DISPOSAL:

Keep container closed when not in use. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Container Disposal - Do not reuse container. Metal containers - Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other approved state and local procedures. Plastic containers - Dispose as for metal containers. May also be incinerated, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

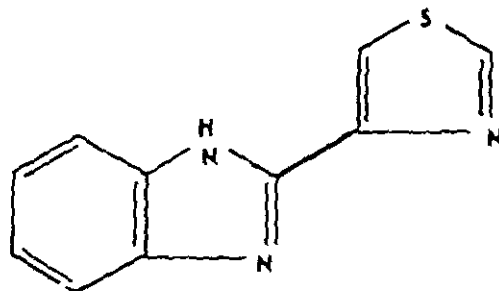
NOTICE: Seller expressly warrants that the product conforms to its chemical description. There are no warranties associated with the sale of this product either expressed or implied, including but not limited to the warranties of fitness for a particular purpose or merchantability.

Made in U.S.A.

10445-31
pm ag
10445-31

CHEMICAL NAME: 2-(4-thiazolyl)benzimidazole

STRUCTURE:



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SPECIFICATIONS:

Active Ingredient: 20% 2-(4-thiazolyl)benzimidazole
(equivalent to 26.6% 2-(4-thiazolyl)benzimidazole as the hypophosphite salt¹)

Appearance: Amber liquid

Specific Gravity: 1.103 @ 25°C

Weight per Gallon: 9.2 lbs (1,150 grams per liter)

pH of Solution: 1.7

DIRECTIONS FOR USE:

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EPA Registration No. 10445-31

*U.S Patent Nos. 3,017,415, 3,370,957 and 3,535,331

¹Salt formed in situ by the reaction of 1 mole 2-(4-thiazolyl)benzimidazole with 1 mole of hypophosphorous acid.

RECOMMENDATIONS:

Adhesives Films

The following concentrations must be used to provide mildew control on water-based adhesives films. The concentrations are based on the total adhesive formulation weight. TK-100 Liquid Concentrate can be incorporated with the make-up water or as a post-additive in adhesive production. Tektamer 38 A.D. or other Calgon preservatives should be incorporated into the aqueous adhesive formulations to inhibit in-can bacterial degradation during shelf storage.

<u>Adhesive Type</u>	<u>Percent Concentration TK-100 Liquid Concentrate</u>
Polyvinyl acetate	0.50 - 0.75%
Styrene butadiene	0.25 - 0.50%
Polyvinyl alcohol	0.50 - 0.75%
Methyl cellulose	0.25 - 0.50%
Hydroxyethyl cellulose	0.50 - 0.75%
Acrylic	0.25 - 0.50%
Dextrin	0.25 - 0.50%
Casein	0.75%
Epoxy	0.25 - 0.50%
Polyester	0.25 - 0.50%

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TK-100 Liquid Concentration should not be used where the treated adhesive comes in contact with food packaging materials or on food contact surfaces. Testing should be conducted to assure compatability with product formulation.

Paint Films

Exteriors

The active ingredient in TK-100 Liquid Concentrate has been extensively tested in the laboratory under accelerated weathering conditions and panels have been exposed for periods up to four years at critical mildew locations in the United States. Millions of gallons of paints have been commercially produced and used in homes and industrial installations ranging from the Eastern shore to the Gulf Coast for periods up to five years. Recommendations are based on the successful results of these investigations.

Tektamer 38 A.D. or other Calgon preservatives should be incorporated into latex paint formulations to inhibit any bacterial degradation during shelf storage. Testing should be conducted to assure compatability with product formulation.

<u>Paint System</u>	<u>TK-100 Liquid Concentrate (lb/100 gal.)</u>
PVA	2.5 - 5.0 lb.
Acrylic	2.5 - 5.0 lb.
Vinyl acrylic	2.5 - 5.0 lb.
Alkyd modified latex	5.0 - 7.5 lb.
Zinc oxide pigmented latex	1.25 - 3.75 lb.
Oil house paint	5.0 - 7.5 lb.
Alkyd	5.0 - 10.0 lb.
Zinc oxide pigmented alkyd and oil paints	2.5 - 5.0 lb.

Interiors

TK-100 Liquid Concentrate is an effective mildewcide for interior coatings and masonry surface coatings where mold-resistant interior coatings are needed. TK-100 Liquid Concentrate should not be used in coatings that come into direct contact with food. The following recommendations are made.

<u>Interior Paint System</u>	<u>TK-100 Liquid Concentrate (lb/100 gal.)</u>
TT-P-0029 latex flat	0.50 - 1.25 lb.
TT-P-650 latex primer	1.25 - 2.50 lb.
New York City Housing Authority coatings	1.25 - 3.75 lb.
Sanitary latex semi-gloss	1.25 - 5.00 lb.
Oleoresinous interiors	2.50 - 5.00 lb.

TK-100 Liquid Concentrate should be incorporated with the TiO₂ in the pigment grind for all paint systems. Testing should be conducted to assure compatibility with product formulation.

Paper Products

TK-100 Liquid Concentrate is most efficiently applied via the size tub or water troughs. TK-100 Liquid Concentrate is a water-soluble acidic salt solution. If the pH of this solution is raised above 4, the salt reverts to the insoluble 2-(4-thiazolyl)benzimidazole which will precipitate. The 2-(4-thiazolyl)benzimidazole is stable and active under a wide variety of pH conditions ranging from highly alkaline to highly acidic. However, once precipitation occurs, pick-up will be poor.

The tub-size or water-trough solutions should be adjusted to a pH below 4.0. The TK-100 Liquid Concentrate should then be added with thorough agitation. It has been shown that the resulting pH has no adverse effects of the properties of the starch, equipment, or the physical properties of the final products. The TK-100 Liquid Concentrate should be applied at dosage levels from 200 to 1000 ppm active ingredient based on the finished paper weight.

For use in a coating color the TK-100 Liquid Concentrate should be added with agitation to the make-up water. Although subsequent raising of the pH with the binder or alkali will precipitate the 2-(4-thiazolyl)benzimidazole, this precipitate will be evenly distributed throughout the coating color. The use of TK-100 Liquid Concentrate in coating colors is recommended in addition to treatment of the base stock.

TK-100 Liquid Concentrate is a fungicide only. Tektamer 38 A.D. or other Calgon preservatives should be incorporated into sizing solutions to inhibit any bacterial degradation during shelf storage.

NOTE: TK-100 Liquid Concentrate should be used only for the manufacture of non-food grade paper products. TK-100 Liquid Concentrate has not been cleared for use in paper or paperboard products intended for use in contact with food.

Canvas Textiles

TK-100 Liquid Concentrate is an effective product that has been used successfully in providing mold and mildew resistance to canvas textiles. The simplest treatment method is to prepare a trough with water at pH 3-4 and then add the TK-100 Liquid Concentrate to obtain the desired concentration. The fabric is passed through the solution until the proper amount of solution is absorbed on the fabric. A wetting agent may be used to aid the solution in penetrating the fabric. The TK-100 Liquid Concentrate should be applied at dosage levels from 500 to 3000 ppm active ingredient based on finished fabric. The amount necessary to provide the desired protection against mold and mildew can then be determined. If deposition of TK-100 Liquid Concentrate onto the canvas is desired, a subsequent wash with 1% soda ash solution will suffice. This can be followed by normal processing steps of the canvas textile. TK-100 Liquid Concentrate should be used for manufacture of canvas textiles only, such as tents and awnings.

Nylon Carpeting

Using spin finish application, add 0.25 - 1.00% TK-100 Liquid Concentrate based on total weight of the material being used.

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STORAGE AND DISPOSAL

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Container Disposal: Do not reuse container.

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

Plastic Containers: Dispose as for metal containers. May also be incinerated, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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TK-100 Liquid Concentrate and Tektamer 38 A.D. are registered trademarks of Merck & Co., Inc.

CALGON CORPORATION
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