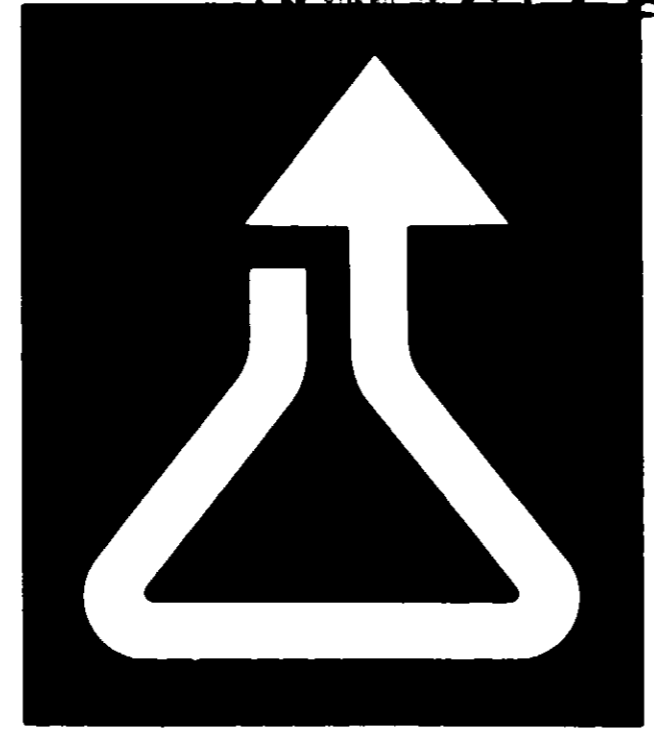


DITHANE M-45 CONCENTRATE

ACCEPTED
July 8, 1971
Comment
707-102

AGRICULTURAL FUNGICIDE

FOR DUST BLENDING AND FORMULATING ONLY
Before using refer to manufacturers technical bulletins and this label.



**ROHM
AND
HAAS**
PHILADELPHIA, PA. 19105

CAUTION KEEP OUT OF THE REACH OF CHILDREN

May cause irritation of nose, throat, eyes and skin. Do not breathe dust. In case of skin contact wash with water; for eyes, wash copiously with water and get medical attention.

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

IMPORTANT: Keep away from fire and sparks. Store in a cool, dry place. Do not allow to become wet or overheated in storage. This may bring on chemical changes which will impair the fungicidal effectiveness of DITHANE M-45 concentrate and may also generate flammable vapors. Keep container closed when not in use.

Do not reuse empty container. Dispose of by perforating and either burning in strict accordance with air pollution control laws or by burying in a safe place in noncrop lands away from water supplies.

ACTIVE INGREDIENTS

A co-ordination product of zinc ion and manganese ethylene bisdithiocarbamate..... 80%
In which the ingredients are
Manganese.....16%
Zinc..... 2%
Ethylene bisdithiocarbamate ion (C₂H₂N₂S₂)=..... 62%

INERT INGREDIENTS..... 20%
100%

USDA Registration No. 707-102
U.S. Patents 2,974,156 and 3,379,610

NET WEIGHT

LBS.



DITHANE M-45 CONCENTRATE

USDA Reg. No. 707-102

FORMULATING, MIXING, PACKAGING AND LABELING GUIDE

INTRODUCTION

Dithane M-45 is a fungicide concentrate or dust base containing 80 percent active ingredient. Dithane M-45 concentrate is described as a co-ordination product of zinc ion and manganese ethylene bisdithiocarbamate. Dithane M-45 concentrate may be combined with a number of inert diluents and insecticides for application as a dust. Suggestions for formulating, mixing, packaging and labeling Dithane M-45 dusts are outlined in this bulletin as a guide to manufacturers.

FORMULATION

Stability

Dithane M-45 concentrate represents an improvement over other bisdithiocarbamate compounds. Stability has been shown for at least two years when kept in the original sealed containers and stored in a cool, dry place.

The following is a summary of a storage test of Dithane M-45/CaCO₃ dust formulations which were conducted for one year. Samples were stored at 100°F and periodic analyses were made throughout the year. The percentages are based on active ingredient using the Dithane M-45 concentrate label claim of 80 percent.

	Days of Storage	20/80* % Active Ingredient Found	10/90* % Active Ingredient Found
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>ACCEPTED</p> <p>JUL 8 1971</p> <p>U.S. DEPARTMENT OF AGRICULTURE PHILADELPHIA, PA.</p> </div>	0	21.9	10.9
	132	23.9	10.5
	365	21.5	10.5

*Composition is indicated as percent Dithane M-45/CaCO₃.

Diluents

Stability studies with numerous carriers indicate that the best diluents for Dithane M-45 concentrate are those with low moisture content. Treated calcium carbonate, pyrophyllite and sulphur contain less than 0.5 percent moisture and have been found to be excellent diluents for Dithane M-45 concentrate.

Various talcs and volcanic dusts with low moisture content also are suggested. Many clays, attapulgites, and kaolins contain 1 percent to 5 percent or more moisture and are not recommended as diluents for Dithane M-45 dusts. We do not believe pH is a major factor since both treated calcium carbonate and sulfur are excellent diluents for Dithane M-45 concentrate.

Compatibility

Dithane M-45 concentrate can be readily combined with many pesticides commonly used in dust formulations.

Concentration

The concentration of Dithane M-45 can be varied to meet particular needs. The usual concentrations are 5 percent to 10 percent of Dithane M-45, providing 4.0 percent active to 8.0 percent active.

Mixing

Dusts containing Dithane M-45 concentrate do not require any special processing. Mixing can be done satisfactorily in standard dust mixing equipment.

Packaging

Packages containing Dithane M-45 dusts must be air-tight and moisture-proof, and should be stored in a cool dry place.

Labeling

The tradename Dithane is well known to growers and agricultural authorities throughout the world. Rohm and Haas Company sponsors considerable advertising for Dithane products in local and national farm publications, and in grower literature. It is suggested that Dithane M-45 be identified as a component of dust formulations.

Active Ingredient

The active ingredient in Dithane M-45 is a coordination product of zinc ion and manganese ethylene bisdithiocarbamate. The ingredient statement of Dithane M-45 is as follows:

ACTIVE INGREDIENT

A coordination product of zinc ion and manganese ethylene bisdithiocarbamate 80%

In which the ingredients are

Manganese⁺⁺ 16
 Zinc⁺⁺ 2
 Ethylene bisdithiocarbamate ion
 (C₄H₆N₂S₄)⁻ 62

INERT INGREDIENTS 20
 100%

It is common practice in agricultural dusts to declare slightly less active ingredient than calculated to compensate for loss of activity on mixing or in storage. It is suggested that at least a 5 percent margin be allowed in declaring the active ingredient for Dithane M-45 dusts.

Caution Statement

Federal registration requires on the front panel of the label the word "CAUTION" in 18 point type (for labels over 30 square inches in size) to be followed by the words "KEEP OUT OF REACH OF CHILDREN" in 12 point type (See USDA regulations for type size requirements for smaller labels). Additional cautions must be made in regard to handling, storage and contamination of foods and waters (See the specimen label for details).

If insecticides are combined with Dithane M-45 such precautionary labeling as is required for the particular insecticides must be added.

Dithane M-45 dusts sold in interstate trade are subject to the Federal Insecticide, Fungicide and Rodenticide Act and must be registered with the Pesticides Regulation Division, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C. 20250, and the Federal Registration Number must be shown on the label. Federal regulations also require the net contents and name and address of the manufacturer or seller, and the proper use directions to be on the label. Also most states require annual registration. Information may be obtained by contacting the State Department of Agriculture in each state where the product is to be sold.

We offer the following specimen labels as guides for XYZ Potato Seed Piece Fungicide Dust, XYZ Peanut Fungicide Dust and XYZ Cucurbit Fungicide Dust. These specimen labels represent a format which should be followed for other uses and concentrations of active ingredients. When making adjustments in active ingredients consideration must be taken of the total recommendation of pounds per acre in relation to established dosage rates listed in the USDA Summary of Registered Agricultural Pesticide Chemical Uses.

Our suggestions follow the present USDA requirements, however, dust formulators should determine whether local or state regulations require modifications or additions.

SPECIMEN LABEL

XYZ POTATO SEED-PIECE FUNGICIDE DUST
(Contains DITHANE⁰⁹ M-45)

ACTIVE INGREDIENTS

A co-ordination product of zinc ion and manganese ethylene bisdithiocarbamate 8.0%

In which the ingredients are:

manganese⁺⁺ 1.6%

zinc⁺⁺ 0.2%

ethylene bisdithiocarbamate 6.2%

INERT INGREDIENTS 92.0%

100.0%

CAUTION

KEEP OUT OF REACH OF CHILDREN

May cause irritation of nose, throat, eyes and skin. Do not breathe dust. In case of skin contact wash with water; for eyes, wash copiously with water and get medical attention. Do not reuse containers. Destroy by burying with waste.

This product is toxic to fish. Keep out of lakes, streams or ponds. Do not contaminate water by cleaning equipment, or disposal of wastes.

IMPORTANT Keep away from fire and sparks. Store in a cool dry place. Do not allow to become wet or overheated in storage. This may bring on chemical changes which will impair the fungicidal effectiveness of Dithane M-45 and may also generate flammable vapors. Keep container closed when not in use.

Recommendations

XYZ Potato Seed-Piece Fungicide Dust is a special fungicide dust formulation for application on whole or cut potato tubers for the control of Fusarium seed-piece decay and seed-borne common scab.

Directions For Use

Use 1 lb. of XYZ Potato Seed-Piece Fungicide Dust per 100 lbs. of whole or cut potato seed pieces. Apply the dust so that the entire surface of the seed-piece becomes thoroughly covered by the fungicide dust. Treated seed may be held for a week or longer at cool temperature and high relative humidity to aid suberization, or it may be planted immediately. Do not use treated seed potatoes for food or feed purposes.

DITHANE is a trademark of Rohm and Haas Company, Philadelphia, or of its subsidiaries or affiliates. The Company's policy is to register its trademarks where products designated thereby are marketed by the Company, its subsidiaries or affiliates.

NOTE: 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 the 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. These risks include, but are not limited to, damage to plants, crops and animals to which the material is applied, failure to control pest, damage caused by drift to other plants or crops, and personal injury.

SPECIMEN LABEL

XYZ POTATO SEED-PIECE FUNGICIDE DUST
(Contains DITHANE⁰⁹ M-45)

ACTIVE INGREDIENTS

A co-ordination product of zinc ion and manganese ethylene bisdithiocarbamate 6.0%

In which the ingredients are:

manganese⁺⁺ 1.20%

zinc⁺⁺ 0.15%

ethylene bisdithiocarbamate 4.65%

INERT INGREDIENTS 94.0%

100.0%

CAUTION

KEEP OUT OF REACH OF CHILDREN

May cause irritation of nose, throat, eyes and skin. Do not breathe dust. In case of skin contact wash with water; for eyes, wash copiously with water and get medical attention. Do not reuse containers. Destroy by burying with waste.

This product is toxic to fish. Keep out of lakes, streams or ponds. Do not contaminate water by cleaning equipment, or disposal of wastes.

IMPORTANT Keep away from fire and sparks. Store in a cool dry place. Do not allow to become wet or overheated in storage. This may bring on chemical changes which will impair the fungicidal effectiveness of Dithane M-45 and may also generate flammable vapors. Keep container closed when not in use.

Recommendations

XYZ Potato Seed-Piece Fungicide Dust is a special fungicide dust formulation for application on whole or cut potato tubers for the control of Fusarium seed-piece decay and seed-borne common scab.

Directions For Use

Use 1 lb. of XYZ Potato Seed-Piece Fungicide Dust per 100 lbs. of whole or cut potato seed pieces. Apply the dust so that the entire surface of the seed-piece becomes thoroughly covered by the fungicide dust. Treated seed may be held for a week or longer at cool temperature and high relative humidity to aid suberization, or it may be planted immediately. Do not use treated seed potatoes for food or feed purposes.

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SPECIMEN LABEL

XYZ PEANUT FUNGICIDE DUST
(Contains DITHANE[®] M-45)

ACTIVE INGREDIENTS

A co-ordination product of zinc ion and manganese
ethylene bisdithiocarbamate 4.8%
In which the ingredients are:
manganese⁺⁺ 0.96%
zinc⁺⁺ 0.12%
ethylene bisdithiocarbamate 3.72%

INERT INGREDIENTS 95.2%
100.0%

CAUTION

KEEP OUT OF REACH OF CHILDREN

May cause irritation of nose, throat, eyes and skin. Do not breathe dust. In case of skin contact wash with water; for eyes, wash copiously with water and get medical attention. Do not reuse containers. Destroy by burying with waste.

This product is toxic to fish. Keep out of lakes, streams or ponds. Do not contaminate water by cleaning equipment, or disposal of wastes.

IMPORTANT Keep away from fire and sparks. Store in a cool dry place. Do not allow to become wet or overheated in storage. This may bring on chemical changes which will impair the fungicidal effectiveness of Dithane M-45 and may also generate flammable vapors. Keep container closed when not in use.

Recommendations

XYZ Peanut Fungicide Dust is used for control of Cercospora leaf spot.

Directions For Use

PEANUTS Cercospora leaf spot. Begin applications when disease first appears and repeat at 10-14 day intervals throughout the season or as required for adequate disease control. Apply 15-30 lbs/acre as required to provide good coverage of plants. If peanut hay is to be used as livestock feed, XYZ dust should be applied at a dosage of 15-25 lbs/acre and should not be applied within 14 days of harvest.

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SPECIMEN LABEL

XYZ CUCURBIT FUNGICIDE DUST
(Contains DITHANE[®] M-45)

ACTIVE INGREDIENTS

A co-ordination product of zinc ion and manganese
ethylene bisdithiocarbamate 5.3%
In which the ingredients are:
manganese⁺⁺ 1.06%
zinc⁺⁺13%
ethylene bisdithiocarbamate 4.11%

INERT INGREDIENTS 94.7%
100.0%

CAUTION

KEEP OUT OF REACH OF CHILDREN

May cause irritation of nose, throat, eyes and skin. Do not breathe dust. In case of skin contact wash with water; for eyes, wash copiously with water and get medical attention. Do not reuse containers. Destroy by burying with waste.

This product is toxic to fish. Keep out of lakes, streams or ponds. Do not contaminate water by cleaning equipment, or disposal of wastes.

IMPORTANT Keep away from fire and sparks. Store in a cool dry place. Do not allow to become wet or overheated in storage. This may bring on chemical changes which will impair the fungicidal effectiveness of Dithane M-45 and may also generate flammable vapors. Keep container closed when not in use.

Recommendations

XYZ Cucurbit Fungicide Dust is recommended for CUCUMBERS, WATERMELONS, CANTALOUPEFS, HONEYDEWS, MUSKMELONS, SUMMER SQUASH Downy mildew, anthracnose, scab, Alternaria leaf spot, Cercospora leaf spot and gummy stem blight.

Directions For Use

Use XYZ dust at 25-45 lbs/acre. Begin applications when plants emerge or when disease is noted or expected in the area and repeat at 5 to 7 day intervals.

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Dithane M-45 concentrate may also be used to formulate seed treatment fungicides. In seed treatment fungicides it is necessary to add a suitable dye or discoloring chemical which will impart an unnatural color to seeds so treated. This unnatural color must not be readily removed by washing or other physical means.

In preparing labels for formulations containing Dithane M-45 concentrate we suggest a review of the current USDA Summary of Registered Agricultural Pesticide Chemical Uses for Zinc Ion and Manganese Ethylene Bisdithiocarbamate 80% or writing directly to Rohm and Haas in Philadelphia, Pa. for a current listing of registered uses for Dithane M-45 concentrate.

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