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READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

USE ONLY IN ACCORDANCE WITH INSTRUCTIONS.

KEEP OUT OF REACH OF CHILDREN

SYSTAKIL 80 WP



INGREDIENTS

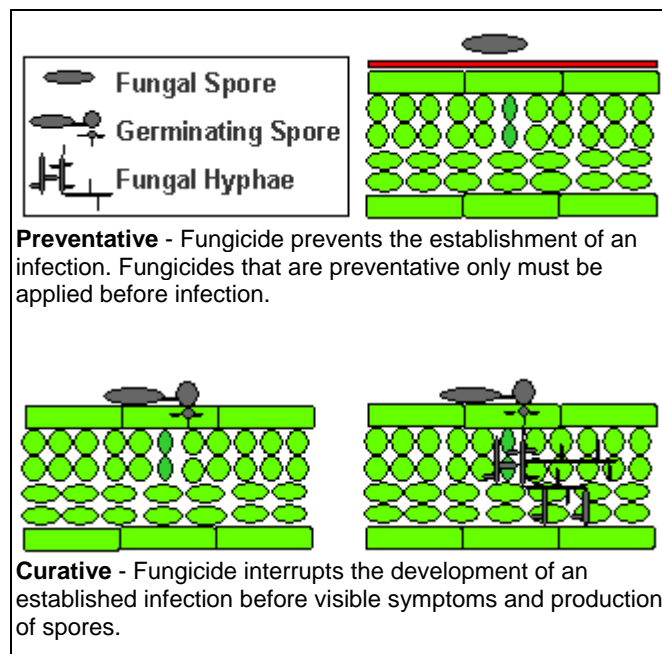
Mancozeb 80%
Other ingredients 20%

SYSTAKIL 80 WP is a **cost effective fungicidal solution with a wide variety of uses on vegetables, field crops and fruits** and contains as its active ingredient **Mancozeb 80 WP**.

SYSTAKIL 80 WP is used to protect many fruit, vegetable, nut and field crops against a wide spectrum of fungal diseases, including potato blight, leaf spot, scab (on apples and pears), and rust (on roses) and on onions, apples and tomatoes. It is also used for seed treatment of cotton, potatoes, corn, safflower, sorghum, peanuts, tomatoes, flax, and cereal grains.

What is Mancozeb 80 WP and how does it work?

Mancozeb is a protectant fungicide and has a preventative action as it stops energy production in the fungus (interfere with the production of ATP) and thus inhibit spore germination and very early infection at multiple biotic sites.



A Classification of fungicides by general function - preventative (SYSTAKIL 80 WP) and curative (ARREST 25 EC).

Often, it is recommended to tank-mix or to alternate fungicides with different modes of action (eg. ARREST 25 EC) to prevent or delay the buildup of resistant fungi.

Trade Names Of Other Firms: Trade names for products containing Mancozeb include Dithane, Dithane-Ultra, Fore, Green-Daisen M, Karamate, Mancofol, Mancozeb, Mancozin, Manzate 200, Manzeb, Manzin Nemispor, Nemispor, Policar, Riozeb, and Zimaneb.

Key Benefits of SYSTAKIL 80 WP:

1. SYSTAKIL 80 WP has a broad-spectrum of activity and is effective against a large variety of pathogenic fungi including leaf spot and brown rust on wheats
2. Mancozeb is a practically nontoxic ethylene bisdithiocarbamate in EPA toxicity class IV - practically nontoxic
3. To increase fungicide effectiveness,

- growers should select the fungicide with the highest level of control and apply before disease pressure is too severe. This is exactly the role SYSTAKIL 80 WP plays.
4. Season long protection against potato blight Short 7 day spray interval where blight risk is particularly high.

PRECAUTIONS

Product is poisonous if swallowed or absorbed by skin contact. Will irritate eyes and skin. Repeated minor exposure may have a cumulative poisoning effect. Facial skin contact may cause temporary facial numbness. Avoid all contact by mouth, skin, and eyes. Avoid inhaling vapour or spray mist. When opening the container and preparing spray, wear cotton overall buttoned to the neck and wrist and a washable hat, elbow-length PVC gloves, face shield or goggles. If clothing becomes contaminated with product or wet spray, remove clothing immediately. If product or spray contacts skin and eyes, immediately wash affected area with soap and water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

SYMPTOMS OF POISONING

Skin contact may cause skin irritation with discomfort and rash. Repeated exposure may cause skin sensitization with allergic rashes. Significant skin permeation and systemic toxicity after contact appears unlikely. Eye contact may cause eye irritation with discomfort, tearing, or blurring of vision. Based on animal studies, long term exposure to high levels may cause abnormal thyroid function.

MEDICAL TREATMENT

Treatment is symptomatic.

FIRST AID

General: When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Skin: Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Call a physician or poison control center immediately.

Ingestion: Call a physician or poison control center immediately. Rinse out mouth and give water in small gulps to drink. DO NOT induce vomiting unless directed to do so by a physician

or poison control center. Never give any thing by mouth to an unconscious person. Do not leave victim unattended.

Inhalation: Move to fresh air. If person is not breathing, call ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

DIRECTIONS OF USE

Potatoes - use at 1.7kg/ha in 200-1000 litres of water (ground application) or 20-40 litres of water (aerial application). With ground application always use sufficient water to achieve satisfactory coverage of the haulm. Spray cones should overlap just above the top of the crop. Use a FINE SPRAY at high pressure.

Bananas: use at 1.7kg/ha

Winter Oilseed Rape - use at 1.7kg/ha in 200-1000 litres of water. Latest timing 31 December.

Cereals - (winter and spring wheat and winter barley), apply 2.0kg/ha in 200-400 litres of water.

Mixing: Add half the required volume of water to the spray tank. Add the recommended quantity of powder into a clean bucket. Add a little water and stir thoroughly into a thin cream, ensuring all lumps are broken down. Pour and rinse the cream into the tank through the filter. Agitate while topping up the tank and continue agitating during spraying. When tank-mixing with other products add the SYSTAKIL 80 WP after the other product has already dispersed in the spray tank.

DISPOSAL METHODS

Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

STORAGE CONDITION

Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked room or place away from children, animals, flood, feedstuffs, seed and fertilisers. Triple or

preferably pressure rinse containers before disposal. Add rinsing to spray tank.

For More Details including effects on environment email contact@ivorychem.com with Subject "SYSTAKIL 80 WP DETAILS"

More Details:

TOXICOLOGICAL EFFECTS

- **Acute toxicity:** SYSTAKIL 80 WP is practically nontoxic via the oral route with reported oral LD50 of greater than 5000 mg/kg to greater than 11,200 mg/kg in rats [1,3]. Via the dermal route it is practically nontoxic as well, with reported dermal LD50 values of greater than 10,000 mg/kg in rats, and greater than 5000 mg/kg in rabbits [4]. It is a mild skin irritant and sensitizer, and a mild to moderate eye irritant in rabbits [4,32]. Workers with occupational exposure to SYSTAKIL 80 WP have developed sensitization rashes [1].
- **Chronic toxicity:** No toxicological effects were apparent in rats fed dietary doses of 5 mg/kg/day in a long-term study [1]. Impaired thyroid function was observed as lower iodine uptake after 24 months in dogs fed doses of 2.5 and 25 mg/kg/day of SYSTAKIL 80 WP, but not in those dogs fed 0.625 mg/kg/day [1]. A major toxicological concern in situations of chronic exposure is the generation of ethylenethiourea (ETU) in the course of SYSTAKIL 80 WP metabolism, and as a contaminant in SYSTAKIL 80 WP production [1,33]. ETU may also be produced when EBDCs are used on stored produce, or during cooking [9]. In addition to having the potential to cause goiter, a condition in which the thyroid gland is enlarged, this metabolite has produced birth defects and cancer in experimental animals [9].
- **Reproductive effects:** In a three-generation rat study with SYSTAKIL 80 WP at a dietary level of 50 mg/kg/day there was reduced fertility but no indication of embryotoxic effects [1,9]. In another study in which pregnant rats were exposed to SYSTAKIL 80 WP by inhalation, toxic effects on the pups were observed only at exposure levels (55 mg/m³) that were also toxic to the dams [1]. It is unlikely that SYSTAKIL 80 WP will produce reproductive effects in humans under normal circumstances.
- **Teratogenic effects:** No teratogenic effects were observed in a three-generation rat study with mancozeb at a dietary level of 50 mg/kg/day [1]. Developmental abnormalities of the body wall, central nervous system, eye, ear, and musculoskeletal system were observed in experimental rats which were given a very high dose of 1320 mg/kg of mancozeb on the 11th day of pregnancy [25]. Mancozeb was not teratogenic to rats when it was inhaled by pregnant females at airborne concentrations of 0.017 mg/L [32]. In pregnant rats fed 5 mg/kg/day, the lowest dose tested, developmental toxicity was observed in the form of delayed hardening of the bones of the skull in offspring [9]. In view of the conflicting evidence, the teratogenicity of mancozeb is not known.
- **Mutagenic effects:** Mancozeb was found to be mutagenic in one set of tests, while in another it did not cause mutations [9]. Mancozeb is thought to be similar to maneb, which was not mutagenic in the Ames Test [32]. Data regarding the mutagenicity are inconclusive but suggest that mancozeb is either not mutagenic or weakly mutagenic.
- **Carcinogenic effects:** No data are available regarding the carcinogenic effects of SYSTAKIL 80 WP. While studies of other EBDCs indicate they are not carcinogenic, ETU (a SYSTAKIL 80 WP metabolite), has caused cancer in experimental animals at high doses [9,10]. Thus, the carcinogenic potential of SYSTAKIL 80 WP is not currently known.
- **Organ toxicity:** The main target organ of mancozeb is the thyroid gland; the effects may be due to the metabolite ETU [9,10].
- **Fate in humans and animals:** SYSTAKIL 80 WP is rapidly absorbed into the body from the gastrointestinal tract, distributed to various target organs, and almost completely excreted in 96 hours. ETU is the major SYSTAKIL 80 WP metabolite of toxicologic significance, with carbon disulfide as a minor metabolite [10].

ECOLOGICAL EFFECTS

- **Effects on birds:** SYSTAKIL 80 WP is slightly toxic to birds, with reported -day dietary LC50 values in bobwhite quail

and mallard ducklings of greater than 10,000 ppm [32]. The 10-day dietary LC50 values of 6400 ppm and 3200 ppm are reported for mallard ducks and Japanese quail, respectively [4].

- **Effects on aquatic organisms:** Mancozeb is moderately to highly toxic to fish and aquatic organisms. Reported 48-hour LC50 are 9 mg/L in goldfish, 2.2 mg/L in rainbow trout, 5.2 mg/L in catfish, and 4.0 mg/L in carp [4]. The reported 72-hour LC50 for mancozeb in crayfish is greater than 40 mg/L; the 48-hour LC50 is 3.5 mg/L in tadpoles [32].
- **Effects on other organisms:** Mancozeb is not toxic to honeybees [4].

ENVIRONMENTAL FATE

- **Breakdown in soil and groundwater:** Mancozeb is of low soil persistence, with a reported field half-life of 1 to 7 days [20]. Mancozeb rapidly and spontaneously degrades to ETU in the presence of water and oxygen [10]. ETU may persist for longer, on the order of 5 to 10 weeks [20]. Because SYSTAKIL 80 WP is practically insoluble in water, it is unlikely to infiltrate groundwater [3]. Studies do indicate that ETU, a metabolite of SYSTAKIL 80 WP, has the potential to be mobile in soils [9]. However, ETU has been detected (at 0.016 mg/L) in only 1 out of 1295 drinking water wells tested [10].
- **Breakdown in water:** SYSTAKIL 80 WP degrades in water with a half-life of 1 to 2 days in slightly acidic to slightly alkaline conditions [32].
- **Breakdown in vegetation:** When used as directed, SYSTAKIL 80 WP is not poisonous to plants [4].

PHYSICAL PROPERTIES AND GUIDELINES

Physical Properties:

- **Appearance:** SYSTAKIL 80 WP is a grayish-yellow powder [3].
- **Chemical Name:** manganese ethylenebis(dithiocarbamate) (polymeric) [3]
- **CAS Number:** 8018-01-7
- **Molecular Weight:** 266.31
- **Water Solubility:** 6 mg/L [3]

- **Solubility in Other Solvents:** Practically insoluble in most organic solvents [3]
- **Melting Point:** Decomposes without melting @ 192 C [3]
- **Vapor Pressure:** Negligible @ 20 C [3]
- **Partition Coefficient:** Not Available
- **Absorption Coefficient:** >2000 [20]



I
IVORYCHEM PTE LIMITED
15 Beach Road #02-09
Beach Centre
Singapore 189677
Tel: +65 63377765
Fax: +65 63377730
contact@ivorychem.com
www.ivorychem.com

Company Registration No 200405572W