MATERIAL SAFETY DATA SHEET OF

DIAZINON 50% EC

1. IDENTIFICATION OF THE CHEMICAL PRODUCT AND COMPANY

Supplier: SHANGHAI MINGDOU AGROCHEMICAL CO., LTD
Address: Rm. 1210, Zhenyuan Building, No. 2052 North Zhongshan Rd, Shanghai, China
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Product name: Diazinon 50% EC

2. COMPOSITION/INFORMATION ON INGREDIENTS

Formulation Type: Emulsifiable concentrate
Active Ingredients: Diazinon
Chemical Abstracts name: O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] phosphorothioate
CAS NO.: 333-41-5
Molecular Formula: C_{12}H_{21}N_{2}O_{3}PS
Molecular Weight: 304.3
Structural Formula:

Other ingredients determined not to be hazardous

<table>
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<tr>
<th>INGREDIENT</th>
<th>CAS NO</th>
<th>PURITY</th>
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<td>diazinon</td>
<td>333-41-5</td>
<td>≥50%</td>
</tr>
<tr>
<td>others</td>
<td>Not available</td>
<td>≤50%</td>
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3. HAZARDS IDENTIFICATION

KEEP OUT OF REACH OF CHILDREN – DANGER - POISON – Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye injury.

Avoid contact with skin, eyes, or clothing. Avoid breathing vapor or spray mist. Avoid contamination of food and feed. Food utensils such as tablespoons and measuring cups should not be used for food purposes after use in measuring pesticides. Keep out of reach of domestic animals. Do not use on humans, household pets or...
livestock. Do not contaminate ornamental fishponds. For use only by certified users.

Warning Statements:

NOTE TO PHYSICIAN: This product is an organophosphate (cholinesterase-inhibiting) insecticide. Atropine is antidotal and should be given in multiple doses as necessary until the patient is atropinized. In severe cases 2-PAM may be given provided therapy begins within 24 hours of exposure. Monitor serum and RBC cholinesterase. Morphine, theophylline, aminophylline, phenothiazines, reserpine, furosemide, or ethacrynic acid are contraindicated in organophosphate poisonings. Administer intravenous fluids cautiously, if needed, to correct dehydration. Symptoms of cholinesterase inhibition can include headache, dizziness, blurred vision, weakness, nausea, cramps, diarrhea, discomfort in the chest, nervousness, sweating, miosis, tearing, salivation, pulmonary edema, uncontrollable twitches, convulsions, coma, and loss of reflexes and sphincter control.

4. FIRST AID MEASURES

General: If poisoning is suspected, immediately contact the poison information centre, doctor or nearest hospital. Have the product container, label or Material Safety Data Sheet with you when going for treatment. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given.

If swallowed: Call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by poison control centre or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call an ambulance, then give artificial respiration, preferable by mouth-to-mouth, if possible. Call a poison control centre or doctor for treatment advice. Take container, label or product name with you when seeking medical attention.

If in eyes: 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 poison control centre or doctor for treatment advice.

Note to physician: This product is a strong cholinesterase inhibitor capable of affecting the central and peripheral nervous system. It may produce respiratory depression and cardiac arrest. Continued absorption of the poison may occur; 2-PAM is also antidotal and should be used in conjunction with Atropine.

5. FIRE FIGHTING MEASURES

Extinguishing media: Considered combustible. Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.
Hazardous combustion products: Thermal decomposition products include, but are not limited to, various aliphatic organophosphates, substituted pyrimidines, and hydrogen cyanide. Incomplete combustion may lead to formation of carbon monoxide and other asphyxiants.

Special fire fighting procedures: Wear self-contained breathing apparatus with full protective clothing. Fight fire from upwind and keep all non-essential personnel out of area.

Unusual fire and explosion hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Do not allow water runoff to enter nearby streams, ponds or lakes.

6. ACCIDENT RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wear chemical safety glasses with side shields or chemical goggles, rubber gloves, rubber boots, long-sleeved shirt, long pants, head covering, and a NIOSH-approved pesticide respirator or air-supplied respirator. For small spills, absorb with an absorbent material such as pet litter. Sweep up and place in an approved chemical container for proper disposal. Check local and provincial regulations for proper disposal. For large spills, contain liquid by diking the area, keep product out of water supplies. If possible use a pump to pick up liquid, then use absorbent material to absorb any residual liquid. Place both in an approved container. Flush the area with a household bleach and water mixture (1:1) and then absorb the liquid as described in small spills.

Caution: Keep spills and cleaning runoff from flowing onto adjacent land, or into municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

Handling: Wash hands after handling, and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage: Store in original container in a cool, dry, well-ventilated area. Store product in an area inaccessible to children and domestic animals. Do not store near fertilizers, herbicides, other insecticides, seeds, food, or feed. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering control: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets with requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS.

Respiratory protection: Not normally required, if vapors exceed acceptable levels, wear a MSHA/NIOSH approved pesticide respirator with cartridges for pesticide vapors.
Eye protection: Chemical goggles or shielded safety glasses.

Skin protection: Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: liquid.

Colour: amber to straw-colored.

Odour: solvent odour.

Bulk density: 1.00 g/ml.

Solubility: emulsifies.

pH: 7~8 (1% solution).

10. STABILITY AND REACTIVITY

Stability: Stable.

Conditions to avoid: Excessive heat and ignition sources.

Incompatibility: Strong bases, acids, and oxidizers.

Hazardous decomposition products: Thermal decomposition-aliphatic organophosphates, substituted pyrimidines, and hydrogen cyanide.

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

DIAZINON 50% EC:

Acute Oral LD$_{50}$ (rat): 1600 mg/kg.

Acute Dermal LD$_{50}$ (rabbit): > 2020 mg/kg.

Acute Inhalation LC$_{50}$: for rats >2 mg/l.

Eye Irritation (rabbit): Causes moderate injury.

Skin Irritation (rabbit): Slight irritant.

Skin Sensitization (Guinea Pig): Not a sensitizer.

DIAZINON:

Acute toxicity:

Acute Oral Toxicity: LD$_{50}$: for rats 1250, mice 80-135, guinea pigs 250-355 mg/kg.

Acute Dermal Toxicity: LD$_{50}$: for rats >2150, rabbits 540-650 mg/kg. Not an irritant (rabbits).

Acute Inhalation Toxicity: LC$_{50}$: for rats >2330 mg/m$^3$.

Eye Irritation: not irritant (rabbit).

Skin Irritation: not irritant (rabbit).
**Chronic toxicity:** Chronic effects have been observed at doses ranging from 10 mg/kg/day for swine to 1000 mg/kg/day for rats. Inhibition of red blood cell cholinesterase, and enzyme response occurred at lower doses in the rats. Enzyme inhibition has been documented in red blood cells, in blood plasma, and in brain cells at varying doses and with different species.

**Reproductive effects:** No data are currently available.

**Teratogenic effects:** The data on teratogenic effects due to chronic exposure are inconclusive. One study has shown that injection of diazinon into chicken eggs resulted in skeletal and spinal deformities in the chicks. Bobwhite quail born from eggs treated in a similar manner showed skeletal deformities but no spinal abnormalities. Acetylcholine was significantly affected in this latter study. Tests with hamsters and rabbits at low doses (0.125 to 0.25 mg/kg/day) showed no developmental effects, while tests with dogs and pigs at higher levels (1.0 to 10.0 mg/kg/day) revealed gross abnormalities.

**Mutagenic effects:** While some tests have suggested that diazinon is mutagenic, current evidence is inconclusive.

**Carcinogenic effects:** Diazinon is not considered carcinogenic. Tests on rats over a 2-year period at moderate doses (about 45 mg/kg) did not cause tumor development in the test animals.

**Organ toxicity:** Diazinon itself is not a potent cholinesterase inhibitor. However, in animals, it is converted to diazoxon, a compound that is a strong enzyme inhibitor.

### 12. ECOLOGICAL INFORMATION

**Effects on birds:** Birds are quite susceptible to diazinon poisoning. Bird kills associated with diazinon use have been reported in every area of the country and at all times of the year. Geese and mallard ducks may be exposed to LC$_{50}$ concentrations in very short periods of time after application (from 15 to 80 minutes depending on the application rate of the pesticide). Birds are significantly more susceptible to diazinon than other wildlife. LD$_{50}$ values for birds range from 2.75 mg/kg to 40.8 mg/kg.

**Effects on aquatic organisms:** Diazinon is highly toxic to fish. In rainbow trout, the diazinon LC$_{50}$ is 2.6 to 3.2 mg/L. In hard water, lake trout and cutthroat trout are somewhat more resistant. Warm water fish such as fathead minnows and goldfish are even more resistant with diazinon LC$_{50}$ values ranging up to 15 mg/L. There is some evidence that saltwater fish are more susceptible than freshwater fish. Bioconcentration ratios range from 200 in minnows to 17.5 for guppies. These studies show that diazinon does not bioconcentrate significantly in fish.

**Effects on other organisms:** Diazinon is highly toxic to bees. Diazinon is slightly toxic to earthworms.

### 13. DISPOSAL CONSIDERATION
Do not reuse containers for any purpose. Refillable Container: For disposal, the container may be returned to
the point of purchase (dealer/distributor). It must be refilled by the dealer/distributor with the same product.
Container is recyclable, and is to be disposed of at a container collection site. Contact your local
dealer/distributor for the location of the nearest collection site. Before taking container to the collection site:
Triple or pressure-rinse the empty container, adding the rinsate to the spray tank. Make the empty container
unsuitable for further use. If there is no container collection site in your area, dispose of the container in
accordance with provincial requirements. For information on disposal of unused, unwanted product, contact the
manufacturer or the provincial regulatory agency. Do not contaminate water, food, or feed by storage or
disposal.

14. TRANSPORT INFORMATION
Description: Environmentally hazardous substance, liquid, n.o.s. (diazinon).
UN No.: 3082.
Class: 9.
Package group: III.
Marine pollutant: Yes.

15. REGULATORY INFORMATION
Keep locked up out of reach of children and other, unauthorized persons. Keep away from food, drink and
animal feeding stuffs.

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Do not
get in eyes, on skin or on clothing. Do not breathe dust, vapor or spray mist.

In case of accident of if you feel unwell, seek medical advice immediately.

This material and its container must be disposed of in a safe way.

16. OTHER INFORMATION
This MSDS summarizes our best knowledge of the health and safety hazard information of the product and how
to safely handle and use the product in the workplace. Each user should read this MSDS and consider the
information in the context of the how the product will be handled and used in the workplace including in
conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made the
user should contact the company.

END OF MSDS