

**SECTION 1 - PRODUCT & COMPANY IDENTIFICATION**

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**Substance:** diazinon  
**Product Name:** **KNOX OUT 2 FM**  
**Product Use:** Insecticide  
**Creation Date:** January 2011  
**Revision Date:** January 2011

**24 Hr Emergency Number:** 082 771 2712  
**In case of Poisoning:**  
Poison Information Centre 082 446 8946  
Tygerberg Hospital: (021) 931 6129  
Poison Emergency Enquiries (021) 689 5227  
**In case of Spillage:**  
HAZMAT: 0800 147 112

**SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS**

**Common Name:** diazinon  
**Chemical Name:** O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-yl phosphorothioate (IUPAC)  
**CAS No.:** [333-41-5]  
**Chemical Family:** Organophosphate  
**Chemical Formula:** C<sub>12</sub>H<sub>21</sub>N<sub>2</sub>O<sub>3</sub>PS  
**Molecular weight:** 304.3  
**Use:** A micro-encapsulated non-systemic insecticide and acaricide with contact, stomach, and respiratory action. Cholinesterase inhibitor.  
**Formulation:** Diazinon: 240 g/l  
Capsule Suspension (Liquid)  
**Hazardous Ingredient:**  

<u>Inert:</u>	<u>concern:</u>	<u>% present:</u>
diazinon	very toxic to fish, harmful, cholinesterase inhibitor	± 24 %

**SYMBOLS:** N  
**RISK-PHRASE(S):** R22, R36, R50, R53

**SECTION 3 - HAZARD IDENTIFICATION**

**Toxicity class:**  
WHO (a.i.) II; EPA (formulation): II  
**Main Hazard:**  
Caution. The toxicity of this encapsulated product is relatively low because diazinon is not released readily while in the digestive tract. May be harmful if swallowed or inhaled. May cause eye irritation. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist.

**Acute effects of overexposure:**

The symptoms associated with diazinon poisoning in humans include weakness, headaches, tightness in the chest, blurred vision, non-reactive pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhea, abdominal cramps, and slurred speech. Death has occurred in some instances from both dermal and oral exposures at very high levels.

**SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS****Inhalation:**

If vapours or mists have been inhaled, and irritation has developed, remove the source of contamination or move victim to fresh air. Obtain medical attention if irritation persists.

**Skin contact:****MATERIAL SAFETY DATA SHEET**

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Remove contaminated clothing, shoes and leather goods. Wash skin gently and thoroughly with cold water and non-abrasive soap. Apply olive oil to the affected area to afford prompt relief. Obtain medical attention if irritation persists.

**Eye contact:**

Immediately flush eyes with a stream of clean water for at least 20 minutes, holding the eyelid(s) open. Obtain medical attention if irritation persists.

**Ingestion:**

**Do not induce vomiting.** Do not give anything by mouth. Obtain medical attention. If the person is alert, rinse mouth thoroughly with water and give 1 or 2 glasses of water to drink.

**Advice to physician:**

This product contains a cholinesterase inhibitor, diazinon.

The stomach should be emptied as soon as possible by careful gastric lavage, using a cuffed endotracheal tube already in place.

An aqueous suspension of activated charcoal can be administered to absorb remaining toxicant.

As early as possible, administer atropine sulfate and pralidoxime chloride or obidoxime chloride intravenously to patients suffering from severe respiratory difficulties, convulsions and unconsciousness.

The dose and frequency of atropine varies with each patient. Patients with organophosphate poisoning require amounts of atropine far in excess of doses usually employed in medical practice. The therapeutic objective is to achieve atropinisation, as evidenced by dilation of the pupils, drying secretion, pulse rate of over 120/minute, and flushing skin.

Overdosage with atropine is rarely serious, but underdosage may be fatal in poisoning with organophosphorous compounds.

**Important Note:** Because of their respiratory-depressant effects, **morphine** and similar drugs are **contra-indicated** for patients poisoned with organophosphorous compounds. **Avoid aminoglycosides** and **succinylcholine**, which have a blocking effect on the neuromuscular junction. **Phenothiazines, reserpine and theophylline** are **contraindicated** in organophosphorous poisoning.

**SECTION 5 - FIRE-FIGHTING MEASURES****Fire and explosion hazard:**

**This material is not flammable.**

**Extinguishing agents:**

Extinguish fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Use as little water as possible. Use spray or fog. Solid stream may cause spreading. Contain water used for fire fighting for later disposal.

**Fire fighting:**

Remove spectators from surrounding area. Remove container from fire area if possible. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind.

**Personal protective equipment:**

Fire may produce irritating or toxic fumes of hydrogen cyanide, chlorine, and oxides of nitrogen and carbon, mists or other products of combustion. Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

**SECTION 6 - ACCIDENTAL RELEASE MEASURES (SPILLAGE)****Personal precautions:**

Avoid contact with skin and eyes. Do not breathe in spray or fumes. For personal protection see Section 8.

**Environmental precautions:**

Diazinon is highly toxic to fish and bees. In case of accidental spill, prevent the material from getting into lakes, rivers and other bodies of water and to areas where a bee population may be present. Isolate discharged material and keep material out of water sources.

Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

**Occupational spill:**

Do not touch spilled material; stop leak if you can do it without risk. Keep out unprotected persons and animals.

For small liquid spills, soak up with damp earth or sand, or other non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal.

For large liquid spills, contain the liquid by damming in with absorptive material and pump into containers. Soak up remainder with absorbent material.

Label containers with its content and dispose it in accordance with local regulations. Open burning or dumping of this material is prohibited. Do not flush spilled material into drains. Keep spectators away. In situations where product comes in contact with water, contain contaminated water for disposal.

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**SECTION 7 - HANDLING AND STORAGE REQUIREMENTS****Handling:**

Harmful by skin or eye contact, inhalation or ingestion. Avoid contact with eyes and skin, and inhalation of spray and vapour. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

**Storage:**

Keep under lock and key and out of reach of unauthorised persons, children and animals. Store in its original labelled container in isolated, dry, cool and well-ventilated area. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

**SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION**

It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

**PERSONAL PROTECTIVE EQUIPMENT:**

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

**Respirator:**

For splash, mist, or spray exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides. Respirator use and selection must be based on airborne concentrations.

**Clothing:**

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

**Gloves:**

Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.

**Eye protection:**

The use of safety goggles is recommended.

**Emergency eye wash:** Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	A viscous, beige coloured liquid.
<b>Flammability:</b>	Not flammable.
<b>Flash point:</b>	> 100 °C.
<b>Specific gravity:</b>	1,040 ± 0.05 g/ml
<b>Solubility in water:</b>	Dispersible in water.
<b>pH:</b>	8.5

**SECTION 10 - STABILITY AND REACTIVITY****Storage stability:**

Stable for up to 2 years under normal storage conditions, in original packaging. Avoid extreme high or low temperatures. Corrosive to mild steel and oxidable metal due to presence of water. Avoid bacterial contamination.

**Hazardous decomposition:**

Product may produce carbon dioxide and carbon monoxide under fire conditions.

**SECTION 11 - TOXICOLOGICAL INFORMATION**

<b>Acute oral LD<sub>50</sub> rats:</b>	> 2000 mg/kg
<b>Acute dermal LD<sub>50</sub> rabbits:</b>	> 2000 mg/kg
<b>Inhalation LC<sub>50</sub> rats:</b>	<i>Technical:</i> > 2330 mg/l (4hours)
<b>Acute eye irritation:</b>	Not an irritant. May cause eye irritation.
<b>Acute skin irritation:</b>	Not an irritant.
<b>Skin sensitization:</b>	Not a skin sensitizer.
<b>Reproductive effects:</b>	No data are currently available.
<b>Teratogenic effects:</b>	The data on teratogenic effects due to chronic exposure are inconclusive.

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<b>Mutagenic effects:</b>	While some tests have suggested that diazinon is mutagenic, current evidence is inconclusive.
<b>Carcinogenic effects:</b>	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.
<b>Organ toxicity:</b>	Diazinon itself is not a potent cholinesterase inhibitor. However, in animals, it is converted to diazoxon, a compound that is a strong enzyme inhibitor.
<b>ADI:</b>	0.002 mg/kg/day

## SECTION 12 - ECOLOGICAL INFORMATION

### Degradability:

Degradation involves oxidation to the phosphate (diazoxon) and hydrolysis.

Diazinon is fairly strongly adsorbed onto soil. Diazinon has a low persistence in soil. The half-life is 2 to 4 weeks [19]. Bacterial enzymes can speed the breakdown of diazinon and have been used in treating emergency situations such as spills [12]. Mobility is low. Diazinon seldom migrates below the top half inch in soil, but in some instances it may contaminate groundwater.

The breakdown rate is dependent on the acidity of water. At highly acidic levels, one half of the compound disappeared within 12 hours while in a neutral solution, the pesticide took 6 months to degrade to one half of the original concentration.

### ECOTOXICOLOGY:

#### Birds: Highly toxic to birds.

Oral LD <sub>50</sub> :	mallard ducklings:	2.7 mg/kg
	young pheasants:	4.3 mg/kg

#### Fish: Very highly toxic to fish.

LC <sub>50</sub> (96 hours):	rainbow trout:	2.6 - 3.2 mg/l
	bluegill sunfish:	16 mg/l
	carp:	7.6 - 23.4 mg/l

#### Daphnia: Highly toxic to Daphnia. LC<sub>50</sub> (48 hours): 0.96 µg/l

Bioconcentration ratios range from 200 in minnows to 17.5 for guppies. Does not bioconcentrate significantly in fish.

#### Bees: Highly toxic to bees.

Algae: Highly toxic to algae. > 1 ppm

#### Earthworms: Slightly toxic to earthworms.

## SECTION 13 - DISPOSAL CONSIDERATION

### Pesticide disposal:

Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed should be disposed of in a landfill approved for pesticide disposal. Do not contaminate rivers, dams or any other water sources with the product or used containers. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.

### Package product wastes:

Emptied containers retain vapour and product residues. Observe all labelled safeguards. TRIPLE RINSE empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of 10 % of that of the container. Add the rinsings to the contents of the spray tank before destroying the container.

Destroy the emptied containers by perforation and flattening. Bury in an approved dump site. Do not re-use the empty container for any other purpose.

Comply with any local legislation applying to disposal.

## SECTION 14 - TRANSPORT INFORMATION

UN NUMBER: 3082

### Road Transport ADR/RID:

Class: 9  
Packaging group: III  
Shipping name: Environmentally hazardous substance, liquid, N.O.S. (diazinon 240 g/l)

### Maritime Transport IMDG/IMO:

Class: 9  
Packing group: III  
Shipping name: Environmentally hazardous substance, liquid, N.O.S. (diazinon 240 g/l)

### MARINE POLLUTANT

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**SECTION 15 - REGULATORY INFORMATION**

**Symbol:** N  
**Indication of Danger:** Environmentally dangerous substance

**Risk phrases:**

**R 22** Harmful if swallowed.  
**R 36** Irritating to eyes.  
**R 50** Very toxic to aquatic organisms.  
**R 53** May cause long-term adverse effects in the aquatic environment.

**Safety phrases :**

**S 1/2** Keep locked up and out of reach children.  
**S 20/21** When using do not eat, drink or smoke.  
**S 23** Do not breathe vapour/spray.  
**S 24/25** Avoid contact with skin and eyes.  
**S 36/37/39** Wear suitable protective clothing, gloves and eye/face protection.  
**S 60** This material and its container must be disposed of as hazardous waste.  
**S 61** Avoid release to the environment. Refer to special instructions/safety data sheets.  
**S 62** If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

**SECTION 16 - OTHER INFORMATION****Packing and Labelling**

Packed in 100, 200, 500 ml & 1 litre amber glass bottles or fluorinated plastic containers and labelled according to the South African regulations and guidelines.

**Disclaimer:**

The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed.

All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.

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