



CROWNBRIDGE

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MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT & COMPANY IDENTIFICATION

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Substance: Dimethoate
Product Name: **Fos-Bi**
Product Use: Insecticide

24 Hr Emergency Number: 080004249300

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Common Name: dimethoate
Chemical Name: *O,O*-dimethyl *S*-methylcarbamoylmethyl phosphorodithioate; 2-dimethoxyphosphinothiylthio-*N*-methylacetamide (IUPAC)
CAS No.: [60-51-5]
Chemical Family: Organophosphate
Chemical Formula: C₅H₁₂NO₃PS₂
Molecular weight: 229.3
Use: A non-systemic insecticide with contact, stomach and respiratory action. Cholinesterase inhibitor.
Formulation: dimethoate: 400g/ℓ
Emulsifiable Concentrate (Liquid)

Hazardous Ingredient:

<u>Inert:</u>	<u>concern:</u>	<u>% present:</u>
dimethoate	verytoxic	> 40 %
aromatic hydrocarbons	irritant, flammable	± 30 %
methylglycol and other	harmful, irritant	± 30 %

SYMBOLS: T, F

RISK-PHRASE(S): R10, R20, R24/25, R36/38, R51, R65

SECTION 3 - HAZARD IDENTIFICATION

Toxicity class: WHO (a.i.) II; EPA (formulation): II

Main Hazard:

This compound inhibits cholinesterase enzyme activity in the nervous tissue and is toxic. Contact with skin, inhalation of spray, or swallowing may be fatal.

Fire and explosion hazard: Product is flammable.

Acute effects of overexposure:

May cause temporary irritation to eyes, nose, throat and respiratory tract. If swallowed and aspirated into the lungs, chemical pneumonia can occur. Symptoms of exposure to the product include: headache, dizziness, weakness, nausea, abdominal cramps, excessive sweating, anxiety, blurred vision, small pupils, muscle twitching and may cause central nervous system depression.

Depending on severity of poisoning these symptoms become worse with the onset of vomiting, abdominal pain, diarrhea, sweating and salivation. Confusion, ataxia, slurred speech, loss of reflexes are some of the central nervous system effects that may lead to misdiagnosis of acute alcoholism. In extreme cases unconsciousness, convulsions and severe respiratory depression may occur.

Ingestion: Toxic if swallowed.

Inhalation: Toxic by inhalation.

Skin contact: Toxic in contact with skin. Mild irritant. May cause dermatitis through defatting of tissue. May cause skin sensitization.

Eye contact: Mild irritant to the eyes and may cause damage



SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS

FIRST AID:

The airway should be kept clear to maintain respiration, particularly when the patient is unconscious or has vomited. The mouth and pharynx should be cleared and dentures removed. The jaw should be supported and the patient placed in a face down position with the head down and turned to one side, with the tongue drawn forward. First aid should be performed by qualified medical personnel and should include, if necessary, mouth-to-nose respiration and cardiac massage.

Inhalation:

Immediately remove source of contamination or move patient to fresh air. Keep affected person warm and at rest. If breathing has stopped, perform artificial mouth-to-nose respiration and administer oxygen. **Obtain medical advice immediately.**

Skin contact:

Remove contaminated clothing, shoes and leather goods immediately. Gently wipe off excess chemical. Wash skin gently and thoroughly with clean water and non-abrasive soap or mild detergent until no evidence of chemical remains (approximately 15 to 20 minutes). Persons who become sensitised may require specialised medical management with anti-inflammatory agents. **Obtain medical advice immediately.**

Eye contact:
Flush eyes immediately with large amounts of gently flowing cold water, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15 to 20 minutes). Obtain medical advice.

Ingestion:

Do not induce vomiting, due to aromatic solvent present in product. **Obtain medical advice immediately** and make the container, or label or this Data Sheet available.

Never give anything by mouth to a semi-conscious or unconscious person. If vomiting occurs, take care to prevent vomit from being inhaled.

Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen.

Advice to physician:

This product contains a cholinesterase inhibitor and an aromatic solvent.

If product is aspirated into the lungs during ingestion or vomiting, mild to severe pulmonary injury may be caused. 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

Flammable properties:

Flammable: Flash point: 50 °C

Extinguishing agents:

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

Avoid the accumulation of polluted run-off from the site.

Fire fighting:

Remove spectators from surrounding area. Remove container from fire area if possible without risk. Eliminate all ignition sources in immediate area. Fight fire from maximum distance. For massive fire, use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous vapours. Keep upwind.

Special Hazards:

This product will emit toxic fumes when burned, including carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen cyanide gas, sulfur oxides, phosphorus oxides and other phosphorus compounds.

Personal protective equipment:

Fire-fighters and others that may be exposed should wear full protective impervious clothing, including gloves and eye protection, and self-contained breathing apparatus. Contact with the fumes and vapours should be avoided by staying upwind.

Clean all clothing before re-use.



SECTION 6 - ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions:

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

Environmental precautions:

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:

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

Earth all equipment used when handling the product. Do not touch or walk through spilled material. Stop leak if possible without risk. Avoid runoff of product into sewers, water systems, basements or confined areas as it may cause fire/explosion. A vapour-suppressing foam could be used to reduce vapours. Thoroughly wash body areas, which come into contact with the product.

For spills: Use clean, non-sparking tools to collect absorbed material. Soak up with absorptive material such as damp earth or sand or other suitable non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal. In situations where product comes in contact with water, contain contaminated water for later disposal. Prevent material from spreading by damming in with absorptive material. Do not flush spilled material into drains. Keep spectators away and upwind.

To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e. organic solvent, detergent bleach or caustic). Add the solution to the drums already collected. Label drums with its content and dispose it in accordance with local regulations.

Open burning or dumping of this material is prohibited.

SECTION 7 - HANDLING AND STORAGE REQUIREMENT

Handling:

Operator should not be alone during handling and application of product. Remove sources of naked flame or sparks. Toxic if swallowed and by skin contact, and harmful if inhaled. Avoid contact with eyes and skin and inhalation of fumes. Avoid exposure to spray. 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:

Store in its original container in isolated, dry, cool (avoid temperatures above 32 °C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilisers. Keep under lock and key out of reach of unauthorised persons, children and animals. Store away from incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

Keep away from naked flames and other sources of ignition.

SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

Engineering control measures:

It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. Only spark-resistant equipment should be used. 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 equipment including approved respiratory protection.

Respirator:

Where exposure through inhalation and eye contact may occur when handling the product, when preparing and when applying the spray mixture, wear a suitable face mask and respirator. If the product is used in dusty or confined conditions or spillage and fire conditions, an approved full-face air-purifying respirator, equipped with organic vapour cartridges or canisters, suitable and approved for protection from dusts and mists of pesticides is adequate. Limitations of respirator use specified by the approved agency and the manufacturer must be observed.

Clothing:

Employee must wear appropriate protective (impervious) clothing (long sleeved cotton overalls, apron, rubber boots, face shield and hat or cap) and equipment to prevent skin contact with the substance.

Gloves:

Employee must wear appropriate chemical resistant protective gloves (PVC or neoprene gloves) to prevent contact with this substance.

Eye protection:

Employee must wear splash-proof safety goggles and face-shield to prevent contact with this substance.

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

Appearance: A clear yellow coloured liquid with mercaptan odour.
Flammability: Flammable. Flash point: 50°C.
Specific gravity: 1.021 ± 0.05 g/mL @ 20°C.
Solubility in water: Forms an emulsion in water.

SECTION 10 - STABILITY AND REACTIVITY

Storage stability:

Stable for up to 2 years under normal warehouse and field conditions. Avoid contact with strong acids, strong alkalis, alkaline materials such as lime and oxidizing agents. Avoid heat and sources of ignition.

Hazardous decomposition:

Product undergoes decomposition at high temperatures and will cause toxic fumes of including carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen cyanide gas, sulfur oxides, phosphorus oxides and other phosphorus compounds.

Polymerization:

This product will not polymerize.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute oral LD₅₀ rats: *Technical:* 320-380 mg/kg

Formulation calculated: 800 mg/kg

Acute dermal LD₅₀ rabbits: *Technical:* 400 mg/kg

Formulation calculated: 1000

mg/kg

Inhalation LC₅₀ rats: *Technical:* > 1.6 mg/ℓ (4 hours)

Acute eye irritation: Mild irritant

Acute skin irritation: Mild irritant

May cause dermatitis through defatting of tissue.

Reproductivity:

When mice were given 9.5 to 10.5 mg/kg/day dimethoate in their drinking water, there was decreased reproduction, pup survival, and growth rates of surviving pups. Adults in this study exhibited reduced weight gain, but their survival was not affected. Impaired reproductive function in humans is not likely under normal conditions.

Teratogenicity:

Dimethoate is teratogenic in cats and rats. Dosages of 3 or 6 mg/kg/day were not teratogenic in cats or rats. No teratogenic effects were seen in the offspring of mice given 9.5 to 10.5 mg/kg/day dimethoate in their drinking water. It is not likely that teratogenic effects will be seen in humans under normal circumstances.

Mutagenicity:

Mutagenic effects due to dimethoate exposure were seen in mice. Mutagenic effects are unlikely in humans under normal circumstances.

Carcinogenicity:

An increase in malignant tumors was reported in rats given oral doses of 5, 15 or 30 mg/kg/day dimethoate for over a year. The increases were not, however, dose dependent. That is, higher doses did not necessarily result in higher tumor rates. Thus the evidence of carcinogenicity, even with high-dose, long-term exposure, is inconclusive. This suggests carcinogenic effects in humans are unlikely.

ADI: 0.002 mg/kg/day

SECTION 12 - ECOLOGICAL INFORMATION

Degradability:

Dimethoate is of low persistence in the soil environment. Soil half-lives of 4 to 16 days, or as high as 122 days have been reported, but a representative value may be on the order of 20 days. Because it is rapidly broken down by soil microorganisms, it will be broken down faster in moist soils. Dimethoate is highly soluble in water, and it adsorbs only very weakly to soil particles so it may be subject to considerable leaching. However, it is degraded by hydrolysis, especially in alkaline soils, and evaporates from dry soil surfaces.

In water, dimethoate is not expected to adsorb to sediments or suspended particles, nor to bioaccumulate in aquatic organisms. It is subject to significant hydrolysis, especially in alkaline waters. The half-life for dimethoate in raw river water was 8 days, with disappearance possibly due to microbial action or chemical degradation. Photolysis and evaporation from open waters are not expected to be significant.

ECOTOXICOLOGY:

Birds: Moderately to very highly toxic to birds.

Oral LD₅₀: Mallard ducks: 42 mg/kg

Bobwhite quail: 10.5 mg/kg

Japanese quail: 84 mg/kg

LC₅₀ (96 hours): Rainbow trout: 24.5 mg/ℓ



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Bluegill sunfish: 17.6 mg/ℓ

Daphnia: Moderately toxic to Daphnia.

LC₅₀(48hours): *Daphnia magna* 2 mg/ℓ

Bees: Highly toxic to honeybees.

LD₅₀(oral): 0.15 µg/bee

LD₅₀(contact): 0.12 µg/bee

Algae:

E_bC₅₀(72hours) *Selenastrum capricornutum*: 90.4 mg/ℓ

Earthworms:

LC₅₀(14days): *Eisenia foetida*: 31 mg/kg drysoil

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 No.: 3017

AIR/IATA:

Class: 6.1

Subsidiary risk: 3

Packing group: III

Shipping name: Organophosphorus pesticide, liquid, toxic, flammable (dimethoate 400 g/ℓ)

IMDG/IMO:

Class: 6.1

Subsidiary risk: 3

Packing group: III

Shipping name: Organophosphorus pesticide, liquid, toxic, flammable (dimethoate 400 g/ℓ)

MARINE POLLUTANT

SECTION 15 - REGULATORY INFORMATION

Symbol: T, F

Indication of Danger: Toxic substance, Flammable.

Risk phrases:

R 10 Flammable.

R 20 Harmful by inhalation.

R 24/25 Toxic in contact with skin and if swallow.

R 36/38 Irritating to eyes and skin.

R 51 Toxic to aquatic organisms.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 47/49 Keep only in original container at a temperature not exceeding 48 °C.

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.

R 65 Harmful: may cause lung damage if swallowed.

Safety phrases:

S 1/2 Keep locked up and out of reach of children



- S 3/9/14** Keep in a cool, well-ventilated place away from open flames and sparks.
S 23 Do not breathe fumes or vapour.
S 24/25 Avoid contact with skin and eyes.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
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 5, 10, 20 & 25 litre fluorinated plastic containers and labelled according to the Canadian 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.