



CURE CHEM INDIA

The Chemical People

A-85, 1ST FLOOR, MASOODPUR MAIN ROAD, VASANT KUNJ, NEW DELHI-110070 (INDIA)
TEL: (91-11) 26898689, 26139884, MOBILE: 9811213932, FAX: (91-11) 26123165
EMAIL: kutty@curechem.com WEB: <http://www.curechem.com>

MATERIAL SAFETY DATA SHEET

APHISCURE (ACEPHATE 75% SP)

1. IDENTIFICATION OF PRODUCT AND COMPANY

Product Trade Name: APHISCURE

Product Use: Insecticide

Manufacturer: CURE CHEM INDIA

Address: A-85, 1ST FLOOR, MASOODPUR MAIN ROAD, VASANT KUNJ, NEW DELHI-110070 (INDIA)

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name Acephate

Chemical Name: *O*, *S*-dimethyl acetyl phosphoramidothioate (IUPAC)

CAS No.: 30560-19-1

Chemical Family: Organophosphate

Chemical Formula: C₄H₁₀NO₃PS (Mol. wt.: 183.2)

Use: Systemic insecticide with contact and stomach action.

Formulation: Acephate: 750 g/kg Soluble Powder

Hazardous components: Acephate

EEC classification: Xn

RISK PHRASE(S): R 22

3. HAZARD IDENTIFICATION

Toxicity class: WHO III; EPA III

ADI 0.03 mg/kg

NOEL 1 mg/kg (rats and mice) - 2 year

NIOSH 10 mg/m³

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

Fire and explosion hazard: Combustible material. Only slight fire and explosion hazard when exposed to heat or flame. Could burn, but does not ignite readily.

Biological Hazard: Likely routes of exposure: Skin and eye contact, ingestion and inhalation.

Ingestion: Highly toxic by ingestion.

Inhalation: Highly toxic by inhalation.

Skin contact: Mild irritant, highly toxic, due to possible absorption.



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Eye contact: Highly toxic and Irritating to eyes.

4. FIRST AID MEASURES AND PRECAUTIONS

Symptoms of exposure to the product include: nausea, headache, tiredness, giddiness, blurred vision and pupillary constriction. Depending on severity of poisoning these symptoms become worse with the onset of vomiting, abdominal pain, diarrhoea, 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.

Extreme salivation, involuntary defecation and urination, sweating, lacrimation, penile erection, bradycardia and hypotension manifest **severe intoxication**.

Inhalation: Remove source of contamination or move victim to fresh air. The affected person must be kept warm and at rest.

Supply oxygen if necessary. Treat symptomatically and supportively. **Seek medical advice immediately.**

Skin contact: Remove contaminated clothing, shoes and leather goods. Gently wipe of excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Seek medical advice if necessary. Persons who become sensitised may require specialised medical management with anti-inflammatory agents.

Eye contact: Immediately flush eyes with gently flowing cold water or saline solution for 20 minutes, holding the eyelid(s) open. **Seek medical attention immediately.**

Ingestion: Have victim rinse mouth thoroughly with water.

Seek medical advice immediately. 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 include, if necessary, mouth-to-nose respiration, cardiac massage and avoidance of injury in-patient with trauma.

Note to physician: Atropine must be administered as early as possible and could save lives, if given in time and in an adequate dosage. 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/minutes, and flushing skin. To prevent gastrointestinal absorption in unconscious that have swallowed this product, perform stomach lavage using bicarbonate solution and activated charcoal.

In less severe cases begin with 2 mg atropine intravenously for adults or 0.05 mg atropine/kg body weight intravenously for children under 12 years of age and repeat administration of the drug at 15 to 30 minutes intervals.



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In severe cases a total atropine dose of 20 to 80 mg in the first hour may be necessary, with repeated drug administration at 3 to 10 minutes intervals. When signs of atropinisation appear, the dose and frequency of administration should be reduced to a schedule that will maintain full atropinisation for at least 24 hours. Over-dosage with atropine is rarely serious, but under-dosage may be fatal in poisoning with organophosphorous compounds.

In any severe progressive case of poisoning a cholinesterase reactivator e.g. pralidoxime (2PAM), if available, should be administered, preferably within 8 hours after intoxication. An average dose is 1 g for an adult (up to 50 mg/kg for children), usually given half as a single intramuscular or intravenous injection and the other half as an intravenous infusion with glucose and or saline.

In severe cases this treatment may be repeated in 1 to 2 hours, then at 10 to 12 hour intervals if needed, but not beyond 24 hours, or 48 hours at the most. Pralidoxime should be administered very slowly. If respiration is depressed during or after pralidoxime injection, pulmonary ventilation should be assisted mechanically. Toxogonin is a more recent cholinesterase reactivator. It can be administered instead of 2PAM at a dose of 250 mg intramuscularly for adults (4 to 8 mg/kg for children) and, if necessary, repeated after 1 to 2 hours.

Diazepam should be included in the therapy of severe cases and whenever convulsions appear. Doses of 5 to 10 mg for adults (2 to 5 mg for children) can be administered intravenously or subcutaneously or per rectum, and repeated as required.

IMPORTANT

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

5. FIRE FIGHTING MEASURES

Fire/Explosion hazard: Combustible material. Only slight fire and explosion hazard when exposed to heat or flame. Could burn, but does not ignite readily.

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. 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. 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. Water can



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be used to cool unaffected containers but must be contained for later disposal. Avoid inhaling hazardous vapours. Keep upwind.

Special Hazards: Fire may produce irritating or poisonous vapours (phosphorus oxides), mists or other products of combustion.

Personal protective equipment: Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions: Do not inhale dust, fumes or vapours. Ventilate area of spill or leak, especially confined areas. Avoid contact with skin, eyes or clothes. For personal protection see Section 8.

Environmental precautions: Do not allow entering drains or watercourses. When the product contaminates public waters, report immediately to the local authorities and to the Environmental Management Agency.

Occupational spill: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do so without any risk.

Prevent entry of substance into waterways, sewers, basements or confined areas.

Absorb or cover spill with dry earth, sand or suitable non-combustible absorbent material, and place into containers for subsequent disposal. Thoroughly wash body areas, which come into contact with the product. Avoid runoff to sewer as it may cause fire/explosion. Do not allow the product to come in contact with water systems. Contain spillage and contaminated water for subsequent disposal.

Do not flush spilled material into drains. Keep spectators away and upwind. Do not get water inside the containers.

7. HANDLING AND STORAGE

Handling: Remove sources of naked flame or sparks. Acephate (Acephate) is harmful by inhalation or if swallowed. Avoid contact with eyes and skin and inhalation of fumes. 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 40°C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilisers. Product hydrolysed rapidly in alkaline media and hydrolysed slower in acidic and neutral aqueous media. Keep under lock and key out of reach of unauthorised persons, children and animals. Keep away from incompatible substances. Acephate **MUST NOT** to be stored next



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to foodstuffs and water supplies. Local regulations on handling and storage must be complied with, hence consult a chemical handling expert on matters which are unclear.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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: An approved full-face respirator suitable for protection from mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing: Employee must wear appropriate protective (impervious) clothing and equipment to prevent skin contact with the substance.

Gloves: Employee must wear appropriate chemical resistant protective 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 eyewash: 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Off-white powder with slight, characteristic organophosphate odour.

Flammability: Non-flammable.

Explosive properties: Only slight fire and explosion hazard when exposed to heat or flame.

Flash point: Not applicable.

Corrosiveness: Non-corrosive.

pH: Acidity: 1, 0 % maximum by mass when calculated as (sulphuric acid) H₂SO₄.

Relative density: 0.705 g/l at 25^oC

Persistent foaming: No persistent foaming.

Solubility in water: Is instantaneously soluble in water.

Vapour pressure: 0.226 mPa (*data for active substance*).

10. STABILITY AND REACTIVITY

Stability: The product is stable at room temperature. Product hydrolysed rapidly in alkaline media and hydrolysed slower in acidic and neutral aqueous media. Half life (DT50); pH5= 40 days, pH7= 46 days and pH9= 16 days.



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Storage stability: Stable for up to 2 years under normal warehouse and field conditions. Acephate is stable for 14 days at $0 \pm 2^{\circ}\text{C}$.

Incompatibility: The product is compatible with most other common pesticides but incompatible with alkaline materials such as Bordeaux mixture or Lime Sulphur.

Do not physically mix concentrate directly with other herbicides or pesticide concentrates; always dilute first.

Hazardous decomposition: Product undergoes decomposition at high temperatures. Avoid heating above ambient temperature. Oxides of carbon, phosphorus and sulphur are released when the product decomposes on heating.

11. TOXICOLOGICAL INFORMATION

Acute oral LD50: > 2000 mg/kg body weight in rats, 831.62 mg/kg body weight in mice.

Acute dermal LD50: > 2000 mg/kg in rats.

Acute inhalation LC50 (4 h): > 15 mg/l of air in rats (*Technical*)

Acute skin irritation: This product is considered as a non-irritant.

Acute eye irritation: This product is considered as a non-irritant for the eyes.

Dermal sensitisation: This product is a non-sensitising substance to guinea pigs.

Carcinogenicity: Studies did not detect carcinogenic activity. No human information available.

Mutagenicity: Studies indicate that the product display a mutagenic activity. **Acephate** can induce gene mutation,

DNA repair and sister chromatid exchanged. However, *in vivo* studies did not indicate that these effects and structural chromosome aberrations are produced as a detectable level in an intact mammalian system.

Neurotoxicity: **Acephate** does not induce ataxia and on histological examination there was no evidence of mycelia degeneration during studies. No human information available.

Teratogenicity / Reproductive hazard: Studies did not detect any teratogenic effects. Results indicate the no observable effect level to be 30 ppm. No human information available.

12. ECOLOGICAL INFORMATION

Degradability: (*Technical material*)

This product is an organophosphate insecticide that is widely applied to soil to control insect pests. The pathway of degradation in soil involves both chemical and microbial processes. The major products of degradation have been identified as the hydrolysis product 3,5,6-trichloro-2- pyridinol (TCP), the secondary metabolite 3,5,6-trichloro-2- methoxypyridine (TCMP) and eventually CO₂ resulting from mineralization of the aromatic ring. Laboratory determined soil degradation half-lives vary tremendously, and half-life estimates in different soils have ranged from less than 10 days to greater than 120 days.

Environmental factors can greatly influence the degradation rate in soil; the most important being moisture, pH, organic content, and pesticide formulation. This product in formulation can be classified as non-persistent



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Mobility: Rapid degradation of **Acephate** to low levels of less than 10 % within 62 days. The degradation was faster in the alkaline clay soils, followed by red and lateritic soils.

Accumulation: Contamination of ground water is unlikely to occur, accumulation in the air or contamination by wet or dry deposition is not to be expected.

ECOTOXICOLOGY: (*All ecotoxicity for technical material*)

Birds:

Japanese quail: LD50 after 14 days: 329.52 mg/kg

Pigeons: LD50: 83.9 mg/kg

Chicken: LD50: 432.8 mg/kg

Mallard Duck: LD50: 350 mg/kg

Acephate is Toxic to birds.

Fish:

Poecilia reticulata: LC50 (96 hours): > 100 mg/l water

Carp: LC50 (48 hours): > 40 mg/l water

Bluegill Sunfish: LC50 (96 hours): 2050 mg/l water

Rainbow Trout: LC50 (96 hours) :> 1 000 mg/l water

Acephate is highly toxic to fish.

Daphnia: Toxic to *Daphnia magna*.

Soil micro-organisms & other beneficial:

Trichogramma chilonis (egg parasitoid): LC50:1.217 ppm

Bracon brevicornis (larval parasitoid): LC50: 31.925 ppm

Chrysoperla carnia (predator): LC50: 133.494 ppm

Chlorella vulgaris (algae): EC50: 0.002 to 12.587 µg/ml at 72 hours

13. DISPOSAL CONSIDERATIONS

Pesticide disposal: Open dumping or burning of contaminated absorbents, surplus product, etc., is prohibited. Waste resulting from use of this product cannot be re-used or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. DO NOT contaminate rivers, dams or any other water sources with the product or used containers.

Package product wastes: Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is cleaned, reconditioned, or destroyed. Containers should be emptied over spray mixing tank and disposed of in a safe manner. Destroy empty container by perforation and flattening and bury in an approved landfill. Do not re-use the empty container for any other purpose.

14. TRANSPORTATION INFORMATION



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UN NUMBER: 2783

ROAD TRANSPORT ADR/IRD:

Substance ID NR: 2783

Hazard ID NR: 66

Label: 6.1

AIR/IATA:

Class: 6.1

Hazard Label: Toxic

Packaging group: III

Passenger aircraft: 619 (max: 100kg), Y619 (max: 10 kg); 200 kg)

Proper Shipping Name: Organophosphorous pesticide, solid, toxic (**Acephate**)

IMG/IMO: Packaging group: III

Label of class: 6.1, Marine pollutant

Shipping Name: Organophosphorous pesticide, solid, toxic (**Acephate**)

15. REGULATORY INFORMATION

Symbol: Xn, N

Indication of danger: Harmful, Dangerous for the environment

Risk phrases:

R22 Harmful if swallowed.

Safety phrases:

S1/2 Keep locked up and out of reach of children.

S 22 Do not breathe dust.

S 36/37/38 Wear suitable protective clothing, gloves and eye/face protection.

16. OTHER INFORMATION

PACKING AND LABELLING

Packed in 500 grams and 1 kg aluminium foil lined sachets packed in 10kg 3 ply paper boxes and labelled according to the **Zimbabwe-Statutory Instrument 144 of 2012, Pesticides Regulations, 2012 (CAP. 18: 12) and Pesticides (Amendment) Regulations 2013 (No.1)**

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 nonstandard uses of the product or 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. We recommend that matters which are to do with application rates and pests' controlled careful and thorough reading of the product label must be done.