DIRECTIONS FOR USE:

Crop	Pest	Dosage/100ℓ water	Application
Wheat & Barley	Aphids	400 – 600ml/ha	Apply as full cover spray .
Groundnuts/ Soya beans	Aphids	800 –1000ml/ha	Apply as full cover spray .
Maize	Aphids Leaf hoppers	750 – 1000ml/ha	Apply as full cover spray.
Tobacco seedbeds	Aphids	190ml	Drench every 2 weeks at 1.0 ℓ/m²
Tobacco lands **TRB Reg. No: 16-19-D-49**	Aphids	375ml	Spray 2-4 weeks after planting at 150ℓ mix/ha.

COMPATIBILITY:
Incompatible with alkaline materials and sulphur based formulations.

WARNINGS:
Allow the following number of days between last application and harvest of the crop:
Soya beans/groundnuts.....14 days
Maize.....21 days
Handle with extreme care. Poisonous when swallowed, inhaled or absorbed through the skin. Toxic to fish, bees and wildlife.
FLAMMABLE – Do not store or spray near open flames. Store under lock and key in a cool place, away from food and feedstuffs.
Keep out of reach of children, uninformed persons and animals.
In case of poisoning, call a doctor immediately and make this label available to him.

PRECAUTIONS:
Avoid inhalation and skin contact of the spray mist or vapour .
Wear full protective clothing (cotton overalls, face shield, respirator, rubber boots and rubber gloves) when preparing or applying.
Avoid contact with eyes.
Wash with soap and water immediately after application or accidental skin contact.
Wash overalls daily .
Do not eat, drink or smoke whilst applying or preparing the spray mixture, or before washing hands and face and chance of clothing.
Prevent contamination of food, feeds, drinking water and eating utensils. Prevent spray drift onto other crops, grazing, rivers, dams and areas not under treatment.
Clean applicator before using for other remedies and dispose of wash water where it will not contaminate the environment.

DIMETHOATE 40 EC

Insecticide

Reg. No.: 19-D-35-60 **100mℓ**

DANGEROUS POISON

HARMFUL BY SKIN ABSORPTION

Composition	mass/volume
Dimethoate.....	**40.0%**
Inert ingredients.....	**60.0%**

Chemical group: **Organophosphate**

A systemic and contact insecticide for the control of sucking pests on Wheat, Barley, Groundnuts, Soya beans, Tobacco and Maize.

SYMPOMS OF HUMAN POISONING:
Headache, fatigue, faintness, giddiness, excessive sweating, nausea, abdominal pains, vomiting, diarrhoea, tightness of chest, anxiety, blurred vision, muscle twitching beginning in eyelids and tongue, small pupils, respiratory distress convulsions and coma.

FIRST AID TREATMENT:
Remove patient from source of poisoning to a cool and well-ventilated area and keep him quiet and reassured. Remove contaminated clothing and rinse contaminated body area thoroughly with plenty of soap and cold water. Do not rub skin. Flush contamination out of eyes with clean water or 15 minutes or longer. If water-diluted mixture has been swallowed, induce vomiting by tickling the back part of the throat. If concentrate has been swallowed, firstly give copious quantities of either beaten egg white, starch solution or Milk of Magnesia before inducing vomiting. Repeat until vomit fluid is clear and free from smell of poison.
TAKE THE PATIENT IMMEDIATELY TO THE NEAREST DOCTOR.
Administer artificial respiration or closed chest cardiac massage, if necessary. Do not apply direct mouth-to-mouth respiration. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN:
Inject Atropine Sulphate 2-4mg intravenously repeated with 10-minute intervals until atropinization appears.
In addition PAM (1-2mg) or Toxogonin (0.25g) administered by intravenous injection.

SAFETY PRECAUTIONS
Empty container disposal
Invert the empty container over the spray tank 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 the container. Add the rinsings to the contents of the spray tank. Destroy the empty container by perforation and flattening. Return to supplier for recycling. DO NOT use for any other purpose. Dispose of the wash water at a site for the disposal of pesticides.
Decontamination of sprayer
Clean applicator thoroughly after use and ensure that all traces of **DIMETHOATE 40EC** are removed. Make use of the following method:
(a) Drain and rinse tank, spray boom and hoses with clean water for at least 10 minutes
(b) Fill tank with clean water and add it to 1 litre household bleach (5%) or 1.5 Litres of household bleach (3.5%) per 200 Litres of water. Rinse hoses and spray boom and leave in tank for 15 minutes whilst agitating. Drain through nozzle outlets.
(c) Repeat step (b) and thereafter, rinse thoroughly with clean water and dispose of the wash water at a site designated for the disposal of pesticides

Date of Manufacture: **Batch No.:**

Manufactured by:

NOVAAGRO (HK) LTD.
6TH FLOOR, WYNDHAM PLACE,
44 WYNDHAM STREET,
CENTRAL HONG KONG

Registration held by:

MAGHEM (PVT) LIMITED
2274 TILBURY ROAD,
WORKINGTON, HARARE,
ZIMBABWE

NOVA AGRO

MATERIAL SAFETY DATA SHEET (MSDS)

DIMETHOATE 400EC

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER **:** **NOVA AGRO (HK) LTD.**
(Reg. No. 1023146)
6th Floor Wyndham Place
44 Wyndham Street
CENTRAL HONG KONG.

Emergency Telephone Numbers
Poisonings
National Poison Centre: **(**+27)-21-938 6084 (office hours).
(South Africa) : (+27)-21-931 6129 (after hours); (+27)-800 33444 (24 h)
Trade Name **:** **DIMETHOATE 400EC**
Product Name : Dimethoate
Chemical Name (a.i.): *O*,*O*-dimethyl *S*-methylcarbamoylmethyl phodphorodithioate (IUPAC).
Chemical Family : Organophosphate
Empirical Formula (a.i.): $CH_3NHCO.CH_2SP(OCH_3)_2$
Product Description : Insecticide
Molecular Weight (a.i.): 229.28

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Content (g/litre)	CAS RN
Dimethoate	400	60-51-5

SECTION 3. HAZARDS IDENTIFICATION

Physical Properties
Appearance: Clear, light yellow to amber liquid
Odour: Slight mercaptan odour
Symptoms of Overexposure
Dimethoate is an organophosphate cholinesterase inhibitor. Symptoms of poisoning including headache, lightheadedness, weakness, abdominal cramps, diarrhea, nausea, muscle twitching, excessive salivation, perspiration and blurred vision. More severe signs

include lacrimation, pinpoint pupils, excessive respiratory secretions, cyanosis, convulsions, generalized tremor, coma and death. This product contains cyclohexanone, which may be irritating to the skin, eyes, and mucous membranes, and may produce transient corneal injury. This formulation also contains mixed aromatic hydrocarbons, including xylene. Inhalation of aromatic hydrocarbon vapors may cause central nervous system depression, dizziness, disturbances in vision, and respiratory irritation.

Contact with eyes and skin may be irritating. Dermatitis and dermal sensitization may occur.

Medical Conditions likely to be aggravated by Exposure

Pre-existing skin, eye, liver, kidney and nervous disorders.

Primary Routes of Exposure

Harmful if ingested, inhaled, or absorbed through skin.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide, sulfides, oxides of sulfur, phosphorus trioxide, dimethyl sulfide.

Unusual Fire, Explosion, and Reactivity Hazards

Containers in fire may burst or explode from excessive heat. Stay well back from fire area. Vapors may travel along floor to ignition source and flash back.

SECTION 4. FIRST AID MEASURES

If poisoning is suspected, immediately contact a physician, the nearest hospital, or the nearest Poison Control Center. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given.

Ingestion: DO NOT induce vomiting. Call a Poison Control Center or hospital immediately.

Inhalation: Remove victim to fresh air. Apply artificial respiration if necessary.

Eye Contact: Concentrated material causes eye irritation. In case of contact with eyes, flush eyes with plenty of water for at least 15 minutes.

Skin Contact: Wash with plenty of soap and water. Get medical attention if irritation persists.

Note to Physician

The effects of exposure to this, cholinesterase inhibiting, product can be controlled with atropine in 2-4 mg doses intravenously or intramuscularly. Repeat at 15-minute intervals until signs of atropinization appear. Pralidoxime chloride (2-PAM) may be effective as an adjunct to atropine. The product contains light aromatic hydrocarbons that can produce a severe pneumonitis or pulmonary edema if aspirated. Consideration should be given to gastric lavage with an endotracheal tube in place. Central nervous system stimulation can be controlled with barbituric acid derivatives. Diazepam was not found to be useful in an animal (rat) study. Do not give morphine or tranquilizers. Epinephrine is contraindicated due to cardiac muscle stimulation. Close supervision with otherwise symptomatic and supportive treatment is advised.

IN ALL CASES OF SUSPECTED POISONING, GET MEDICAL ATTENTION IMMEDIATELY

SECTION 5. FIRE FIGHTING MEASURES

Flashpoint (test method): 43^0C (TCC)
Flammable Limits (% in air): Not available
Autoignition Temperature: Not available
Appropriate Extinguishing Media
Use CO_2, foam, dry chemical, water spray or fog.
Fire Fighting Guidance
Smoke and fumes from fire may contain hazardous components. Use self-contained breathing apparatus and full protective clothing. Fight fire from upwind side. Keep non-essential personnel away from immediate fire area and out of any fall-out or run-off areas. Evacuate people downwind from fire. If water is used to fight fire or to cool containers, contain run-off by diking to prevent contamination of water supplies.
Unusual Fire, Explosion, and Reactivity Hazards
Containers in fire may burst or explode from excessive heat. Stay well back from fire area. Vapors may travel along floor to ignition source and flash back.

SECTION 6. ACCIDENTAL RELEASE MEASURES

In Case of Spills or Leaks
Isolate and post spill area. Wear prescribed protective clothing and equipment. Keep out animals and unprotected persons. Keep material out of streams and sewers. Dike to confine spill, and absorb with an absorbent such as clay, sand or cat litter. Vacuum, shovel or pump wastes into an approved drum and label drum for contents. To decontaminate spill area, tools and equipment, wash with organic solvent, detergent, bleach or caustic solution and add the solution to the drums of wastes already collected. Dispose of drummed wastes according to the methods outlined in Section 13 – Disposal Considerations.

SECTION 7. HANDLING AND STORAGE

May be harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing. Store in the original container and keep closed. Store containers in a cool dry place.
Precautions in storing
DO NOT contaminate water, food, or feed by storage or disposal. Do not use, pour, spill or store near heat or open flame. Store in a cool, dry place away from children, domestic animals, food and feed products. Do not contaminate other stored products or the storage area by storage of this product. Immediately clean up any spills which, occur during storage. Protect from freezing.

Storing

Store in a cool, dry place away from children, domestic animals, food and feed products. Immediately clean up any spills which, occur during storage. Protect from freezing. Store in a well-ventilated area.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Thoroughly ventilate all transport vehicles prior to unloading. Store in a well ventilated area. Use local exhaust at all processing locations to control employee exposure..

Eye/Face: Wear protective eyewear appropriate to exposure potential.

Skin Protection: Applicators and other handlers (other than mixers and loaders) must wear coveralls over short-sleeved shirt and short pants, chemical-resistant gloves and chemical-resistant footwear plus socks, chemical-resistant headgear for overhead exposure and a chemical-resistant apron when cleaning equipment. Mixers and loaders must wear coveralls over short-sleeved shirt and short pants, chemical-resistant gloves, footwear plus socks, chemical-resistant headgear, and a chemical-resistant apron when mixing or loading.

Respiratory Protection: For exposure in enclosed areas, use a respirator with either an organic vapor-removing cartridge with a pre-filter approved for pesticides, or a canister approved for pesticides. For exposure outdoors, use a dust/mist filtering respirator.

Additional Protection

Information: Inspect gloves regularly for leaks. Emergency eyewash fountain should be located nearby. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining personal protective equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Applicators/Handlers: Applicators and other handlers (other than mixers and loaders) must wear coveralls over short-sleeved shirt and short pants, chemical-resistant gloves and footwear plus socks, chemical-resistant headgear for overhead exposure and a chemical-resistant apron when cleaning equipment.

Mixers/Loaders: Mixers and loaders must wear coveralls over short-sleeved shirt and short pants, chemical-resistant gloves and footwear plus socks, chemical-resistant headgear, and a chemical-resistant apron when mixing or loading.

User Safety

Recommendations: Users should wash hands 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Bluish liquid

Odour: Aromatic odour

Flash point: 41 to 44^{0}C.
Relative density: 1.05 to 1.08 g/l at 20^{0}C.
pH: 0.1 %: 5.5 to 7.5
Storage stability: Stable for up to 2 years under normal warehouse and field conditions.
Solubility in water: Not soluble; emulsifies in water.

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable
Hazardous Polymerization: Will not occur
Decomposition Products: Carbon monoxide, carbon dioxide, sulfides, oxides of sulfur, phosphorus trioxide, dimethyl sulfide
Hazardous Mixtures: Strong oxidizers, strong acids, alkalis (bases)
Conditions To Avoid: Excessive heat and fire; alkalis and oxidizing agents. Thermal decomposition and burning may produce toxic by-products.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicology Class: WHO (a.i.) II; EPA (formulation) II
Oral LD_{50} (mg/kg): 387 for rats; 160 for mice (tech.)
Dermal LD_{50} (mg/kg): >2000 for rats (tech.)
Inhalation LC_{50} (mg/l): > 2.25 (4h) for rats;
Eye irritation: Irritating.
Skin irritation: Slightly irritating.
Mutagenic Potential: Mutagenic to rats
Reproductive Hazard Potential: Not
Carcinogenic Potential: None
Other Toxicity Information: Not available

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY:
Birds: Toxic to birds.
Fish: Toxic to fish. LC_{50} (96h): 6.2 mg/l (Rainbow trout)
Daphnia: Toxic to daphnia. LC_{50} (24h): 4.7 mg/l
Bees: Toxic to bees. LC_{50} (oral and topical): 0.1 to 0.2µg/l
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. Environmental factors can greatly influence the degradation rate in soil; the most important being moisture, pH, organic content, and pesticide formulation.

Absorption and desorption constants have been shown to be a linear function of soil silt content Koc ranges from 16.25 (sandy loam) to 51.88 (sandy/loamy sand).
This product in formulation can be classified as non-persistent.
DT_{50} aerobic: 2 to 4.1 days.
DT_{50} photolytic on soil surface: 7 to 16 days.

SECTION 13. DISPOSAL CONSIDERATION

Pesticide disposal:
Contaminated absorbents, surplus product, etc., should be burned in a high-temperature incinerator (> 1000^0C) with effluent gas scrubbing. 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 until container is destroyed. Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must be **TRIPLE RINSED** with water and then be punctured and transported to a facility for recycling or disposal in approved landfill site. Comply with any local legislation applying to disposal.

SECTION 14. TRANSPORT INFORMATION

UN NUMBER: 3017
ADR/RID:
Substance ID NR: 3017
Hazard ID NR: 63
Label: 6.1 + 3
Item no: 72
AIR/IATA:
Proper shipping name: Organophosphorous pesticide, liquid, toxic, flammable (**Dimethoate**)
Class: 6.1
Subsidiary Risk: 3
Hazard Label: Toxic & flammable liquid
Packaging group: III
Passenger aircraft: 611 (max 60 L)
Y611 (2 L)
Cargo aircraft: 618 (max 220 L)
IMDG/IMO:
Proper shipping name: Organophosphorous pesticide, liquid, toxic, flammable (**Dimethoate**)
Packaging group: III
Label of class: 6.1

Subsidiary Risk: 3
Considered a marine pollutant.

SECTION 15. REGULATORY INFORMATION

Symbol: Xn, F, N
Indication of danger: Harmful, Flammable, Environmentally dangerous substance.
Risk phrases:
R10 Flammable
R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrases:
S1/2 Keep locked up and out of reach of children.
S13 Keep away from food, drink and animal feeding stuffs.
S20/21 When using do not eat, drink or smoke.
S28 After contact with skin, wash immediately with plenty of water and non-abrasive soap.
S36/37 Wear suitable protective clothing, and gloves.
S 61 Avoid release to the environment.

SECTION 16. OTHER INFORMATION

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 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.