MATERIAL SAFETY DATA SHEET OF

IMIDACLOPRID 70% WDG

1. IDENTIFICATION OF THE CHEMICAL PRODUCT AND COMPANY

Supplier: SHANGHAI MINGDOU AGROCHEMICAL CO., LTD
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FAX: +86 21 52912097, 61638378
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Product name: Imidacloprid 70% WDG
Product use: Insecticide. Control of sucking insects, including rice-, leaf- and planthoppers, aphids, thrips and whitefly.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Formulation Type: Water dispersible granule
Active Ingredients: Imidacloprid
Chemical Abstracts name: 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine
IUPAC name: 1-(6-Chloro-3-pyridinyl)methyl-N-nitroimidazolidin-2-ylideneamine
Chemical Family: Neonicotinoid
CAS NO. 138261-41-3; 105827-78-9 former number
Molecular Formula: C₉H₁₀ClN₅O₂
Molecular Weight: 255.7
Structural Formula:

Other ingredients determined not to be hazardous

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>CAS NO</th>
<th>PROPORTION</th>
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<tbody>
<tr>
<td>Imidacloprid</td>
<td>138261-41-3; 105827-78-9 former number</td>
<td>≥70% (w/w)</td>
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<tr>
<td>Others</td>
<td>Not available</td>
<td>≤30% (w/w)</td>
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3. HAZARDS IDENTIFICATION

Emergency overview: Keep out of reach of children. Caution! Harmful if swallowed. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Routes of entry: Ingestion, inhalation, skin absorption.

Health hazards:

Signs and symptoms of exposure: Gastrointestinal discomfort, tremors, difficulty breathing.

Ingestion: Harmful if swallowed.

Eyes contact: slightly irritating to eyes.

Skin contact: slightly irritating to skin.

Inhalation: LC50, inhalation, rat: > 1.62 mg/l/4 h.


Environmental hazards: This product is highly toxic to aquatic invertebrates. Keep out of lakes, streams, or ponds. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other water. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority.

4. FIRST AID MEASURES

General: 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.

Skin contact: Remove contaminated clothing and footwear. Wash with plenty of water and soap. Get medical attention if irritation develops.

Eye contact: Immediately flush with plenty of water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and flush again. Get medical attention if irritation develops.

Ingestion: Immediately rinse mouth and drink water. Call a doctor or get medical attention immediately. If large quantities are ingested (more than a mouthful), let the exposed person induce vomiting by touching the back of the throat with a finger. If vomiting occurs, rinse mouth and drink water again. Never give anything by mouth to an unconscious person.

Inhalation: If experiencing any discomfort, immediately remove to fresh air and obtain medical advice if discomfort does not disappear.

Note to physician: There is no specific antidote against this substance. Treatment is symptomatic and supportive. Gastric lavage and/or administration of activated charcoal and sodium sulphate can be
5. FIRE FIGHTING MEASURES

Flash point: NA

Flammable limits:
LFL: Not determined.
UFL: Not determined.

Autoignition temperature: >225°C.

Hazardous products: In the event fire, the information of hydrogen chloride, hydrogen cyanide, carbon monoxide, sulphur dioxide and nitrogen oxides must be anticipated.

Extinguishing media: Spray water jet, foam, extinguish powered, CO₂, sand. Contain fire fighting water.

Fire-fighting instructions: Keep unnecessary people away. If it can be done safely, remove intact containers from the fire. Otherwise, use water spray to cool them. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later. Do not release contaminated water into the environment.

Protective equipment for firefighters: Firefighters should wear full protective gear, including self-contained breathing apparatus.

6. ACCIDENT RELEASE MEASURES

Personal precautions:
If product is handed while not enclosed, and if skin contact may occur.
Hand protection: protective gloves for chemical.
Eye protection: goggles.
Occupational health: Avoid contact with product. Change badly soiled or soaked clothing. Wash hands before breaks and at the end of work.

Environmental precautions: Prevent entry into drains, water or soil. Take up spilled product with dust-binding material or suitable vacuum cleaner. Avoid formation of dust. Fill materials taken up into closable contain. To clean the floor and all objects contaminated by this material, use damp cloth. Also place used cleaning materials into closable receptacles.

Steps to be taken in case of spill: It is recommended to have a predetermined plan for the handling of spills. Stop the source of the spill immediately if safe to do so. Contain the spill to prevent any further contamination of surface, soil or water. Reduce and avoid formation of airborne dust as much as possible, if appropriate by moistening. Remove sources of ignition. Spills on the floor or other impervious surface should be swept up immediately and transferred to suitable containers. Rinse area with strong industrial
detergent and much water. Absorb wash liquid onto a suitable absorbent such as universal absorbent, attapulgite, bentonite or other absorbent clays and transfer contaminated absorbent to suitable containers. Washings must be prevented from entering surface water drains. Large spills which soak into the ground should be dug up and placed in suitable containers. Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body. The used containers should be labelled. Refer to section 13 for disposal.

7. HANDLING AND STORAGE

Handling:
Avoid contact with skin, eyes, or clothing. Avoid breathing dust or vapor. 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. Remove Personal Protective Equipment immediately after handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage:
The product is stable under normal conditions of warehouse storage at temperatures of -10 to 40°C. Protect against extremes of heat and cold. Store in closed, labelled containers. The storage room should be constructed of incombustible material. closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading “POISON” is recommended. The room should only be used for storage of chemicals. Food, drink, feed and seed must be kept away. A hand wash station should be available.

Fire and explosion precautions:
Like most organic powders, the substance can form explosive mixtures with air. Avoid dust formation and take precautionary measures against static discharge. Use explosion protected equipment. Keep away from sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment:
Respiratory protection: The product is not likely to present an airborne exposure concern during normal handling. In the event of an accidental discharge of the material which produces a heavy vapour or dust, workers should put on officially approved respiratory protection equipment with a universal filter type including particle filter.
Hand protection: Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
The breakthrough times of these gloves for the product are unknown, but it is expected that they will give adequate protection because of the low dermal toxicity of the product. It is recommended to limit the work to be done manually.

Eye protection: Wear goggles, safety glasses or face shield. It is recommended to have an eye wash fountain immediately available in the work area when there is a potential for eye contact.

Skin protection: Wear appropriate protective clothing to prevent skin contact.

**Work/hygienic practices:**
Avoid contact with eyes, skin or clothing. Do not breathe vapour or mist. Remove contaminated clothing immediately. Wash thoroughly after handling. Before removing gloves, wash them with water and soap. After work, take off all work clothes and shoes. Take a shower, using water and soap. Wear only clean clothes when leaving job. Wash protective clothing and protective equipment with water and soap after each use. The respirator must be cleaned and the filter replaced according to the accompanying instructions.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Form:** Solid, granules.

**Color:** Brown.

**Odor:** Slight characteristic smell.

**pH:** 7.0–9.0 at 1% in water.

**Bulk density:** Approx. 0.67 g/cm³.

**Solubility:** Miscible with water.

**Flammability:** Not highly flammable.

**Explosive properties:** Not explosive.

**Oxidising properties:** Not oxidizing.

**10. STABILITY AND REACTIVITY**

**Chemical stability:** Stable under normal temperatures and conditions.

**Conditions to avoid:** Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

**Hazardous decomposition products:** Proposed: HCl, HCN, CO, NOx.

**Incompatible materials:** None known.

**Hazardous reactions:** Hazardous polymerization will not occur.

**11. TOXICOLOGICAL INFORMATION**

The following information is for the active ingredient, Imidacloprid.
Acute toxicity:
Oral: LD$_{50}$ for male and female rats 450 mg/kg.
Dermal: LD$_{50}$ >5000 mg/kg (rats).
Inhalation: LC$_{50}$ >5 mg/l (rat).

Irritant properties:
Skin: not irritant (rabbit).
Eye: not irritant (rabbit).

Allergenic and sensitizing effects:
Not considered to be a skin sensitizer (Guinea pig).

Chronic toxicity:
A 2-year feeding study in rats fed up to 1,800 ppm resulted in a No Observable Effect Level (NOEL) of 100 ppm (5.7 mg/kg body weight in males and 7.6 mg/kg in females). Adverse effects included decreased body weight gain in females at 300 ppm, and increased thyroid lesions in males at 300 ppm and females at 900 ppm. A 1-year feeding study in dogs fed up to 2,500 ppm resulted in a NOEL of 1,250 ppm (41 mg/kg). Adverse effects included increased cholesterol levels in the blood, and some stress to the liver.

Carcinogenic Effects:
Imidacloprid is considered to be of minimal carcinogenic risk, and is thus categorized by EPA as a “Group E” carcinogen (evidence of noncarcinogenicity for humans). There were no carcinogenic effects in a 2-year carcinogenicity study in rats fed up to 1,800 ppm imidacloprid.

Genetic effects/Mutagenicity:
Imidacloprid may be weakly mutagenic. In a battery of 23 laboratory mutagenicity assays, imidacloprid tested negative for mutagenic effects in all but two of the assays. It did test positive for causing changes in chromosomes in human lymphocytes, as well as testing positive for genotoxicity in Chinese hamster ovary cells.

Reproductive effects:
A three generation reproduction study in rats fed up to 700 ppm imidacloprid resulted in a NOEL of 100 ppm (equivalent to 8 mg/kg/day) based on decreased pup body weight observed at the 250 ppm dose level.

Developmental effects:
A developmental toxicity study in rats given doses up to 100 ppm by gavage on days 6 to 16 of gestation resulted in a NOEL of 30 mg/kg/day (based on skeletal abnormalities observed at the next highest dose tested of 100 ppm). In a developmental toxicity study with rabbits given doses of imidacloprid by gavage during days 6 through 19 of gestation, resulted in a NOEL of 24 mg/kg/day based on decreased body weight and skeletal abnormalities observed at 72 mg/kg/day (highest dose tested).
Target organ effects:
In short-term feeding studies in rats, there were thyroid lesions associated with very high doses of imidacloprid.

12. ECOLOGICAL INFORMATION
The following information is for the active ingredient, Imidacloprid.

Ecotoxicity:

Birds   Acute oral LD\textsubscript{50}: for Japanese quail 31 mg/kg, for bobwhite quail 152 mg/kg.
Dietary LC\textsubscript{50} (5 days): 2225 ppm for Japanese quail.
Fish   LC\textsubscript{50} (96 h): for golden orfe 237 mg/L, rainbow trout 211 mg/L, carp 280 mg/L (96 h).
Daphnia   EC\textsubscript{50} (48 h): for \textit{Daphnia magna} 85 mg/L
Algae   EC\textsubscript{50}: for green alga (\textit{Pseudokirchneriella subcapitata}) > 100 mg/L (72 h)
Bees   LD\textsubscript{50} (oral): 0.0037 \mu g/bee.
Earthworm:   LC\textsubscript{50} (14 days): 10.7 mg/kg dry soil

Persistence and degradability: Imidacloprid is not readily biodegradable. It undergoes slow degradation in the environment and in waste water treatment plants. Degradation is mainly microbiological and aerobic, but photodegradation also occurs. Degradation half-lives in the environment vary much with circumstances, usually from a few months to one year.

Bioaccumulative potential: Imidacloprid is not expected to bioaccumulate.

Mobility in soil: In the environment, imidacloprid is of moderate mobility.

13. DISPOSAL CONSIDERATION
Waste disposal: Material that cannot be reused or chemically reprocessed can be disposed of by controlled incineration with flue gas scrubbing or removal to a licensed chemical destruction plant. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

Packaging/container disposal: Triple rinse container (or equivalent) and offer for recycling or reconditioning. The packaging can also be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Disposal of waste and packagings must always be in accordance with all applicable local regulations.

14. TRANSPORT INFORMATION
UN Number: 2588
UN Proper shipping name: Pesticide, solid, toxic, n.o.s. (Imidacloprid)
Transport hazard class: 6.1
Packing group: III
Marine pollutant: Yes

15. REGULATORY INFORMATION

Hazard symbols:

Xn Harmful

Risk phrases:

R22 Harmful if swallowed.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases:

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

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