

Material Safety Data Sheet

Fludioxonil 25g/L + Metalaxyl-M 37.5g/L FS

1. PRODUCT IDENTIFICATION

Product Name: Fludioxonil 25g/L + Metalaxyl-M 37.5g/L FS
 Common Name: Fludioxonil + Metalaxyl-M
 Chemical Family: Phenylpyrrole (Fludioxonil);
 Acylalanine (Metalaxyl-M).
 Chemical Formula: C₁₂H₆F₂N₂O₂ (Fludioxonil);
 C₁₅H₂₁NO₄ (Metalaxyl-M).
 Chemical Name: 4-(2,2-difluoro-1,3-benzodioxol-4-yl)pyrrole-3-carbonitrile (IUPAC)
 (Fludioxonil);
 methyl *N*-(methoxyacetyl) -*N*-(2,6-xylyl) -*D*-alaninate; methyl (*R*)-2-
 {[(2,6-dimethylphenyl) methoxyacetyl] amino} propionate (IUPAC)
 (Metalaxyl-M).
 CAS No.: 131341-86-1 (Fludioxonil);
 70630-17-0 (Metalaxyl-M).
 Product Use: Insecticide

2. COMPANY IDENTIFICATION:

Exporter:

CHICO CROP SCIENCE CO., LTD.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient Name</u>	<u>CAS Registry Number</u>	<u>Typical Wt. w/v</u>
Fludioxonil	131341-86-1	25g/L
Metalaxyl-M	70630-17-0	37.5g/L
Inert	/	to balance

4. HAZARDS IDENTIFICATION

Emergency Overview

Red flowable liquid with weak characteristic odor.

CAUTION!

KEEP OUT OF REACH OF CHILDREN
MAY CAUSED SKIN SLIGHT IRRITATION
MAY CAUSED EYE SLIGHT IRRITATION

Potential Health effects

Dermal contact, ingest and inhalation of the product are the primary routes to induce potential adverse health effects. Inhalation of aerosol during application of the product as part of its end use is another potential route of entry. Eye and skin irritation may occur from contact with the liquid or spray mixture.

5. FIRST AID MEASURES

- If swallowed: Rinse mouth with water. Never give anything by mouth to an unconscious person. Should be send to the hospital treatment immediately.
- If in eye: Immediately rinse eyes with a large amount of running water. Hold eyelids apart to rinse the advice of a physician.
- If on skin: Wash with plenty of soap and water, including hair and under fingernails. Do not apply any medicating agents except on the advice of a physician. Remove contaminated clothing and decontaminate prior to use.
- If Inhaled: Move victim from contaminated area to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

Notes to Physician: There is no specific antidote, Treat symptomatically.

6. FIRE FIGHTING MEASURES

Fire and explosive Properties

Auto-Ignition Temperature	Not applicable
Flash Point	Not available.

Extinguishing Media

Water fog, Carbon Dioxide, Dry Chemical, Foam.

Fire Fighting Instructions

The product is not flammable. But if firing, fire fighters and others who may be exposed to products of combustion should wear full firefighting turn out gear and self-contained breathing apparatus. Firefighting equipment should be thoroughly decontaminated after use.

Person who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

7. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Stop the leak, if possible. Ventilate the space involved. Absorb, sweep up, place in container for disposal. Shut off or remove all ignition sources. Prevent waterway contamination. Construct a dike to prevent spreading. Protect works with water spray. Collect run-off water and transfer to drums or tanks for later disposal.

8. HANDLING AND STORAGE

Handling

Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. Do not breathe gas or allow to get in eyes, on skin, or on clothing. Wash hands, arm and face thoroughly with soap and warm water after use and before eating or smoking. Wash all contaminated clothing with soap and hot water before reuse. Do not contaminate feed or food items. Keep out of reach of children.

Storage

Store in a cool dry and air ventilating warehouse and protected from light. Avoid contacting with food, feed stuff and seed.

9. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye/Face Protection

Goggles and full-face shield should be used when needed to prevent liquid from face and getting into the eyes.

Skin Protection

Avoid skin contact. Use chemical-resistant gloves, and wear long sleeves and trousers to prevent dermal exposure.

Respiratory Protection

Under normal handling conditions no respiratory protection is needed. However, if needed to prevent respiratory irritation, either a respirator approved for dusts and mists, or one approved for pesticides.

10. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Red
Physical state:	Flowable liquid
Odor:	Weak characteristic odor
pH:	4.0-8.0
Melting point:	199.8 °C (Fludioxonil); -38.7 °C (glass transition temperature) (Metalaxyl-M)
Boiling point:	N/A (Fludioxonil); Decomp. <i>c.</i> 270 °C (Metalaxyl-M)
Vapor pressure:	3.9×10^{-4} mPa (25 °C) (Fludioxonil); 3.3 mPa (25 °C) (Metalaxyl-M)
Solubility in water:	In water 1.8 mg/l (25 °C). (Fludioxonil); In water 26 g/l (25 °C). (Metalaxyl-M)
Solubility in organic solvents:	In acetone 190, ethanol 44, toluene 2.7, <i>n</i> -octanol 20 and hexane 0.01 (all in g/l, 25 °C). (Fludioxonil); In <i>n</i> -hexane 59 g/L; miscible with acetone, ethyl acetate, methanol, dichloromethane, toluene and <i>n</i> -octanol. (Metalaxyl-M)
Partition coefficient:	$K_{ow} \log P = 4.12$ (25 °C) (Fludioxonil); $K_{ow} \log P = 1.71$ (25 °C) (Metalaxyl-M)

11. STABILITY AND REACTIVITY

Stability

Practically no hydrolysis at 25 °C between pH 5 and 9. (Fludioxonil);
Hydrolytically stable under acidic and neutral conditions ($DT_{50} > 200$ d). Under alkaline conditions, DT_{50} 116 d (pH 9, 25 °C). (Metalaxyl-M)

Hazardous Polymerization

Does not occur.

Incompatibility

The product is not compatible with strong oxide agents.

Hazardous Decomposition Products

Not available

12. TOXICOLOGICAL INFORMATION

Acute Oral:	Acute oral LD_{50} for rats and mice > 5000 mg/kg. (Fludioxonil); Acute oral LD_{50} for male rats 953, female rats 375 mg/kg. (Metalaxyl-M)
Acute Dermal:	Acute percutaneous LD_{50} for rats > 2000 mg/kg. (Fludioxonil); Acute percutaneous LD_{50} for rats > 2000 mg/kg. (Metalaxyl-M)
Irritation:	Non-irritating to eyes and skin (rabbits). (Fludioxonil);

- Not a skin irritant (rabbits); risk of serious damage to eyes (rabbits). (Metalaxyl-M)
- Sensitization:** Non-sensitizing to skin (guinea pigs). (Fludioxonil).
Not a skin sensitizer (guinea pigs). (Metalaxyl-M)
- Long-term Studies:** Studies showed no evidence of carcinogenicity and mutagenicity to rats and rabbits.

13. ECOLOGICAL INFORMATION

Ecotoxicological Information

Fludioxonil

- Effects on Birds: Acute oral LD₅₀ for mallard ducks and bobwhite quail >2000 mg/kg. LC₅₀ for mallard ducks and bobwhite quail >5200 ppm.
- Effects on Fish: LC₅₀ (96 h) for bluegill sunfish 0.74, catfish 0.63, common carp 1.5, rainbow trout 0.23 mg/l.
- Effects on Daphnia: LC₅₀ (48 h) 0.40 mg/l.
- Effects on Algae: EC₅₀ (72 h) for *Scenedesmus subspicatus* 0.93 mg/l; E_bC₅₀ for *Selenastrum capricornutum* 0.025 mg/l.
- Effects on Bees: Non-toxic; LD₅₀ (48 h, oral and contact) >100 µg/bee.

Metalaxyl-M

- Effects on Birds: LD₅₀ (14d) for bobwhite quail 981–1419 mg/kg. LC₅₀ (8d) for bobwhite quail >5620 mg/kg.
- Effects on Fish: LC₅₀ (96 h) for rainbow trout >100 mg/l.
- Effects on Daphnia: LC₅₀ (48 h) >100 mg/l.
- Effects on Algae: E_rC₅₀ (72 h) for *Scenedesmus subspicatus* 103 mg/l.
- Effects on Bees: LD₅₀ (48 h, contact) >100 µg/bee.

Chemical Fate Information

- Animals:** Well absorbed from the gastrointestinal tract, rapidly distributed in the body and completely excreted. The major metabolic reaction is the oxidation of the pyrrole ring at the 2- position. All metabolites are excreted as conjugates, mainly glucuronides. (Fludioxonil)
Following oral administration, rapidly absorbed, distributed and almost completely eliminated in urine and faeces. Metabolism proceeds via demethylation, hydrolysis of the ester bond, oxidation of the 2-(6)-methyl group, *meta*- hydroxylation of the phenyl ring and *N*-dealkylation. There was no evidence for accumulation of metalaxyl-M or its metabolites. (Metalaxyl-M)
- Plants:** Metabolism proceeds via oxidation at the pyrrole ring, followed by ring opening and the formation of pyrrolidine carboxylic acid. In general, fludioxonil is metabolized to more than 10–15 minor metabolites. (Fludioxonil)

Metabolized by more than four types of phases I reaction (oxidation of the phenyl ring, oxidation of the methyl group, cleavage of the methyl ester and *N*-dealkylation) to form major metabolites; at phase II, most of the metabolites are conjugated with sugar. (Metalaxyl-M)

Soil/Environment: Formation of bound residues is the major route for dissipation in soil. Field DT₅₀ *c.* 14 d and *c.* 26–54 d after foliar and seed treatment use, resp. In leaching and adsorption/desorption experiments, the compound proved to be immobile in soil. Photolytic DT₅₀ in water is 9–10 d (natural sunlight). (Fludioxonil)

In soil, DT₅₀ 21 d (range 5–30 d). K_{oc} 45 ml/g (range 30–300 ml/g). (Metalaxyl-M)

14. DISPOSAL CONSIDERATIONS

Waste Disposal

Pesticide wastes are acutely hazardous. Do not reuse product containers. Dispose product containers, waste containers, residues according local health and environmental regulations.

15. TRANSPORT INFORMATION

UN Number: 3082

Dangerous Goods Class: 9

Packing Group: III

16. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

17. OTHER INFORMATION

The information contained herein relates only to the specific material identified. We believe that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, express or implied, is made as to the reliability or completeness of the information. Urge persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Chico Crop Science Co., Ltd.