

Product Safety Data Sheet

1. Chemical product and company identification

1.1. *Prepared Date* : Jan. 15 . 2021

1.2. *Product information* : -

Trade name : Mobin-391 SC.

1.3. *Information about manufacturer / supplier :*

Saudi Delta Company for Chemical Industries
Riyadh – Saudi Arabia – 3rd Industrial City
Tel. 00966-11-2654533 Fax. 00966-11-2654532
P.O. Box 355809 Riyadh 11383 Saudi Arabia

2. Information on ingredients

2.1. *Chemical properties (Component substances)*

The product is a mixture of two active ingredients , emulsifiers , Co- solvent, and Solvent.

- Azoxystrobin : 28.2% w/v (Fungicide)
- Metalaxyl-M : 10.9% (Systemic Fungicide)
- Propylene glycol : 6%
- Wetting Dispersing agents:5% (w/v).
- Coconut Oil : 10% (w/v)
- Thicking Agent : 0.2% (w/v)
- Benzyl Alcohol : 1% (w/v)
- Water : Up to 100% (v).

2.1.1. Azoxystrobin :

- **Chemical Name:** (IUPAC) name : methyl (E)-2-{2-[6-(2-cyanophenoxy)pyrimidin-4-yloxy]phenyl}-3-methocyacrylate
- **CAS No.** : 131860-38-8
- **Mol. Formula** : C₂₂H₁₇ N₃ O₅
- **Physical Form** : white solid
- **Melting Point** : 114-116 °C (tech.)
- **B.D** : 1.34 (20 °C)
- **Solubility** : In water 6 mg/L , Low solubility in hexane , n-Octaneol ; Moderately soluble in methanol, toluene , acetone ; high

soluble in ethyl acetate , acetonitrile, dichloromethane .

- **Stability** : DT50 for aqueous photolysis 2 w. stable to hydrolysis

2.1.1. Metalaxyl-M :

- **Chemical Name** : methyl N-(methoxyacetyl)-N-(2,6-xylyl)-D-alaninate; methyl (R)-2-{[(2,6-dimethylphenyl)methoxyacetyl]amino}propionate
- **CAS No.** : [70630-17-0]
- **Mol. Formula** : $C_{15}H_{21}NO_4$
- **Mol. wt .** : 279.3
- **Physical Form** : Pale yellow to light brown, viscous liquid
- **Melting Point** : -38.7 °C (glass transition temperature)
- **B.p.** : Decomp. c. 270 °C
- **V.p.** : 3.3 mPa (25 °C)
- **Know logP** = 1.71 (25 °C)
- **Henry** : 3.5×10^{-5} Pa m³ mol⁻¹ (calc.)
- **S.g./density** : 1.125 (20 °C)
- **Solubility** : In water 26 g/l (25 °C). In n-hexane 59 g/l; miscible with acetone, ethyl acetate, methanol, dichloromethane, toluene, n-octanol.
- **Stability** : Hydrolytically stable under acidic and neutral conditions (DT50 >200 d). Under alkaline conditions, DT50 116 d (pH 9, 25 °C).
Specific rotation Negative
- **F.p.** : 179 °C (EEC A10)

2.1.3. Propylene glycol

- **CAS No.** : 57-55-6.μ
- **Mol. wt.** : 76.1
- **Chemical Formula:** $C_3H_8O_2$. **Appearance:** Clear, colourless oily Liquid
- **Odor** : Odourless.
- **Solubility** : in water complete **S.G.:** 1.04 (25°C) °C
- **Boiling Point:** 185°C **Melting Point:** - 60°C
- **Vapour Density (Air =1):** 2.6 **Vapour Pressure (mm/Hg):** 2.6 at 26°C
- **Viscosity:** 46 CPS at 25°C .

2.1.4. Surfactants:

Anionic Surfactants (lignosulfonate) 50-100%

Anionic surfactants 10-25%

Form: Powder **pH:** 8 (5% H₂O)

M.P.: > 100°C **F.P:** Not applicable

Colour: brown **V.P:** < 1mb (20°C).

Water Solubility: Completely soluble.

Flammability (Solid, gas): No date available

3. Hazard Identification

- 3.1. **Dangerous Substances:** No any dangerous substances.
- 3.2. **Important Hazardous:** can be harmful if swallowed, inhaled, or absorbed through the skin
- 3.3. **Symptoms relating to use:** There is no dangerous signs or symptoms obtained, but headache, skin irritation, and stomach may be caused by the over exposure of this material.

4. First aid Measures

- 4.1. **Precautions:** If you feel unwell, seek medical advice (show the label where possible)
- 4.2. **Inhalation:** In case of loss of cons., artificial respiration should be performed, move to fresh air.
- 4.3. **Skin Contact:** After contact with skin, wash immediately thoroughly with soap and water.
- 4.4. **Contact:** In case contact with eyes, rinse immediately with plenty of water and seek medical advice.
- 4.5. **Ingestion:** Give plenty of water and induce vomiting.
- 4.6. **Contact with clothes:** Change clothes when contaminated and in any case when the work is over.
- 4.7. **Further informations:** Treat symptomatically, no specific antidote.

5. Fire Fighting Measures

- 5.1. **Extinguishing media:**
- 5.1.1. **Suitable:** Carbon dioxide, dry chemicals, foam.
 - 5.1.2. **Not to be used:** Don't use water except in case important fire.
 - 5.1.3. **Protection against fire:** Keep away from sources of ignition, No smoking.
 - 5.1.4. **Special exposure Hazards:** Contain fire fighting water to protect environment, thermal decomposition may release toxic fumes.
In case of important fire use a self contained respiratory apparatus and protective clothes.

6. Accidental Release Measures

- 6.1. **Personal precautions:** Avoid contact with skin.
- 6.2. **Environment precautions:** Stop any eventual leakage.
- 6.3. **After spillage / leakage on soil:** Sweep up to collect product without dust, and incinerate according to regulation or recycle.

7. Handling and Storage

- 7.1. **Technical Protective measures:** Keep the product in the original container, away from food, animals, foodstuff, and out of reach of children, don't breath the dust, decomposes on prolonged exposure to air and moisture.
- 7.2. **Handling:** Handle contains tightly closed, antidust mask may be desirable when emptying bags.
- 7.3. **Storage:** Store in dry, cool, well-ventilated area, avoid exposure to direct sunlight, and don't pile higher than 3 pallets.

8. Exposure controls, Personal Protections.

- 8.1. **Personal protection:** Don't breath dusts, after treatment, wash and change clothes prior anything else like eating, drinking, or smoking.
- 8.2. **Respiratory protection:** Wear a suitable anti dust mask.
- 8.3. **Skin protection:** Wear suitable protective clothing mask.
- 8.4. **Eye protection:** Wear. Eye / face protection.
- 8.5. **Ingestion:** Don't eat, drink or smoke during application.
- 8.6. **Industrial hygiene:** Avoid splashes (Suitable protective clothing ...etc.)

9. Physical and chemical properties

- | | |
|---------------------------|--------------------------------------|
| 9.1. Shape | : Liquid as a suspension concentrate |
| 9.2. Density | : 1.01 gm/ml (20°C) |
| 9.2. Colour | : White |
| 9.3. Odour | : Typical odor |
| 9.4. Product Use | : Agricultural Use .(Fungicide) |
| 9.5. Melting point | : N.A |
| 9.6. Boiling Point | : N.A |
| 9.7. Specific Gravity | : 1.1 |
| 9.8. Vapour Pressure | : Not available |
| 9.9. Viscosity (CPS) 25°C | :460 |
| 9.10. Solubility in water | : Forms a white emulsion |
| 9.11. % Persistent foam | : Max. 20 ml after 1 min. |
| 9.12. PH | : 6-8 |

10. Stability and Reactivity

- 10.1. **Hazardous decomposition products:** Stable for at least two years below 50°C, and slowly decomposed in alkaline solution with no any hazardous products.

10.2. **Hazardous properties:** Slightly fire hazard when exposed to heat end flame.

11. Toxicological Information

Azoxystrobin:

Oral Acute oral LD50 for male and female rats and mice >5000 mg/kg.

Skin and eye Acute percutaneous LD50 for rats >2000 mg/kg.

Slight eye and skin irritation (rabbits).

Not a skin sensitiser (guinea pigs).

Inhalation LC50 for male rats 0.96, female rats 0.69 mg/kg.

NOEL 18 mg/kg b.w. daily.

ADI 0.1 mg/kg b.w. (EU); 0.18 mg/kg b.w. (USA)

Other Not oncogenic in rats or mice. No evidence of neurotoxicity, endocrine effects or teratogenicity.

Metalaxyl-M :

Oral Acute oral LD50 for rats 667 mg/kg.

Skin and eye Acute percutaneous LD50 for rats >2000 mg/kg. Not a skin irritant (rabbits); risk of serious damage to eyes (rabbits). Not a skin sensitiser (guinea pigs). **Inhalation LC50** (4 h) for rats >2290 mg/m³.

NOEL for rats 2.5, mice 35.7, dogs 8.0 mg/kg b.w. daily.

ADI 0.025 mg/kg b.w.

Other Not oncogenic, not mutagenic, not teratogenic.

12. Ecological Data

Azoxystrobin :

Birds Acute oral LD50 for mallard ducks and bobwhite quail >2000 mg/kg.

Sub-acute dietary LC50 (5 d) for bobwhite quail and mallard ducks >5200 mg/kg diet.

Fish LC50 (96 h) for rainbow trout 0.47, bluegill sunfish 1.1, carp 1.6, sheepshead minnow 0.66 mg/l. For degradate R234886, LC50 >150 mg/l.

Daphnia EC50 (48 h) 259 mg/l. EC50 for degradates: R234886 >180, R401553 >50, R402173 >50 mg/l.

Algae EC50 (120 h) for green algae 0.12 mg/l.

Other aquatic spp. LC50 for mysid shrimp 55 mg/l; EC50 for pacific oyster 1300 mg/l, Lemna gibba 3.2 mg/l.

Bees LD50 for honeybees >200 mg/bee.

Worms LC50 (14 d) for earthworms 283 mg/kg.

Other beneficial spp. Harmless to non-target organisms, including predatory mites and bugs, spiders, lacewings, hoverfly, ladybird, carabid beetle, parasitoid wasps and bees, under field conditions at field application rates (IOBC)

Metalaxyl-M :

Birds LD50 (14 d) for bobwhite quail 981-1419 mg/kg. LC50 (8 d) for bobwhite quail >5620 mg/kg. Fish LC50 (96 h) for rainbow trout >100 mg/l.

Daphnia LC50 (48 h) >100 mg/l.

Algae ErC50 (72 h) for *Scenedesmus subspicatus* 103 mg/l.

Other aquatic spp. EC50 (96 h) for Eastern oyster (*Crassostrea virginica*) 9.7 mg/l.

Bees LD50 (48 h, contact) 25 mg/bee.

Worms LC50 (14 d) for *Eisenia foetida* 830 mg/kg soil.

Other beneficial spp. EC formulation (480 g/l) harmless to *Poecilus cupreus* and *Orius insidiosus* (IOBC).

13. Disposal Considerations

13.1. **Disposal:** Residue and rinse water must be poured into a 30cm hole, 50m away from any water and covered with earth.

After use, empty and clean apparatus on site, prevent the product entering natural water, ditches or sewers.

13.2. **Disposal of packaging:** After use, empty packing must be punched and destroyed or incinerated.

14. Transport Information

14.1. **UN No.:** 3082

14.2. **Class:** 9

14.3. **Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

14.4. **Packing Group:** III

15. Regulatory Information

15.1. **Symbol (s) :** Warning

15.2. **R-Phrase :**

R20/21/22 : Harmful by inhalation, in contact with skin and if swallowed

R36/38 : Irritating to eyes and skin.

15.3 **S-Phrase :**

S2 : Keep out of reach of children.

S13 : Keep away from food, drink, and animal feeding stuffs .

S25 : Avoid contact with eyes.

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- | | |
|--------|---|
| S22 | : Don't breath dust. |
| S26 | : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |
| S37/39 | : Wear suitable gloves and eye/ face protection. |
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16. Other Information

- 6.1.1. **Recommended uses and restrictions:** The producer warrantees the quality of this product in the original closed packaging, and of its conformity with authority agreement for minimum 2 years.



利民化学有限责任公司

LIMIN CHEMICAL CO., LTD.

Address: Economic Development Zone, Xinyi, Jiangsu, 221400, China
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Material Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: Azoxystrobin 97% TC

Use: Fungicide

Chemical group : Strobilurin Fungicide

Supplier: LIMIN CHEMICAL CO., LTD

Add: Economic Development Zone, Xinyi, Jiangsu, China

2. HAZARDS IDENTIFICATION

Hazardous classification: (T) Toxic
(N) Dangerous for the environment

Label Elements:



R-phrases R23 - toxic by inhalation
R50 - Very toxic to aquatic organisms
R53 - May cause long-term adverse effects in aquatic environment
S-phrases S1/2, S22, S46, S60, S61

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical nature

Chemical Name	CAS-No.	Concentration
Azoxystrobin	131860-33-8	97%
Other ingredients (non-hazardous) to 100%	—	3%

4. FIRST AID MEASURES

If inhaled: Move to fresh air free from risk of further exposure. If the exposed person is not breathing call 120, then apply rescue breathing. Seek medical attention as soon as possible.

If on skin: Rinse area with copious amounts of water for at least 15 minutes. Call poison control center or doctor for treatment advice. Take off contaminated clothing and wash before reuse.

If in eyes: Flush with clean, lukewarm water raising upper and lower eyelids at low pressure for 15-minutes. Remove contact lenses, if present, after the first five minutes and continue to rinse the eyes. Seek medical attention if no relief.



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If swallowed: Wash out mouth with water provided person is conscious. Call a poison control center or doctor immediately for treatment advice.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media: A solid water stream may be inefficient.

Fire Fighting Instructions:

As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Protective Precautions, Protective Equipment and Emergency Procedures:

Avoid raising and breathing dust, and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

Environmental Precautions:

Take steps to avoid release into the environment, if safe to do so.

Methods and Material For Containment and Cleaning Up:

Transfer to a chemical waste container for disposal in accordance with local regulations.

7. HANDLING AND STORAGE

Handling:

Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.

Storage:

Keep container tightly closed. Store in accordance with information listed on the product insert.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal Protective Equipment

Eyes: Safety goggles

Clothing: Lab coat

Gloves: Compatible chemical-resistant gloves

Respiratory: NIOSH (National Institute for Occupational Safety and Health) approved respirator, as conditions warrant.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White to light brown crystalline solid

Odour: No characteristic odour

pH: PH=7-8 100% w/v at 25°C

Vapour pressure: 8.3×10^{-13} mmHg at 25°C



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Vapour density: 1.33 g/cm³ at 20°C

Boiling point: 581.3±50.0 °C at 760 mmHg

Melting point: 116.0 °C

Flash Point: 305.3 ±30.1 °C

Solubility: 6 mg/L in water (20 °C);

Low solubility in hexane 0.057g/L, n-octano 11.4g/L;

Moderate solubility in methanol 20g/L, toluene 55g/L, acetone 86g/L;

High solubility in ethyl acetate 130g/L, acetonitrile 340g/L, dichloromethane 400g/L.

10. STABILITY AND REACTIVITY

Chemical stability Stable under normal conditions of use.

Conditions to avoid No data available.

Incompatible materials Strong oxidizing agents

Hazardous decomposition or byproducts: Carbon dioxide, carbon monoxide, hydrogen chloride gas, nitrogen oxides

11. TOXICOLOGICAL INFORMATION

Oral toxicity LD₅₀ rat: > 5000 mg/kg

Dermal toxicity LD₅₀ rat: ≥2000 mg/kg

Inhalation toxicity LC₅₀ rat (4 hour): 0.69 mg/L

Skin irritation Slight skin irritation (rabbit)

Eye irritation Slight eye irritation (rabbit)

Sensitisation Not a skin sensitiser

Propiconazole is Investigated as an agricultural chemical. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

Azoxystrobin RTECS Number: CY1576780.

12. ECOLOGICAL INFORMATION

This product is toxic to fish and aquatic organisms. It is not toxic to birds or bees. DO NOT contaminate streams, rivers or waterways with the product or used containers.

Fish toxicity: LC₅₀ (96 h) Bluegill 1100 ai ug /L

LC₅₀ (96 h) rainbow trout 470 ai ug /L

LC₅₀ (96 h) sheepshead minnow 671 ai ug /L

Bee toxicity: Oral LD₅₀ > 25 mg/L

Contact LD₅₀ > 200 mg/L

Bird toxicity: Acute oral LD₅₀ Japanese quail = 2962 mg/kg

Acute oral LD₅₀ Bobwhite quail > 2000 mg/kg

Acute oral LD₅₀ Mallard duck > 250 mg/kg

13. DISPOSAL CONSIDERATIONS

Pesticide disposal: The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.



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Container Disposal: Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. TRANSPORT INFORMATION

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Toxic solid, organic, n.o.s. (Azoxystrobin)

UN Number: 2811

Packing Group: III

Hazard Class: 6.1 Poison

14.2 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Toxic solid, organic, n.o.s. (Azoxystrobin)

UN Number: 2811

Packing Group: III

Hazard Class: 6.1 Poison

IATA Classification: 6.1

14.3 Additional Transport Information:

Transport in accordance with local, state, and federal regulations.

When sold in quantities of less than or equal to 1 ml, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

15. REGULATORY INFORMATION

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components	S.302(EHS)	S. 304 RQ	S.313(TRI)
131860-33-8	Azoxystrobin	No	No	Yes-Cat. N106

CAS #	Hazardous Components	Other US EPA or State Lists
131860-33-8	Azoxystrobin	CAA HAP,ODC: Yes-Cat; CWA NPDES: No; TSCA: No; CA PROP.65: No

16. OTHER INFORMATION

MSDS Creation Date: 8/11/2020

The data in this Material Safety Data Sheet relates only to the specific material designated herein and are based upon data believed to be correct.

Prepared by: LIMIN CHEMICAL CO., LTD



SAFETY DATA SHEETS

Metalaxyl-M 92%TC MIN

No.: 111013

Version: 4

Date: April, 2024

SECTION 1: IDENTIFICATION

Product identifier	Metalaxyl-M 92%TC MIN
Other means of identification	N/A
Recommended use	Fungicide
Supplier's details	Sichuan Heben Crop Protection Co., Ltd.
Address	No.30, Hexi Road, Hexi Town, Jialing District, Nanchong City, Sichuan Province, China
Telephone No	+86-577-88797730; +86-577-88797721
Fax No.	+86-577-88797739
E-mail	hb-p@hb-p.com
Emergency phone number	+86-532-83889090

SECTION 2: HAZARDS IDENTIFICATION

2.1 GHS classification of the substance or mixture (Ninth Revised Edition, 2021)

Physical hazards	None	None
Health hazards	Acute toxicity, oral, Category 4	H302
	Acute toxicity, dermal, Category 5	H313
	Acute toxicity, inhalation, Category 4	H332
	Serious eye damage/eye irritation, Category 1	H318
Environmental hazards	Acute aquatic toxicity, Category 3	H402
	Chronic aquatic toxicity, Category 4	H413

2.2 GHS label elements, including precautionary statements

Hazard pictograms



Signal word

Danger

Hazard statement (s)

H302

Harmful if swallowed

H313

May be harmful in contact with skin



H318	Cause serious eye damage
H332	Harmful if inhaled
H402	Harmful to aquatic life
H413	May cause long lasting harmful effects to aquatic life

Prevention statements

P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P264	Wash hands and face thoroughly after handling.
P265	Do not touch eyes.
P270	Do not eat, drink or smoke when using this product
P271	Use only outdoors or in a well-ventilated area
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection

Response statements

P301+P317	IF SWALLOWED: Get medical help.
P302+P317	IF ON SKIN: Get medical help.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P354+P338	IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P330	Rinse mouth.

Storage statements

P405	Store locked up.
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Disposal statements

P501	Dispose of contents/container in accordance with local regulations.
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2.3 Other hazards which do not result in classification

No other hazards known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Common name, synonyms	Chemical identity	CAS number and other unique identifiers	The concentrations of the ingredients
Metalaxyl-M	methyl N-(methoxyacetyl)-N-(2,6-xylyl)-D-alaninate (IUPAC name)	CAS No.: 70630-17-0; EC No.: 615-135-6	≥ 92%
S-isomer	methyl N-(methoxyacetyl)-N	/	≤4%



	-(2,6-xylyl)-L-alaninate (IUPAC name)		
Other non-hazardous ingredients			< 4%

SECTION 4: FIRST-AID MEASURES

4.1 Description of necessary first-aid measures

Skin: Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.

Eyes: For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport.

Inhalation: Move affect person to fresh air and keep at rest until recovered. If not breathing, give artificial respiration and get to a doctor.

Ingestion: Do not induce vomiting if the person is conscious. Give glass of water. Get to a doctor.

4.2 Most important symptoms/effects, acute and delayed

No such information is reported.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

No antidote, no special treatment, please treat it symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media

Use dry chemical, carbon dioxide, water spray, and foam.

5.2 Specific hazards arising from the chemical

May produce toxic fumes of nitrogen oxides, carbon dioxide and carbon monoxide if burn.

5.3 Special protective equipment for firefighters

Should wear full-protective clothing, and self-contained breathing apparatus. Fight fire from safe distance and protected location. Avoid (reject) fire-fighting water to enter environment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear full protective clothing and self-contained breathing apparatus. Control the spill at its source. Dike area and absorb small spills with materials such as sand, sawdust, Zorb all, or dirt and place in suitable containers for recovery or disposal. Remove all contaminated clothing promptly and wash exposed body areas thoroughly with soap and water immediately after handling. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered.

6.2 Environmental precautions

Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems of any body of water. Keep spills and cleaning run-off out of municipal sewers and open bodies of water.

6.3 Methods and materials for containment and cleaning up



If there is contamination of crops or waterways, advise emergency services or state department of agriculture.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid direct or prolonged contact with skin and eyes. Do not breathe dust. Do not ingest. It is recommended that wear full protective clothing including face mask, face shield and gauntlets, all skin areas should be covered, when handling this product.

Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. And take a bath or wash hands completely with soap after use. Remove contaminated clothing and protective equipment before entering eating areas.

Prevents handling of incompatible substances or mixtures when use this product. Minimize the release of this product to the environment when handling this product.

7.2 Conditions for safe storage, including any incompatibilities

Store the material in a well-ventilated, dry, cool, out of light and secure area, out of reach of children and domestic animals, and in sealed original containers. Do not store food, beverages or tobacco products in the storage area. Store this product away from the incompatible materials, explosive atmospheres, corrosive conditions, fire and heat, etc.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Contain no substances with occupational exposure limit values.

8.2 Appropriate engineering controls

Use only in an enclosed system. Use local exhaust ventilation. Safety shower. Use explosive dust handling controls.

8.3 Individual protection measures

Industrial hygiene: Remove and wash contaminated clothing promptly. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

Personal protective equipment

Respiratory protection:

Wear respirator with a particle filter mask (protection factor 20) conforming to European Norm EN149FFP3 or EN140P3 or equivalent.

Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.

Protective gloves: rubber gloves;

Eye protection: Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).



SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Transparent liquid
Color	Pale yellow to red brown
Odor	Weak odor
Melting point / freezing point	- 38.7 °C (glass transition temperature) (97.2% pure)
Boiling point or initial boiling point and boiling range	not determinable due to thermal decomposition
Flammability	Not flammable
Lower and upper explosion limit/ flammability limit	Not determined
Flash point	179°C (95.2% pure)
Auto-ignition temperature	auto-ignition temperature : 410°C (95.2% pure)
Decomposition temperature	270 °C
pH value	Not determined
Kinematic viscosity	Not determined
Solubility	In water 26 g/l (25 °C). In n-hexane 59 g/l; miscible with acetone, ethyl acetate, methanol, dichloromethane, toluene, n-octanol.
Partition coefficient n-octanol/water (log value)	$\log P_{O/W} = 1.71$ at 25°C (pH 7.6) (97.2% pure)
Vapour pressure	3.3×10^{-3} mPa (20°C) (97.2% pure)
Density and/or relative density	1.125 (20 °C)
Relative vapor density	Not determined
Particle characteristics	Not applicable

9.2 Other information

Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No reactivity under normal conditions.

10.2 Chemical stability

This product is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

This product does not react or polymerize, releasing excess pressure or heat, or creating other hazardous conditions.

10.4 Conditions to avoid

Avoid fire, feed, food and beds of water.



10.5 Incompatible materials

Not compatible with strong oxidizing agents.

10.6 Hazardous decomposition products

When involves in a fire, maybe release oxides of carbon and nitrogen and other toxic nitrogen compounds on combustion.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity	Acute oral LD ₅₀ for rats 667 mg/kg. (The e-pesticide manual (Thirteenth Edition) Version 3.0)
	Acute dermal LD ₅₀ for rats >2000 mg/kg. (The e-pesticide manual (Thirteenth Edition) Version 3.0)
	Inhalation LC ₅₀ (4 h) for rats >2290mg/m ³ . (The e-pesticide manual (Thirteenth Edition) Version 3.0)
Skin corrosion/irritation	Not a skin irritant (rabbits) (The e-pesticide manual (Thirteenth Edition) Version 3.0)
Serious eye damage/irritation	Risk of serious damage to eyes (rabbits) (The e-pesticide manual (Thirteenth Edition) Version 3.0)
Respiratory or skin sensitization	Not a skin sensitizer (Maximisation test) (The e-pesticide manual (Thirteenth Edition) Version 3.0)
Germ cell mutagenicity	No genotoxic potential (Data from EFSA Journal 2015;13(3):3999)
Carcinogenicity	Metalaxyl-M is unlikely to pose a risk to humans (EFSA Journal 2015;13(3):3999)
Reproductive toxicity	No reproductive effects or offspring's toxicity at parental toxic doses (↓bw gain, hepatomegaly and periportal fatty deposition) (Data from EFSA Journal 2015;13(3):3999)
STOT-single exposure	No available data.
STOT-repeated exposure	No available data.
Aspiration hazard	No available data.
Further information	No available data.



SECTION 12: ECOLOGICAL INFORMATION

12.1 Eco-toxicity

Birds	Acute oral LD ₅₀ (14 d) for bobwhite quail 981-1419 mg/kg. LC ₅₀ (8 d) for bobwhite quail >5620 mg/kg. (Data from EFSA Journal 2015;13(3):3999)
Fish	LC ₅₀ (96 h) rainbow trout >100mg./L.(Data from EFSA Journal 2015;13(3):3999)
Daphnia	LC ₅₀ (48 h) >100mg/L (Data from EFSA Journal 2015;13(3):3999)
Algae	EC ₅₀ (72h) for <i>Desmodesmus subspicatus</i> 36mg/L (Data from EFSA Journal 2015;13(3):3999)
Bees	Acute toxicity LD ₅₀ (48 h, contact) 25µg/bee. (Data from EFSA Journal 2015;13(3):3999)
Worms	LC ₅₀ (14 d) for earthworms 830mg a.i./kg (Data from EFSA Journal 2015;13(3):3999)

12.2 Persistence and degradability

In soil laboratory incubations under aerobic conditions in the dark, metalaxyl-M exhibited low to medium persistence, forming the major (>10% applied radioactivity (AR)) metabolite NOA409045 (max. 72 % AR) which exhibited low to high persistence. (Data from EFSA Journal 2015;13(3):3999)

12.3 Bio-accumulative potential

BCF = 15L/kg, low potential. K_{OW} logP = 1.71

12.4 Mobility in soil

Metalaxyl-M exhibited very high to low mobility in soil. (Data from EFSA Journal 2015;13(3):3999)

12.5 Other adverse effects

None

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Product

The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.



13.2 Contaminated packaging

Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: TRANSPORT INFORMATION

According to the criteria of chemical classification settled in 《UN Recommendations on the Transport of Dangerous Goods Model Regulations》 (Twentieth revised edition), this substance is not dangerous.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the product in question

WHO-classification: II (Moderately hazardous)

This product is not subject to any prohibitions or restrictions in China.

SECTION 16: OTHER INFORMATION

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the PRODUCT AS SUCH. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.