ZHEJIANG RAYFULL CHEMICALS CO., LTD

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MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

ZHEJIANG RAYFULL CHEMICALS CO., LTD
ADD: NO.52 PUCHANG ROAD, PUZHOU INDUSTRIAL PARK, LONGWAN DISTRICT, WENZHOU ZHEJIANG P.R. CHINA
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1. Identification of the substance/preparation and the company/undertaking

1.1. Identification of the substance or preparation

Trade name	:	Bifenthrin 100 g/L EC
Chemical description	:	Bifenthrin 100 g/L EC
Synonym	:	FMC 54800; (2-methyl[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate
CAS number	:	82657-04-3
EC Number	:	None

1.2. Use of the substance/preparation

Use : Insecticide

1.3. Company/undertaking identification

Company identification : RAYSTAR CROPPROTECTION PTY LTD
ADD: 19 RITZ ST VERMONT SOUTH VIC 313 AUSTRALIA
A.B.N. 90610946784

1.4. Emergency telephone

Emergency telephone : 114

2. Composition/Information on ingredients

2.1 Substance

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This product is a substance.

Substance name	Value(s)	CASRN / EC-No. / Index-No.	Classification (Dir.67/548)	Classification: REGULATION (EC) No 1272/2008	REACH No
Bifenthrin	≥100 g/L	CASRN 82657-04-3 EC-No. None Index-No. None	Hazard symbol(s): T, N R-phrase(s): 23/25-40-43-48/22-50/53	Carc.2 / H351 Acute Tox. 3 / H331 Acute Tox. 3 / H301 STOT RE 1 / H372 Skin Sens. 1 / H317 Aquatic. Acute 1 / H400 Aquatic Chronic 1 / H410	No data available

For the full text of the R phrases mentioned in this Section, see Section 16

For the full text of the H-Statements mentioned in this Section, see Section 16

3. Hazards Identification

3.1.Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP)

- Health hazards : Carcinogenicity- Category 2 (H351); Acute toxicity, oral - Category 3 (H301); Acute toxicity, inhalation - Category 3 (H331); Specific target organ toxicity (repeated exposure) - Category 1 (H372); Skin sensitisation, Category 1 (H317)
- Environmental hazards : Hazardous to the aquatic environmental-Acute hazard- Category 1 (H400)
  Hazardous to the aquatic environmental-Chronic hazard- Category 1 (H410)

Classification EC 67/548 or EC 1999/45

Symbol(s) : T - Toxic

R-code(s) : N - Dangerous for the environment

3.2. Label elements

Labelling according to Regulation EC 1272/2008 (CLP)

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Hazard pictograms	:	
• Hazards pictograms -code	:	GHSO6 -GHS09
• Signal words	:	Warning
• Hazard statements	:	H301: Toxic if swallowed. H317: May cause an allergic skin reaction. H331: Toxic if inhaled. H351: Suspected of causing cancer. H372: Causes damage to organs through prolonged or repeated exposure. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long lasting effects.
• Precautionary statements		
- Prevention	:	P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P260: Do not breathe dust/fume/gas/mist/vapors/spray. P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P264: Wash with plenty of water and soap thoroughly after handling. P270: Do no eat, drink or smoke when using this product. P271: Use only outdoors or in a well-ventilated area P272: Contaminated work clothing should not be allowed out of the workplace. P273: Avoid release to the environment. P280: Wear protective gloves, protective clothing, face protection, eye protection. P281: Use personal protective equipment as required.
- Response	:	P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302+P352: IF ON SKIN: Wash with plenty of water. P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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P308+P313: IF exposed or concerned: Get medical advice/attention.
P311: Call a POISON CENTER or doctor/...
P314: Get medical advice/attention if you feel unwell.
P321: Specific treatment (see ... on this label).
P330: Rinse mouth.
P333+P313: IF SKIN irritation or rash occurs: Get medical advice/attention.
P363: Wash contaminated clothing before reuse.
P391: Collect spillage.

- Storage : P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.

- Disposal : P501: Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

3.3. Other hazards

No data available.

4. First Aid Measures

4.1. Description of first aid measures

First aid

General advice : In every case of suspected poisoning contact a doctor or a Poisons Information Centre immediately.

Ingestion : Rinse mouth. Never give anything by mouth to an unconscious person. Do not induce vomiting unless told by physician. If vomiting occurs ensure patient can breathe. Get medical attention.

Skin contact : Remove contaminated clothing and shoes immediately, then wash with plenty of water. Clean contaminated clothing and shoes before re-use or discard if they cannot be thoroughly cleaned. If skin irritation develops, get medical attention.

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Eye contact	:	Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses. Get medical attention immediately.
Inhalation	:	Move person to fresh air. If person is not breathing, then give artificial respiration, keep patient warm and at rest.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms of excessive exposure by oral and inhalation routes include bleeding from the nose, tremors, and convulsions.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physician	:	This product is a pyrethroid. If large amounts have been ingested, the stomach and intestine should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and so should be avoided.

5. Fire-fighting measures

5.1. Extinguishing media

Extinguishing media	:	Foam, CO2 or dry chemical. Soft stream water fog if no alternatives. Contain all runoff.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards	:	: Slightly combustible. This material may support combustion at elevated temperatures.

5.3. Advice for fire-fighters

Special protective equipment for firefighters	:	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system. Remove container from danger zone and cool with water. Dispose of fire debris and

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contaminated extinguishing water in accordance with official regulations.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions : Avoid contact with the skin and the eyes. Ensure adequate ventilation. Take precautionary measures against static discharges.

6.2. Environmental precautions

Environmental precautions : Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

6.3. Methods and material for containment and cleaning up

After spillage and/or leakage : Absorb the spillage material with sand, dirt, clay or saw dust. If possible, collect pure material first. This may be re-usable. Scoop the contaminated soil next. Take enough soil to ensure all the material is included. This material should be disposed of at a suitable landfill. Personal protective equipment and clothing should be washed with soapy water before reuse. Dispose of waste as indicated in Section 13.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

7. Handling and storage

7.1. Handling

Handling : KEEP OUT OF REACH OF CHILDREN. Wear suitable personal

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Protective Equipment when handling and spraying. Avoid contact with skin and eyes. Avoid breathing dust/mist. Ensure adequate ventilation. While using do not eat drink or smoke. Wash thoroughly after handling. Empty containers may contain hazardous residues. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using toilet or applying cosmetics.

7.2. Storage

Storage : Do not store material near food, feed or drinking water. Store in a cool, dry, well ventilated, locked Area away from direct sunlight. Containers must be properly sealed. Store so that unauthorized persons do not have access.

7.3. Specific use(s)

See exposure scenario(s) in the attachment to this material safety data sheet.

8. Exposure controls personal protection

8.1. Exposure limit values

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

8.2. Exposure controls

Industrial hygiene : Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

-Respiratory protection : For splash, mist or spray exposure wear, as a minimum, a properly fitted half-face or full-face air- purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

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-Skin protection	:	Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.
-Hand protection	:	Protective gloves.
-Eye protection	:	Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.
-Environmental exposure controls	:	Prevent product from entering drains. Do not contaminate surface water. Avoid subsoil penetration

9. Physical And Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance		
Physical state	:	Transparent liquid
Colour	:	Light yellow
Odor	:	Characteristic solvent odour
pH	:	4.0-7.0
Molecular weight	:	422.88
Melting point	:	No specific data. Liquid at normal temperature.
Flash point	:	>61℃
Partition Coefficient (log Pow)	:	6.6 (at pH 7, 20℃) (for Bifenthrin)
Solubility	:	Product emulsifies in water
Moisture	:	≤0.6%
Emulsion stability	:	Qualified

10. Stability And Reactivity

10.1. Conditions to avoid

Conditions to avoid	:	Do not store for prolonged periods in direct sunlight. Store away from sources of ignition. Avoid alkaline materials.

10.2. Materials to avoid

Materials to avoid	:	Incompatible with strong acids, strong bases, strong oxidising agents.

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10.3. Hazardous decomposition products

Hazardous decomposition products	:	On burning will emit toxic fumes of carbon monoxide, carbon dioxide, hydrogen chloride, chlorine, fluorine and hydrogen fluoride etc.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Acute oral LD_{50} for rats	:	300-2000 mg/kg
Acute dermal LD_{50} for rats	:	>4000 mg/kg
Inhalation LD_{50} for rats	:	>5.25 mg/L
Skin irritation	:	Non-irritating to rabbits (technical-grade active ingredient)
Eye irritation	:	Non-irritating to rabbits (technical-grade active ingredient)
Skin sensitization	:	No skin sensitization (guinea pigs) (technical-grade active ingredient)
Chronic toxicity	:	No data available on this formulation. In studies with laboratory animals, Bifenthrin Technical did not cause teratogenicity or reproductive toxicity. Tremors were associated with repeated exposure of dogs, rats, rabbits and mice to Bifenthrin. The overall results from a battery of genotoxicity studies indicate that Bifenthrin is not considered to be genotoxic. Ames test results were negative. Kidney and liver damage is possible from over-exposure to liquid hydrocarbons over long periods. Additionally, some reversible haematopoietic depression has been observed in animals with extended exposure to liquid hydrocarbons.
Reproductive effects	:	The dose at which no toxic effect of Bifenthrin is observed on the mother (maternal toxicity NOEL) is 1mg/kg/day for rats and 2.67mg/kg/day for rabbits. At higher doses, test animals had tremors. The dose at which no toxic effect is observed on development (developmental toxicity NOEL) is 1mg/kg/day for rats and is greater than 8mg/kg/day for rabbits.

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Teratogenic effects	:	Bifenthrin does not demonstrate any teratogenic effects at the highest levels tested (100 ppm, approximately 5.5 mg/kg/day) in a two-generational study in rats.
Mutagenic effects	:	Bifenthrin gave negative responses in various studies of genotoxicity in vitro and in vivo except for a weakly positive response in vitro but not in vivo in the assay for UDS and at low concentrations in a test in mouse lymphoma cells. That concluded that bifenthrin is unlikely to be genotoxic.
Carcinogenic effects	:	There was no evidence of cancer in a 2-year study of rats who ate as much as 10mg/kg/day of Bifenthrin. However, an 87 week feeding study of mice with doses of 7, 29, 71 and 86mg/kg showed a significantly higher, dose related trend of increased tumour incidence in the male urinary bladder. The incidence was significantly increased at 86mg/kg/day. Also, females had higher incidences of lung cancer than the controls at doses of 7mg/kg and higher. The EPA has classified Bifenthrin as a class C carcinogen, a possible human carcinogen.
Organ toxicity	:	Pyrethroids are poisons that affect the electrical impulses in nerves, over-stimulating nerve cells causing tremors and eventually causing paralysis.

12. Ecological information

12.1. Ecotoxicity

Effect on birds	:	Acute LD50 for Bobwhite quail is 1800 mg/kg (technical-grade active ingredient)
Effects on fish	:	Acute 96 hour LC50 for Rainbow trout is 0.00026 mg/L (technical-grade active ingredient)
Effects on aquatic invertebrates:	:	Acute 48 hour EC50 for Daphnia magna is 0.00011 mg/L (technical-grade active ingredient)
Effects on aquatic plants	:	Acute 72 hour EC50 for Scenedemus subspicatus is 0.822 mg/L (technical-grade active ingredient)

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12.2. Mobility

Mobility	:	Bifenthrin has a high affinity for soil particles and low solubility in water. Bifenthrin has low mobility in soil and there are no concerns about leaching or groundwater contamination.

12.3. Persistence and degradability

Persistence and degradability	:	Moderately persistent. Does not readily hydrolyze. Not readily biodegradable.

12.4. Bioaccumulative potential

Bioaccumulative potential	:	The substance has a potential for bioconcentration.

12.5. Other adverse effects

No information available.

13. Disposal Considerations

13.1. Waste treatment methods

Waste from Residues / Unused Products	:	Dispose of in accordance with local regulations.
Contaminated packaging	:	Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.
EWC waste disposal No	:	A waste code in accordance with the European waste catalog (EWC) cannot be specified, due to dependence on the usage. The waste code in accordance with the European waste catalog (EWC) must be specified in cooperation with disposal agency/manufacturer/ authorities.
OTHER INFORMATION	:	Recycle following cleaning or dispose of at an authorised site.

14. Transport Information

ADR/RID

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-UN No.	:	3352
-Proper shipping name	:	PYRETHROID PESTICIDE, LIQUID, TOXIC
-Packing group	:	III
-Class	:	6.1
-Marine pollutant	:	YES
-Other applicable information:	:	None known

IMDG/IMO

-UN No.	:	3352
-Proper shipping name	:	PYRETHROID PESTICIDE, LIQUID, TOXIC
-Packing group	:	III
-Class	:	6.1
-Marine pollutant	:	YES
-Other applicable information	:	None known

IATA/ICAO

-UN No.	:	3352
-Proper shipping name	:	PYRETHROID PESTICIDE, LIQUID, TOXIC
-Packing group	:	III
-Class	:	6.1
-Marine pollutant	:	YES
-Other applicable information	:	None known

15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Ensure all national/ local regulations were observed.

15.2.Chemical Safety Assessment

A chemical safety assessment has not been carried out.

16. Other Information

Full text of R-phrases referred to under sections 2 and 3

R23/25: Toxic by inhalation and if swallowed.

R40: Limited evidence of carcinogenic effect. Category 3

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R43: May cause sensitization by skin contact.

R48/22: Danger of serious damage to health by prolonged exposure

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of H-Statements referred to under sections 2 and 3

H301: Toxic if swallowed.

H317: May cause an allergic skin reaction.

H331: Toxic if inhaled.

H351: Suspected of causing cancer.

H372: Causes damage to organs through prolonged or repeated exposure.

H400: Very toxic to aquatic life.

H410: Very toxic to aquatic life with long lasting effects.

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 produce 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.