SECTION 1: Identification

1.1 GHS Product identifier

Product name Pyrethrins and Pyrethroids

1.2 Other means of identification

Product number -

Other names 3-(2-propenyl)-2-methyl-4-oxo-2-cyclopentenyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate;2-methyl-4-oxo-3-(2-propenyl)cyclopent-2-en-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropane carboxylate;

1.3 Recommended use of the chemical and restrictions on use

Identified uses Insecticide

Uses advised against no data available

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Acute toxicity - Category 4, Oral
Acute toxicity - Category 4, Dermal
Acute toxicity - Category 4, Inhalation
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word Warning

Hazard statement(s)
H302 Harmful if swallowed
H312 Harmful in contact with skin
H332 Harmful if inhaled
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

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

Response
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P317 Get medical help.
P321 Specific treatment (see ... on this label).
P362+P364 Take off contaminated clothing and wash it before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P391 Collect spillage.

Storage none

Disposal P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Pyrethrins and Pyrethroids	Pyrethrins and Pyrethroids	8003-34-7	232-319-8	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Give a slurry of activated charcoal in water to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Exposure Routes: inhalation, ingestion, skin and/or eye contact Symptoms: Erythema, dermatitis, papules, pruritus, rhinorrhea (discharge of thin mucus); sneezing; asthma Target Organs: respiratory system, skin, central nervous system (NIOSH, 2016)

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

Antihistamines are effective in controlling most allergic reactions. Severe asthmatic reactions, particularly in predisposed persons, may require administration of inhaled B2-agonists and/or systemic corticosteroids. Inhalation exposure should be carefully avoided in the future. Pyrethrum and pyrethrins

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Fire-fighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive-pressure mode.

5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Some may burn but none ignite readily. Containers may explode when heated. Some may be transported hot. For UN3508, be aware of possible short circuiting as this product is transported in a charged state. (ERG, 2016)

5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Personal protection: filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

If pyrethrum is spilled, the following steps should be taken: 1) Ventilate area of spill. 2) For small quantities, sweep onto paper or other suitable material, place in an appropriate container and burn in a safe place (such as a fume hood). Large quantities may be reclaimed; however, if this is not practical, dissolve in a flammable solvent (such as alcohol) and atomize in a suitable combustion chamber.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. NO contact with oxidizing agents. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Separated from strong oxidants and food and feedstuffs. Well closed. Provision to contain effluent from fire extinguishing.Pyrethrins with piperonyl butoxide topical preparations should be stored in well-closed containers at a temperature less than 40 deg C, preferably between 15-30 deg C. Pyrethrins

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 5 mg/m3, as TWA; A4 (not classifiable as a human carcinogen).MAK: sensitization of skin (SH).EU-OEL: 1 mg/m3 as TWA

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection.

Skin protection

Protective clothing.

Respiratory protection

Use ventilation (not if powder), local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Pyrethrins, [solid] is a colorless to white liquids (or tan dusts). Primarily a threat to the environment. Immediate steps should be taken to limit spread to the environment. Easily penetrate the soil, contaminate groundwater or nearby waterways. Toxic by inhalation, skin absorption and/or ingestion. Used as pesticide. Practically insoluble in water.
Colour	Refined extract is pale yellow mobile oil; unrefined extract is a dark greenish brown viscous liquid; powder (ground flowers) is a tan color.
Odour	Characteristic odor of carrier
Melting point/freezing point	90-95 Â°C(lit.)
Boiling point or initial boiling point and boiling range	170ï½ž200
Flammability	Class IIIA Combustible Liquid: Fl.P. at or above 140Â°F and below 200Â°F.
Lower and upper explosion limit/flammability limit	no data available
Flash point	75ÂºC
Auto-ignition temperature	no data available
Decomposition temperature	170Â°C at 0.01 kPa
pH	no data available
Kinematic viscosity	no data available
Solubility	Insoluble (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow = 6.15 (est)
Vapour pressure	Low (NIOSH, 2016)
Density and/or relative density	1.04g/cm3
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on heating. This produces smoke and irritating fumes. Reacts with strong oxidants. This generates fire and explosion hazard.

10.2 Chemical stability

Pyrethrums are highly unstable in the presence of light, moisture, and air. Whole flowers decompose more slowly than ground flowers or dust. Stored powders lose about 20% of their potency in one year. The potency of the pyrethrums can best be preserved in sealed, lightproof containers kept at lower temperatures.

10.3 Possibility of hazardous reactions

Combustible when exposed to heat or flame.PYRETHRINS decompose rapidly in base; may generate heat with caustic solutions. May also react with acids to liberate heat. Generate flammable hydrogen with alkali metals and hydrides.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible with lime and ordinary soaps because acids & alkalies speed up processes of hydrolysis. Pyrethrins

10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 584 to 900 mg/kg (irrespective of grade or solvent)
- Inhalation: LC50 Rat inhalation 3.4 mg/l/4 hr Pyrethrins
- Dermal: LD50 Rat percutaneous greater than 1500 mg/kg

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Cancer Classification: Suggestive Evidence of Carcinogenicity, but Not Sufficient to Assess Human Carcinogenic Potential Pyrethrins

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the nervous system.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation may cause asthma.

Aspiration hazard

Evaporation at 20Â°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50; Species: Oncorhynchus mykiss (Rainbow Trout) length 33 mm (30-38 mm), weight 0.3 g (0.2-0.4 g); Conditions: freshwater, static, 13 deg C, pH 7.1, alkalinity 35 mg/L CaCO3; Concentration: 56 ug/L for 24 hr (95% confidence interval: 49-64 ug/L) /24.6% pyrethrum formulation
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water Flea) age < or =24 hr; Conditions: freshwater, flow through; Concentration: 11.6 ug/L for 48 hr (95% confidence interval: 9.6-14.2 ug/L); Effect: intoxication, immobilization /57.49% purity
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Pyrethrum is a mixture of pyrethrin compounds and specific biodegradation data are not available(SRC). However, the pyrethrin class of insecticides is degraded readily by ambient microorganisms; therefore, pyrethrum is expected to biodegrade readily(1,2).

12.3 Bioaccumulative potential

An estimated BCF of 290 was calculated in fish for pyrethrum(SRC), using an estimated log Kow of 6.15(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is high(SRC).

12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of pyrethrum can be estimated to be 10,000(SRC). According to a classification scheme(2), this estimated Koc value suggests that pyrethrum is expected to be immobile in soil.

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

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.

Contaminated packaging

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.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN2810 (For reference only, please check.) IMDG: UN2810 (For reference only, please check.) IATA: UN2810 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S. (For reference only, please check.) IMDG: TOXIC LIQUID, ORGANIC, N.O.S. (For reference only, please check.) IATA: TOXIC LIQUID, ORGANIC, N.O.S. (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.) IMDG: 6.1 (For reference only, please check.) IATA: 6.1 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: I (For reference only, please check.) IMDG: I (For reference only, please check.) IATA: I (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: Yes IMDG: Yes IATA: Yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Pyrethrins and Pyrethroids	Pyrethrins and Pyrethroids	8003-34-7	232-319-8
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Not Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
Revision Date	July 15, 2019

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Pyrethrum is a mixture of pyrethrin I and II, cinerin I and II, and jasmolin I and II.Carrier solvents used in commercial formulations may change physical and toxicological properties.Do NOT take working clothes home.Anyone who has shown symptoms of asthma due to this substance should avoid all further contact.The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort.Rest and medical observation are therefore essential.Immediate administration of an appropriate inhalation therapy by a doctor or a person authorized by him/her, should be considered.