Material Safety Data Sheet

Tetramethrin Technical Grade

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IENTIFICATION

Chemical product name: Tetramethrin Technical Grade

Common chemical name:
cyclohex-1-ene-1,2-dicarboximidomethyl(1RS)-cis-trans-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropanecarboxylate (IUPAC)
tetramethrin (ISO 1750 - published)
Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methyl-1-propenyl)-, (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)methyl ester (CA INDEX NAME, 9CI)

Company information: Choice Chemicals Ltd.
Centre of City, No.249 Wuyi Road, Furong District,
Changsha,Hunan 410011,P.R.China
Tel: 0086 731 89856736
Fax: 0086 73189878447
E-mail: info@choice-chem.com

24 hr Emergency number: 0086 13298652316

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

According to Directive 67/548/EEC and all subsequent amendments, the substance tetramethrin is classified as follows:
N, Dangerous for the environment; R50/53.
The substance is not classified as hazardous to man, whereas it may cause hazards to various aquatic species.

The stabilizer, cited in Heading 3, is classified as dangerous (Xn; R20/21/22 - Xi; R36/37/38), but is present in a concentration which does not change the toxicological profile of the substance, as can be verified when applying the Dir. 1999/45/EC and from experimental data.

The information shown on the label is reported in Heading 15.

SECTION 3 - HAZARDS IDENTIFICATION

The commercial product “Tetramethrin Technical Grade” contains 92% or more of the substance tetramethrin and a stabilizer having the
following characteristics:

Chemical name	CAS No.	EC No.	Symbols of danger	Risk phrases	Concentration
Butylated Hydroxytoluene	128-37-0	204-881-4	Xn, Xi	R20/21/22, R36/37/38	2.0 %

SECTION 4 - HAZARDS IDENTIFICATION

Inhalation: Move affected person from contaminated area to fresh air. If the affected person is notbreathing, provide artificial respiration. In the case of laboured breathing, provide oxygen and obtain medical aid.

Skin contact: Remove contaminated clothing and wash affected areas with plenty of water and soap. Contact a physician if irritation occurs.

Eye contact: Remove contact lenses, if present. Flush eyes with plenty of water for 15 minutes. Try to open the eyelids. It is advisable to contact a physician if irritation persists.

Ingestion: Contact a poison control centre or a physician immediately. Administer the injured person 1 or 2 glasses of water, if conscious. Vomiting may be induced. Do not administer anything to unconscious people.

SECTION 5 - FIRE FIGHTING MEASURES

Suitable extinguishing media: Foam, CO2, chemical powders, water mist.

Unsuitable extinguishing media: Jets of water.

Special exposure hazards in a fire: As for all organic materials, combustion may lead to formation of hazardous oxides of carbon, nitrogen and other toxic fumes.

Special protective equipment for fire-fighters: Wear a self-contained respiratory apparatus; wear protective clothing in order to avoid contact with the skin and the eye.

Other instructions: Cool fire-exposed containers with water mist and avoid environmental contamination with extinguishing water.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions: Former edition date: January 1st, 2006
Environmental precautions: Wear suitable clothing as reported in Heading 8.
Avoid soil and water contamination. In the case of environmental contamination, inform the authorities.
Methods for cleaning up: Soak up with sand or other absorbent material; collect thoroughly

into suitable containers.
Wash the contaminated area with a soapy solution; collect waste waters for treatment.

SECTION 7 - HANDING AND STORAGE

7.1 Handling:

Handle only when suitable ventilation is available. Avoid contact with eyes, skin and clothing. Avoid ingestion or inhalation. Wash hands and exposed skin after work. Do not eat, drink or smoke during use.

7.2 Storage

Requirements of storage rooms: The product is not affected by the variation of temperature normally reached in awarehouse owing to seasonality. However, it should be stored in a closed, dry and well-ventilated area.
Electrical equipment in warehouses or formulation departments should conform to the local norms for combustible products.

Storage conditions: Keep away from food, drinks or animal feedingstuffs. Protect from light, heat and naked flames.
The substance is stable under normal atmospheric conditions and has a shelf life of minimum 3 years from manufacturing, if properly packed and stored. Storage in closed containers is recommended, preferably in those adopted by the supplier (i.e. polyethylene bags in UN approved epoxy-lined steel drums or cardboard boxes).Do not stack palletised drums in more than 4 vertical layers.

Packaging material to be avoided: Unlined iron and other metals (copper, brass, bronze).

Recommended packaging material: Plastics (in particular polyethylene, polypropylene); dark glass; aluminium; coated steel
(epoxy-phenolic resins); cardboard.

7.3 Specific uses:

The substance is not intended for end-users, but to the chemical industry only.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL, PROTECTION

8.1 Exposure limit values:

No specific limit value (i.e. STEL, TWA, etc.) has been officially established for the substance.
A calculated value, with a safety factor of 100, is the following:
AOEL (Acceptable Operator Exposure Level): 0.5 mg/kg bw/day
A recommended value, accepted from Health and Safety Executive (HSE/UK, 1995), is the

following: AOEL (Acceptable Operator Exposure Level): 5 mg/m3 air
[ISO / 8 hour TWA (Time Weighted Average) reference period]

8.2 Exposure controls

8.2.1 Occupational exposure controls: Appropriate equipment should be used. In particular, a safety eyebath should be available at the workplace as well as localised ventilation systems. These should be designed for maintaining the eventual concentration of product in the air below the limit established by the local norms.

(a) Respiratory protection: If fixed ventilation systems are not available, a mask with filter for organic vapours/particles should be worn during use (it is advisable to adopt devices complying with the EN 14387:2004 and EN 149:2001 norms).

(b) Hand protection: Suitable rubber gloves (nitrile, vinyl or neoprene) should be worn during use; it is advisable to adopt devices complying with the EN 374-1,2,3:2003 norms (recommended protection factor 4). Avoid getting gloves soaked and replace if contaminated.

(c) Eye protection: Safety glasses or goggles should be worn during use (it is advisable to adopt devices complying with the EN 166:2001 norm).

(d) Skin protection: Wear suitable clothing; it is advisable to adopt devices complying with the EN 340:2003 norm. Regarding rubber boots and aprons, it is possible to refer to the EN ISO 20345:2004 and EN 14605:2005 norms respectively. Avoid getting boots soaked; replace contaminated clothing.

8.2.2 Environmental exposure controls:Dusts should be conveyed to suitable scrubbing systems.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Appearance; odour: White to ivory solid granules or crystalline powder; slight phenolic odour.

9.2 Important information

pH: The mean pH of 1% aqueous dispersions is about 6.9 at 20 °C.

Boiling point/boiling range: No boiling point was observed up to 400 °C. The decomposition of the substance was observed at 350 °C, before boiling occurred.

Flash point: Study is technically impossible since the substance is a solid.

Flammability (solid, gas): Not flammable.

Explosive or Oxidising properties: Non-explosive; non-oxidising.

Vapour pressure: < 2.7 x 10-7 hPa (25 °C)

Relative density: 1.18 (22 °C)

Solubility in water: 0.25 mg/L (25 °C)

Solubility in organic solvents: Soluble in all common organic solvents (n-hexane, methanol, acetone, ethanol, n-octanol), including mineral oils.

Partition coefficient n - octanol/water: Log Pow > 4.09

9.3 Other information

Melting point/melting range: 72-74 °C

Auto-ignition temperature: No significant self-ignition phenomena were noted before melting.

SECTION 10 - STABILITY AND REACTIVITY

10.1 Conditions to avoid: The substance is not sensitive to shock, moisture, pressure or temperature. Sources of ignition should however be avoided. Temperatures over 60 °C may cause physical state of the product to change. Do not expose to light for avoiding loss of concentration of the substance.

10.2 Materials to avoid: The substance degrades when in contact with strong alkalis and acids, without generating hazardous products.

10.3 Hazardous decomposition products: Combustion is the only reaction that may lead to hazardous decomposition products (i.e. oxides of carbon, nitrogen and other toxic fumes).

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute Oral Toxicity:	LD50 (rat): > 2000 mg/kg bw
Acute Dermal Toxicity:	LD50 (rat): > 2000 mg/kg bw
Acute Inhalatory Toxicity:	LC50 (rat): > 5.63 mg/L air (4 h)
Corrosion:	Non-corrosive.
Eye and Dermal Irritation:	Non-irritating.
Skin sensitisation:	Non-sensitising (Buehler method).
Long-term toxicity:	Non-carcinogenic, non-mutagenic, non-teratogenic, non-toxic to reproduction.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Acute toxicity to fish:	LC50 (Brachydanio rerio): 33 µg/L (96 h)
Acute toxicity to aquatic invertebrates:	EC50 (Daphnia magna): 0.47 mg/L (48 h)
Toxicity to algae:	EbC50 (Scenedesmus subspicatus): > 1.36 mg/L (72 h)
Acute toxicity to birds:	LD50 (Colinus virginianus): > 2510 mg/kg bw
Acute toxicity to beneficial insects:	The substance is toxic to bees.
Effects on microbiological activity in sewage treatment plants:	No significant inhibitory effect (< 15%) on microbiological activity occurs at concentrations up to and including 1000 mg/L.

12.2 Mobility

Surface tension: 55.3 mN/m at 20 °C for saturated aqueous solution.

Adsorption/desorption on soil: The values of the log Koc (3.3 and 3.4) indicate that the substance is immobile and remains preferably in soil.

12.3 Persistence and degradability

Biodegradability: The substance was found to be moderately biodegradable since the pass levels for ready biodegradability were not reached. Degradation up to 24% occurs after 28 days incubation.

Hydrolysis; photolysis: The substance degrades rapidly in water, particularly in neutral and alkaline conditions. Degradation is about 34% after 120 h at pH 4 (50 °C). Rapid degradation to less toxic products occurs when exposed to sunlight. When Tetramethrin was exposed to artificial sunlight for 28 days, degradation up to 18% occurred.

12.4 Bioaccumulative potential

Bioconcentration: BCF (Koc = 8.900): 20. This estimated value suggests that the potential for bioconcentration in aquatic organisms is low.

12.5 Results of PBT assessment Not available.

12.6 Other adverse effects None.

SECTION 13 - DISPOSAL CONSIDERATIONS

Product: Product wastes belong to class H14 (eco-toxic wastes) and should be disposed of in accordance with the relevant European norms. Incineration is suggested.

Empty packaging: Empty containers are considered wastes of the same class of the contents and should be disposed of in accordance with the relevant European norms.

SECTION 14 - TRANSPORT INFORMATION

Transport within user's premises:Normal precautions for stable and non-reactive products should be adopted.

Transport outside user's premises (identification, classification, packaging group)

Land transport: UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tetramethrin), 9, III.

Kemler Code: 90.

Sea transport: UN 3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

(Tetramethrin), class 9, PG III, MARINE POLLUTANT.

Air transport: Not scheduled.

SECTION 15 - REGULATORY INFORMATION

Classification: N; R50/53.
Health, safety and environmental information shown on the label (self-classification)
Warning Symbols: N: Dangerous for the environment.
Risk phrases: R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety advice: S60: This material and its container must be disposed of as hazardous waste.
S61: Avoid release to the environment. Refer to special instructions/safety data sheets.

SECTION 16 - OTHER INFORMATION

Disclaimer: Choice Chemicals Ltd.. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.
CHOICE CHEMICALS LTD. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, CHOICE CHEMICALS LTD. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.