SECTION 1: Identification

1.1 GHS Product identifier

Product name Methyl 3-[(dimethoxyphosphinyl)oxy]isocrotonate

1.2 Other means of identification

Product number -
Other names dimethyl 2-carbomethoxy-1-methylvinyl phosphate;trans-Mevinphos;3-dimethoxyphosphoryloxy-trans-crotonic acid methyl ester

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 2, Oral
Acute toxicity - Category 2, Dermal
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger
Hazard statement(s)
H300 Fatal if swallowed
H310 Fatal in contact with skin
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.
P262 Do not get in eyes, on skin, or on clothing.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P273 Avoid release to the environment.

Response
P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage P405 Store locked up.
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
Methyl 3-[(dimethoxyphosphinyl)oxy]isocrotonate	Methyl 3-[(dimethoxyphosphinyl)oxy]isocrotonate	338-45-4	206-417-6	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer immediately for medical attention. See Notes.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Wear protective gloves when administering first aid. Refer immediately for medical attention.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible).

Following ingestion

Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer immediately for medical attention. See Notes.

4.2 Most important symptoms/effects, acute and delayed

This material is super toxic; the probable oral lethal dose for humans is less than 5 mg/kg, or a taste (less than 7 drops) for a 150-lb. person. It has direct and immediate effects whether it is swallowed, inhaled, or absorbed through the skin. (EPA, 1998)

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

Treatment is the same as that for poisoning by other organic phosphorus cmpd ... The beneficial effects of oximes in people poisoned by mevinphos have been noted in several cases ... but not in all ... The importnace of thorough bathing is emphasized by a case in which continuing illness suggested continuing dermal absorption.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

If material is on fire or involved in a fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities ofwater. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide. keep run-off water out of sewers and water sources.

5.2 Specific hazards arising from the chemical

Fire may produce irritating or poisonous gases. Runoff from fire control may give off poisonous gases and also cause pollution. When heated to decomposition, it emits toxic fumes of phosphorus oxides. Avoid strong oxidizers. Avoid temperatures above 77-86F, sources of heat, fire, free flames or spark-generating equipment. (EPA, 1998)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours.Avoid contacting with skin and eye. Use personal protective equipment.Wear chemical impermeable gloves. Ensure adequate ventilation.Remove all sources of ignition. Evacuate personnel to safe areas.Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. Collect leaking liquid in sealable containers. 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 phosdrin is spilled or leaked ... collect for reclamation or absorb in vermiculite, dry sand, earth or similar material.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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 food and feedstuffs and strong oxidants. Keep in a well-ventilated room. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing.Rooms used for storage only should be soundly constructed & fitted with secure locks. Floors should be kept clear & pesticides clearly identified. If repacking is carried out in storage rooms, adequate light should be available; floors should be impervious & sound . Pesticides

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Component	Methyl 3-[(dimethoxyphosphinyl)oxy]isocrotonate
CAS No.	338-45-4
	Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 0.01 ppm (0.1 mg/cu m), skin. Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 0.03 ppm (0.3 mg/cu m), skin.

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 tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Mevinphos is a pale yellow to orange liquid, with a weak odor. Used as an insecticide and acaricide on vegetables, alfalfa, deciduous fruits and nuts. (EPA, 1998) May be found in the form of a dry mixture where the liquid is absorbed onto a dry carrier.
Colour	PALE YELLOW LIQUID
Odour	Weak odor
Melting point/freezing point	44.4 to 70Â° F trans isomer / cis isomer (EPA, 1998)
Boiling point or initial boiling point and boiling range	223 to 226Â° F at 1 mm Hg (EPA, 1998)
Flammability	Class IIIB Combustible Liquid: Fl.P. at or above 200Â°F.
Lower and upper explosion limit/flammability limit	no data available
Flash point	175Â° F (EPA, 1998)
Auto-ignition temperature	no data available
Decomposition temperature	300Â°C
pH	no data available
Kinematic viscosity	no data available
Solubility	Miscible (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow = 0.13
Vapour pressure	0.0029 mm Hg at 70Â° F (EPA, 1998)
Density and/or relative density	1.25 at 68Â° F (EPA, 1998)
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on heating. This produces toxic and corrosive fumes including phosphoric acid and phosphorus oxides. Reacts violently with strong oxidants. This generates fire and explosion hazard. Attacks iron, stainless steel, brass, some forms of plastic, rubber and coatings.

10.2 Chemical stability

Moderately stable in neutral soln, ... remained effective biologically after standing 7 days

10.3 Possibility of hazardous reactions

Organophosphates, such as MEVINPHOS, are susceptible to formation of highly toxic and flammable phosphine gas in the presence of strong reducing agents such as hydrides. Partial oxidation by oxidizing agents may result in the release of toxic phosphorus oxides.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Contact with strong oxidizers may cause fires and explosions.

10.6 Hazardous decomposition products

Toxic gases and vapors (... phosphoric acid mist and carbon monoxide) may be released in a fire involving phosdrin.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Mouse oral 7-18 mg/kg
- Inhalation: LC50 Rat female inhalation 14 ppm/1 hr
- Dermal: LD50 Rabbit percutaneous 16-34 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

A4; Not classifiable as a human carcinogen.

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 Lepomis macrochirus 70 ug/l/96 hr /Static bioassay
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

In laboratory studies in Chehalis clay loam, 95% of the applied mevinphos degraded in 1 day(1). An enzyme was found to be responsible for the degradation which was heat labile(1). Another investigator, who did hydrolysis studies of mevinphos in water, reported that mevinphos degradation in soil was generally rapid with a half-life of 2-12 hr(2). This degradation rate, which is much more rapid than the rate of hydrolysis in water at pH 9(2), is consistent with a microbially-mediated process(SRC).

12.3 Bioaccumulative potential

Using an estimated log Kow of -0.24(1), one would estimate a BCF of 0.4 for mevinphos using a recommended regression equation(2). This would indicate that mevinphos would not bioconcentrate in aquatic organisms. Bioaccumulation of mevinphos may be unlikely in some systems because it is metabolized in some animals(3).

12.4 Mobility in soil

The amount of mevinphos bound by soils increased with increasing orgainc content. ... soil moisture has a major influence on the availability and extractability of residues of organophosphorus pesticides ... because of competition between the insecticides and water for adsorption sites on clay particles. ... mevinphos /when compared to other organophosphorus pesticides/ 1.4-fold more active in moist soils than in dry soils. however, even though there is a major interaction between insecticides and water, it does not appear to move freely in soils with water, and loss by leaching does not appear to be a major factor. ...

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: UN1648 (For reference only, please check.) IMDG: UN1648 (For reference only, please check.) IATA: UN1648 (For reference only, please check.)

14.2 UN Proper Shipping Name

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

14.3 Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.) IMDG: 3 (For reference only, please check.) IATA: 3 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: II (For reference only, please check.) IMDG: II (For reference only, please check.) IATA: II (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
Methyl 3-[(dimethoxyphosphinyl)oxy]isocrotonate	Methyl 3-[(dimethoxyphosphinyl)oxy]isocrotonate	338-45-4	206-417-6
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)			Not Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Not Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Not Listed.
Korea Existing Chemicals List (KECL)			Not 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/