

1. Chemical Identity

Synonyms: O,O-diethyl-S-(ethylthiomethyl)phosphorodithioate, agrimet, granutox, rampart, thimeox, thimet, timet, VUAgT, vegfru foratox

Molecular formula: C₇H₁₇O₂PS₃

Molecular Weight: 260.38

CAS No: 298-02-2

EINECS No: 206-052-2

Annex I Index No: 015-033-00-6

2. Composition / Information on Ingredients

Chemical Name	CAS No.	% w/w
Phorate a.i.	298-02-2	92.00%
Other ingredient	--	8.00%

3. Health Hazards Identification

Exposure limit(s) TLV: 0.05 mg/m³ (as TWA); 0.2 mg/m³ (as STEL) (skin) (ACGIH 1992-1993)
NIOSH REL: TWA 0.05 mg/m³ ST 0.2 mg/m³ skin

Exposure effects Fever, low heart rate and abnormally low blood pressure, or rapid heart rate and elevated blood pressure may occur. Headache, dizziness, muscle spasms and profound weakness are common. Alterations of level of consciousness, anxiety, paralysis, seizures and coma may occur. Seizures may be more common in children.

Ingestion Vomiting, hyper salivation, diarrhea, fecal incontinence and abdominal pain may occur.

Inhalation	Dyspnea, rales, bronchorrhea, bronchospasm, or tachypnea may be noted. Noncardiogenic pulmonary edema may occur in severe cases. Chemical pneumonitis may be seen.
Skin	Sweating is a consistent but not universal sign.

4. First Aid Measure

Ingestion	Seek medical assistance.
Inhalation	Move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.
Skin	Remove and isolate contaminated clothing and shoes. Immediately flush with running water for at least 20 minutes. For minor skin contact, avoid spreading material on unaffected skin.
Eyes	Flush eyes with water for at least 15 mins.

5. Fire Fighting Measure

Flash Point, °C	160
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Fire fighting	(Non-Specific -- Organophosphorous Pesticide) Wear positive pressure self-contained breathing apparatus. Move container from fire area if you can do it without risk. Fight fire from maximum distance. Dike fire control water for later disposal; do not scatter the material. (Non-Specific-- Organophosphorous Pesticide) Extinguish with dry chemical, carbon dioxide, water spray, fog.
Fire potential	Combustible material: may burn but does not ignite readily.
Hazards	Shock can shatter containers, releasing the contents. When heated to decomposition, toxic fumes of sulfur oxides, phosphorus oxides, and nitrogen oxides are emitted. Hydrolyzed in water and alkalis.
Combustion Product	Fire may produce irritating, corrosive and/or toxic gases.

6. Accident Release measure

Protection	Wear appropriate protective gloves, clothing and goggles.
Respirators	Must wear a respirator with an activated-carbon gas filter cartridge affording protection for a determined number of working hours.
Small spills/leaks	Caution : Phorate will form toxic mixtures of sulfur oxides, phosphorus oxides, and nitrogen oxides when heated to decomposition. Avoid sources of extreme heat. (Non-Specific -- Organophosphorous Pesticide) unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Ventilate closed spaces before entering them. Remove and isolate contaminated clothing at the site. Do not touch spilled material; stop leak if you can do it without risk. Use water spray to reduce vapors. Small spills: take up with sand or other noncombustible absorbent material and place

into containers for later disposal. Large spills: dike far ahead of spill for later disposal.

7. Handling and Storage

Handling

All chemicals should be considered hazardous. Avoid direct physical contact. Use appropriate, approved safety equipment. Untrained individuals should not handle this chemical or its container. Handling should occur in a chemical fume hood.

Storage

Stable when stored at room temperature for at least 2 years. Store at out of reach of animals and away from feed and foodstuffs.

8. Exposure Controls/Personal Protection

Poisonous if absorbed by skin contact or swallowed. Will irritate eyes and skin. Repeated minor exposure may have a cumulative poisoning effect. Avoid inhaling vapor or spray mist. Obtain an emergency supply of atropine. When opening the container and preparing spray wear:

- Cotton overalls buttoned to the neck and wrist and washable hat
- Elbow-length PVC gloves and
- A face shield

If clothing becomes contaminated with product, or wet with spray remove clothing immediately. If product or spray gets on skin, immediately wash area with soap and water. If products in eyes, wash it out face immediately with water. Wash hands after use. After each day's use, wash gloves, shield and contaminated clothing.

9. Physical & Chemical Properties

Appearance

Clear colorless to slight yellow liquid

Odor	Strong Mercaptan odor
Formula mass	260.38
Melting point, °C	-42.8
Boiling point, °C	125 °C at 0.8 mm Hg.
Vapor pressure, mm_{Hg}	0.000825 (20 °C)
Density	1.1615 g/cm ³ (20 °C)
Solubility in water	0.005 g/100ml
Refractive index	1.5349 (20 °C)
Partition coefficient, pK_{ow}	3.92

10. Stability and Reactivity

Stability	Stable under standard condition.
Incompatibilities	Incompatible with alkaline compounds and with water-alkalis. containing preparations. Avoid contact with water,
Polymerization	Will not polymerize .

11. Toxicological Information

Very toxic, and may be fatal, in contact with the skin or if swallowed. Contact can cause multiple serious effects, including convulsions. Presumed to be very toxic if inhaled. Typical OEL 0.05 mg m⁻³ Note low LD50s below.

Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given .)

ORL-RAT LD50 2 mg kg⁻¹ (some sources give lower LD50 values)

ORL-CHK LD50 1 mg kg⁻¹

IHL-RAT LC50 11 mg m⁻³/1h

SKN-RAT LD50 2.5 mg kg⁻¹

ORL-MUS LD50 2 mg kg⁻¹

ORL-DUK LD50 0.6 mg kg⁻¹

12. Ecological Information

Oral LD50 for rats	1.6 to 3.7 mg/kg body weight
Dermal LD50 for rats	2.5 to 6.2 mg/kg body weight
Inhalation toxicity (LC for rats)	0.011 mg/l to 0.06 mg/l
Birds (LD 50)	0.62 mg/kg for mallard ducks
Fish (LD50 96 hours)	0.28 mg/kg channel catfish
Bees (Topical LD 50)	10 micrograms/bee

13. Disposal Considerations

Dispose of empty, used containers by:

- Triple rinsing or preferably pressure rinsing containers. Add the rinsing to the spray tank. DO NOT dispose of undiluted chemicals on site.
- If recycling, replace cap and return clean containers to recycler or designated collection point

If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

It is the responsibility of the waste generator to determine if any hazardous waste codes apply, prior to disposal.

14. Transport Information

Proper Shipping Name	Organo Phosphorus Pesticides, Liquid, Toxic
UN number	3018
Response guide	
Hazard class	6.1
Packing Group	I
USCG CHRIS Code	PHR

Marin Pollutant	YES
IMDG number	3018

15. Regulatory Information

EC (EINECS/ELINCS)	206-052-2
EC Index Number	015-033-00-6
EC Class	Very toxic
<u>EC Risk Phrase</u>	T+; R27/28 N; R50-53
<u>EC Safety Phrase</u>	T+ ; N R: 27/28-50/53 S: (1/2-)28-36/37-45-60-61
Hazchem Code	2X
Codes/Label	Class 6.1, Toxic

15. Regulatory Information

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.