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**Safety Data Sheet****1. Chemical product and company identification****Product name** : Fosthiazate**SDS code** : Q4-12**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

Address : 3-2-12 Uchihiranomachi, Chuo-ku, Osaka, Osaka, Japan

Telephone : 06-6910-7305

E-mail : shiyaku\_kikaku@hpc-j.co.jp

URL : <https://www.hpc-j.co.jp/>**Emergency number** : 06-6910-7305**Recommended use** : For research and experimental use only.**Restrictions on use** : Do not use for any purpose other than research and experiment. Do not use on a human body or for animal medicines, foods, household products, cosmetics, etc. Do not use in the environment.**2. Hazards identification****GHS classification**

Physical hazards	Explosives	No classification	
	Flammable gases	No classification	
	Aerosol	No classification	
	Oxidizing gases	No classification	
	Gases under pressure	No classification	
	Flammable liquids	Category 4	
	Flammable solids	No classification	
	Self-reactive substances and mixtures	classification not possible	
	Pyrophoric liquids	classification not possible	
	Pyrophoric solids	No classification	
	Self-heating substances and mixtures	classification not possible	
	Substances and mixtures which in contact with water emit flammable gases	No classification	
	Oxidizing liquids	classification not possible	
	Oxidizing solids	No classification	
	Organic peroxides	No classification	
	Corrosive to metals	classification not possible	
	Desensitized explosives	classification not possible	
	Health hazards	Acute toxicity (oral)	Category 3
		Acute toxicity (dermal)	Category 3
		Acute toxicity (inhalation:gas)	No classification
Acute toxicity (inhalation:vapors)		classification not possible	
Acute toxicity (inhalation:dust/mist)		Category 3	
Skin corrosion/irritation		No classification	
Serious eye damage/eye irritation		Category 2B	
Respiratory sensitization		classification not possible	
Skin sensitization		Category 1	
Germ cell mutagenicity		No classification	
Carcinogenicity	No classification		
Reproductive toxicity	Category 2		
Specific target organ toxicity (single exposure)	Category 1 (nervous system, systemic toxicity)		

Environmental hazards	Specific target organ toxicity (repeated exposure)	Category 1 (nervous system, adrenal)
	Aspiration hazard	classification not possible
	Hazardous to the aquatic environment, short-term (acute)	Category 1
	Hazardous to the aquatic environment, long-term (chronic)	Category 1
	Hazardous to the ozone layer	classification not possible

## Hazard pictograms (GHS JP)



GHS06



GHS08



GHS09

## Signal word (GHS JP)

: Danger

## Hazard statements (GHS JP)

: Combustible liquid (H227)  
 Toxic if swallowed, in contact with skin or if inhaled (H301+H311+H331)  
 May cause an allergic skin reaction (H317)  
 Causes eye irritation (H320)  
 Suspected of damaging fertility or the unborn child (H361)  
 Causes damage to organs (nervous system, systemic toxicity) (H370)  
 Causes damage to organs (nervous system, adrenal) through prolonged or repeated exposure (H372)  
 Very toxic to aquatic life with long lasting effects (H410)

## Precautionary statements (GHS JP)

## Prevention

: Obtain special instructions before use. (P201)  
 Do not handle until all safety precautions have been read and understood. (P202)  
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. (P210)  
 Do not breathe dust/fume/gas/mist/vapors/spray. (P260)  
 Wash hands, forearms and face thoroughly after handling. (P264)  
 Do not eat, drink or smoke when using this product. (P270)  
 Use only outdoors or in a well-ventilated area. (P271)  
 Contaminated work clothing should not be allowed out of the workplace. (P272)  
 Avoid release to the environment. (P273)  
 Wear protective gloves/protective clothing/eye protection/face protection. (P280)

## Response

: IF SWALLOWED: Immediately call a POISON CENTER or doctor. (P301+P310)  
 IF ON SKIN: Wash with plenty of water. (P302+P352)  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340)  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)  
 IF exposed or concerned: Call a POISON CENTER or doctor. (P308+P311)  
 Get medical advice/attention if you feel unwell. (P314)  
 Rinse mouth. (P330)  
 If skin irritation or rash occurs: Get medical advice/attention. (P333+P313)  
 If eye irritation persists: Get medical advice/attention. (P337+P313)  
 Take off immediately all contaminated clothing and wash it before reuse. (P361+P364)  
 In case of fire: Use specify appropriate media to extinguish. (P370+P378)  
 Collect spillage. (P391)

## Storage

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

## Disposal

: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

### 3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Name	Concentration or Concentration range	Formula	Kanpo number		CAS RN
			CSCL no	ISHL no	
Fosthiazate	≥95%、≤100%	C9H18NO3PS2	-	8-(7)-864	98886-44-3

The above concentration or concentration range are not product specification.

All percentages listed in the above concentration or concentration range are wt%, unless otherwise specified.

### 4. First aid measures

#### First aid measures

- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.  
Get immediate medical advice/attention.
- First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing.  
Gently wash with plenty of soap and water.  
Get immediate medical advice/attention.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Get immediate medical advice/attention.
- First-aid measures after ingestion : Rinse mouth.  
Get immediate medical advice/attention.

### 5. Fire fighting measures

- Suitable extinguishing media : Water spray, Alcohol-resistant foam, Dry powder, Carbon dioxide, Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.
- Explosion hazard : May induce explosion of containers by heating.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.  
In the case of peripheral fire, quickly remove movable containers to safe places.  
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.  
Avoid (reject) fire-fighting water to enter environment.  
Even after extinguishing fire, thoroughly cool containers by using plenty of water.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

### 6. Accidental release measures

#### Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Before entering, ventilate the area.  
Do not let unauthorized persons come close to the area.  
Immediately place the leakage area in isolation, with taking proper distances for all directions.  
Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

#### Environmental precautions

- Environmental precautions : Avoid release to the environment.  
Prevent entry to sewers and public waters.

#### Methods and Equipment for Containment and Cleaning up

- Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it.  
Collect leaking and spilled liquid in sealable containers as far as possible.  
Wash out the spilled area with large amounts of water.

## 7. Handling and storage

### Handling

- Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.  
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.
- Precautions for safe handling : Do not eat, drink or smoke when using this product.  
Thoroughly wash your hands and gargle after handling.  
Ensure good ventilation of the work station.  
Do not contact, breathe or swallow.
- Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

### Storage

- Storage conditions : Store locked up.  
Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.
- Material used in packaging/containers : Light shielding airtight container.
- Technical measures : Comply with applicable regulations.
- Storage temperature : Refrigerate: 2-10°C

## 8. Exposure controls / Personal protection equipment

- Appropriate engineering controls : Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location.

### Protective equipment

- Respiratory protection : Gas mask for organic gases
- Hand protection : Impervious protective gloves
- Eye protection : Protective glasses (general glasses, glasses with side-shields, goggles)
- Skin and body protection : Impervious aprons, Impervious work clothing, Protective long boots

## 9. Physical and chemical properties

- Physical state : Liquid
- Appearance : Liquid
- Color : colorless transparent
- Odor : Weak sulfur odor
- pH : No data available
- Melting point : No data available
- Freezing point : No data available
- Boiling point : No data available
- Flash point : 80 °C
- Auto-ignition temperature : No data available
- Decomposition temperature : 225 °C
- Flammability (solid, gas) : No data available
- Vapor pressure :  $5.6 \times 10^{-4}$  Pa (25°C)
- Relative density : No data available
- Density : 1.2 g/cm<sup>3</sup> (25°C)
- Relative gas density : No data available
- Solubility : Soluble in acetone. Soluble in methanol. Soluble in toluene. Soluble in hexane.  
Water: 9.00 g/l (pH7,25°C)
- Partition coefficient n-octanol/water (Log Pow) : 1.68 (25°C)
- Explosive limits (vol %) : No data available
- Viscosity, kinematic : No data available
- Particle characteristics : No data available

## 10. Stability and reactivity

Reactivity	:	No data available
Chemical stability	:	Stable under normal handling conditions.
Possibility of hazardous reactions	:	No data available
Conditions to avoid	:	Sunlight, Heat
Incompatible materials	:	No data available
Hazardous decomposition products	:	Nitrogen oxides, Sulfur oxides

## 11. Toxicological information

The information in this section is based on the "GHS Classification Results" by NITE.

Fosthiazate	
Acute toxicity (oral)	Category 3
Acute toxicity (dermal)	Category 3
Acute toxicity (gas)	No classification
Acute toxicity (vapour)	classification not possible
Acute toxicity (inhalation:dust/mist)	Category 3
Skin corrosion/irritation	No classification
Serious eye damage/irritation	Category 2B
Respiratory sensitization	classification not possible
Skin sensitization	Category 1
Germ cell mutagenicity	No classification
Carcinogenicity	No classification
Reproductive toxicity	Category 2
STOT-single exposure	Category 1
STOT-repeated exposure	Category 1
Aspiration hazard	classification not possible

## 12. Ecological information

The information in this section is based on the "GHS Classification Results" by NITE.

Fosthiazate	
Hazardous to Aquatic Environment - Acute Hazard	Category 1
Hazardous to Aquatic Environment - Chronic Hazard	Category 1
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Hazardous to the ozone layer	classification not possible

## 13. Disposal considerations

Ecology - waste materials	:	With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
Contaminated container and packaging	:	Empty the packaging completely prior to disposal. Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

## 14. Transport information

### International Regulations

#### Transport by sea(IMDG)

UN-No. (IMDG)	:	2810
Proper Shipping Name (IMDG)	:	TOXIC LIQUID, ORGANIC, N.O.S.
Packing group (IMDG)	:	III
Transport hazard class(es) (IMDG)	:	6.1
Hazard labels (IMDG)	:	6.1

Class (IMDG)	: 6.1
Division (IMDG)	: 6.1
Special provision (IMDG)	: 223, 274
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P001, LP01
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP1, TP28
Stowage category (IMDG)	: A
Properties and observations (IMDG)	: Toxic if swallowed, by skin contact or by inhalation.
MFAG-No	: 153

**Air transport(IATA)**

UN-No. (IATA)	: 2810
Proper Shipping Name (IATA)	: Toxic liquid, organic, n.o.s.
Packing group (IATA)	: III
Transport hazard class(es) (IATA)	: 6.1
Hazard labels (IATA)	: 6.1
Class (IATA)	: 6.1
Division (IATA)	: 6.1
PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y642
PCA limited quantity max net quantity (IATA)	: 2L
PCA packing instructions (IATA)	: 655
PCA max net quantity (IATA)	: 60L
CAO packing instructions (IATA)	: 663
CAO max net quantity (IATA)	: 220L
Special provision (IATA)	: A3, A4, A137
ERG code (IATA)	: 6L

**Marine pollutant** : Applicable

**Regulations in Japan**

Regulatory information by sea	: Conform to the provisions of the Ship Safety Law.
Regulatory information by air	: Conform to the provisions of the Civil Aeronautics Law.
MFAG-No	: 153

**Special transport precautions** : When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

**15. Regulatory information****National law**

Industrial Safety and Health Law	: Not applicable
Japanese Poisonous and Deleterious Substances Control Law	: Deleterious Substances (Designated Order Art.2) O-Ethyl S-1-methylpropyl (2-oxo-3-thiazolidinyl)phosphonothioate(Fosthiazate) and preparations containing it. (except for preparations which contain 1.5 % or less O-ethyl S-1-methylpropyl (2-oxo-3-thiazolidinyl)phosphonothioate.)
Fire Service Law	: Group 4, Flammable Liquids, Class 3 petroleum, Water-insoluble liquids (Act, Art.2, Para.7, Appended Table 1, Group 4)
Foreign Exchange and Foreign Trade Control Act	: Export Trade Control Ordinance appendix 1-16
Ship Safety Act	: Toxic and infectious substances/Toxic substances (Dangerous Goods Notification Schedule first second and third Article Dangerous Goods Regulations)
Civil Aeronautics Law	: Toxic and infectious substances/Toxic substances (Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)
Port Regulation Law	: Toxic and infectious substances/Toxic substances (Article 21, Paragraph 2 of Law, Article 12 rule, notice attached table that defines the type of dangerous goods)
Road Act	: Restriction for Vehicle Traffic (Enforcement Order Art.19-13, Publication of Japan Highway Public Corp.)

- Japanese Pollutant Release and Transfer Register Law (PRTR Law) : Class 1 Designated Chemical Substances (Act Art.2 para. 2, Enforcement Order Art.1 Appended Table No.1)  
O-Ethyl S-1-methylpropyl (2-oxo-3-thiazolidinyl)phosphonothioate; fosthiazate (100%)  
【After amendment of April 2023】  
Class 1 Designated Chemical Substances (Act, Art.2, Para.2, Enforcement Order, Art.1 Appended Table 1)  
O-Ethyl S-1-methylpropyl (2-oxo-3-thiazolidinyl)phosphonothioate (synonym: Fosthiazate) (100%)

## 16. Other information

- Data sources : Handbook of 17322 Chemical Products, The Chemical Daily Co, Ltd.  
International Chemical Safety Cards.  
National Institute of Technology and Evaluation (NITE).  
2020 Emergency Response Guidebook (ERG 2020).
- Other information : The SDS is copyrighted material of Hayashi Pure Chemical Ind, Ltd. This Safety Data Sheet is intended to be provided for business operators who handle chemical substance products of the relevant product and is not intended to assure safety in any way. The Safety Data Sheet does not verify all the information on the applicable chemical substance in the present time. With the recognition in that unknown danger constantly exists in the relevant chemical substance, the product shall be used in the principle of self-responsibility of the user with the highest priority to safety from transport and unpacking to disposal. When the relevant chemical substance is used, the user him/herself shall collect safety information and shall investigate laws and regulations at the place, organizations, countries, etc. where the substance is actually used and give the highest priority to them. The Company shall take no responsibility for investigating state and local regulations and the user shall handle this problem on his/her own responsibility. In the event that SDS in Japanese and SDS translated into other languages exist, the document described in Japanese is prior to all other documents whether or not there is any difference in contents, and documents in other languages shall be references.