

## Safety Data Sheet

### 1. Chemical product and company identification

**Product name** : Flusulfamide

**SDS code** : V7-13

**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

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**Emergency number** : 06-6910-7305

### 2. Hazards identification

#### GHS classification

Physical hazards	Explosives	classification not possible	
	Flammable gases	No classification	
	Aerosol	No classification	
	Oxidizing gases	No classification	
	Gases under pressure	No classification	
	Flammable liquids	No classification	
	Flammable solids	classification not possible	
	Self-reactive substances and mixtures	classification not possible	
	Pyrophoric liquids	No classification	
	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	No classification	
	Oxidizing solids	classification not possible	
	Organic peroxides	No classification	
	Corrosive to metals	classification not possible	
	Desensitized explosives	No classification	
	Health hazards	Acute toxicity (oral)	Category 3
		Acute toxicity (dermal)	No classification
		Acute toxicity (inhalation:gas)	No classification
Acute toxicity (inhalation:vapors)		classification not possible	
Acute toxicity (inhalation:dust/mist)		Category 2	
Skin corrosion/irritation		No classification	
Serious eye damage/eye irritation		Category 1	
Respiratory sensitization		classification not possible	
Skin sensitization		No classification	
Germ cell mutagenicity		classification not possible	
Carcinogenicity	No classification		
Reproductive toxicity	Category 2		
Specific target organ toxicity (single exposure)	classification not possible		
Specific target organ toxicity (repeated exposure)	Category 1 (liver, central nervous system)		
Specific target organ toxicity (repeated exposure)	Category 2 (visual organ, kidneys, blood system)		

Environmental hazards	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)



GHS05



GHS06



GHS08



GHS09

Signal word (GHS JP)	: Danger
Hazard statements (GHS JP)	: Toxic if swallowed (H301) Causes serious eye damage (H318) Fatal if inhaled (H330) Suspected of damaging fertility or the unborn child (H361) Causes damage to organs (liver, central nervous system) through prolonged or repeated exposure (H372) May cause damage to organs (visual organ, kidneys, blood system) through prolonged or repeated exposure (H373) 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) 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) Avoid release to the environment. (P273) Wear protective gloves/protective clothing/eye protection/face protection. (P280) Wear respiratory protection. (P284)
Response	: IF SWALLOWED: Immediately call a POISON CENTER or doctor. (P301+P310) 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: Get medical advice/attention. (P308+P313) Immediately call a POISON CENTER or doctor. (P310) Get medical advice/attention if you feel unwell. (P314) Rinse mouth. (P330) 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	
Flusulfamide	≥90%	C13H7Cl2F3N2O4S	-	4-(8)-181	106917-52-6

The above concentration or concentration range are not product specification.

All percentages listed in the above concentration or concentration range are mass%, 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 : Take care not to generate dust, sweep it up as much as possible, collect it in an empty container that can be sealed, and move it to a safe place.  
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 : Dustproof mask

Hand protection : Protective gloves

Eye protection : Protective glasses (general glasses, glasses with side-shields, goggles)

Skin and body protection : Protective clothing, Protective boots, Protective apron

## 9. Physical and chemical properties

Physical state : Solid

Appearance : Crystalline powder

Color : light yellow

Odor : Slightly aromatic odor

pH : No data available

Melting point : No data available

Freezing point : No data available

Boiling point : 169.7 – 171.0 °C

Flash point : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure :  $9.9 \times 10^{-7}$  Pa (40°C)

Relative density : No data available

Density : 1.75 g/cm<sup>3</sup> (20°C)

Relative gas density : No data available

Solubility : Soluble in acetone. Soluble in methanol. Slightly soluble in n-hexane.  
Water: 1.25 mg/l (pH6.3)

Partition coefficient n-octanol/water (Log Pow) : No data available

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, Chlorine and its compounds, Fluorine and its compounds

## 11. Toxicological information

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

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

## 12. Ecological information

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

Flusulfamide	
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) : 2811  
 Proper Shipping Name (IMDG) : TOXIC SOLID, ORGANIC, N.O.S.  
 Packing group (IMDG) : II  
 Transport hazard class(es) (IMDG) : 6.1  
 Hazard labels (IMDG) : 6.1  
 Class (IMDG) : 6.1  
 Division (IMDG) : 6.1  
 Special provision (IMDG) : 274  
 Limited quantities (IMDG) : 500 g  
 Excepted quantities (IMDG) : E4  
 Packing instructions (IMDG) : P002  
 IBC packing instructions (IMDG) : IBC08  
 IBC special provisions (IMDG) : B21, B4

Tank instructions (IMDG)	:	T3
Tank special provisions (IMDG)	:	TP33
Stowage category (IMDG)	:	B
Properties and observations (IMDG)	:	Toxic if swallowed, by skin contact or by inhalation.
MFAG-No	:	154
<b>Air transport(IATA)</b>		
UN-No. (IATA)	:	2811
Proper Shipping Name (IATA)	:	Toxic solid, organic, n.o.s.
Packing group (IATA)	:	II
Transport hazard class(es) (IATA)	:	6.1
Hazard labels (IATA)	:	6.1
Class (IATA)	:	6.1
Division (IATA)	:	6.1
PCA Excepted quantities (IATA)	:	E4
PCA Limited quantities (IATA)	:	Y644
PCA limited quantity max net quantity (IATA)	:	1kg
PCA packing instructions (IATA)	:	669
PCA max net quantity (IATA)	:	25kg
CAO packing instructions (IATA)	:	676
CAO max net quantity (IATA)	:	100kg
Special provision (IATA)	:	A3, A5
ERG code (IATA)	:	6L
<b>Marine pollutant</b>	:	Applicable
<b>Regulations in Japan</b>		
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	:	154
<b>Special transport precautions</b>	:	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) 2',4-Dichloro-alpha,alpha,alpha-trifluoro-4'-nitro-m-tolenesulfonaniilide(Flusulfamide) and preparations containing it (except for preparations which contain 0.3% or less of 2',4-dichloro-alpha,alpha,alpha-trifluoro-4'-nitro-m-tolenesulfonaniilide.)
Water Pollution Prevention Law	:	Hazardous Substances (Act, Art.2, Enforcement Order Art.2, Ministerial Ordinance to Provide for Effluent Standards, Art.1)
Fire Service Law	:	Not applicable
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)
Waterworks Law	:	Hazardous Substances (Act Article 4 paragraph 2), Standard for Water Quality (Ministry Order No.101 of 2003)
Sewerage Law	:	Substances for Water Quality Standard (Act Art.12-2 Para.2, Enforcement Order Art.9-4)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)	:	<b>【After amendment of April 2023】</b> Class 1 Designated Chemical Substances (Act, Art.2, Para.2, Enforcement Order, Art.1 Appended Table 1) 2',4-Dichloro-alpha,alpha,alpha-trifluoro-4'-nitro-m-toluenesulfonaniilide (≥90%)
Soil Contamination Countermeasures Law	:	Designated Hazardous Substances (Act Art.2 Para.3, Enforcement Order Art.1)

## 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.  
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