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**Safety Data Sheet****1. Chemical product and company identification****Product name** : Formic acid (98-100)**SDS code** : H5-01**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

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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 on a human body or for animal medicines, foods, household products, cosmetics, etc.**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 3	
	Flammable solids	No classification	
	Self-reactive substances and mixtures	No classification	
	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	No classification	
	Organic peroxides	No classification	
	Corrosive to metals	classification not possible	
	Desensitized explosives	classification not possible	
	Health hazards	Acute toxicity (oral)	Category 4
		Acute toxicity (dermal)	classification not possible
		Acute toxicity (inhalation:gas)	No classification
Acute toxicity (inhalation:vapors)		Category 4	
Acute toxicity (inhalation:dust/mist)		classification not possible	
Skin corrosion/irritation		Category 1	
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	classification not possible		
Specific target organ toxicity (single exposure)	Category 1 (central nervous system, respiratory system, blood system, kidneys)		

	Specific target organ toxicity (repeated exposure)	Category 2 (respiratory system)
	Aspiration hazard	classification not possible
Environmental hazards	Hazardous to the aquatic environment, short-term (acute)	Category 3
	Hazardous to the aquatic environment, long-term (chronic)	No classification
	Hazardous to the ozone layer	classification not possible

Hazard  
pictograms  
(GHS JP)

GHS02



GHS05



GHS07



GHS08

## Signal word (GHS JP)

: Danger

## Hazard statements (GHS JP)

: Flammable liquid and vapor (H226)  
 Harmful if swallowed or if inhaled (H302+H332)  
 Causes severe skin burns and eye damage (H314)  
 Causes damage to organs (central nervous system, respiratory system, blood system, kidneys) (H370)  
 May cause damage to organs (respiratory system) through prolonged or repeated exposure (H373)  
 Harmful to aquatic life (H402)

## Precautionary statements (GHS JP)

## Prevention

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. (P210)  
 Keep container tightly closed. (P233)  
 Ground and bond container and receiving equipment. (P240)  
 Use explosion-proof electrical/ventilating/lighting equipment. (P241)  
 Use only non-sparking tools. (P242)  
 Take action to prevent static discharges. (P243)  
 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)

## Response

: IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. (P301+P312)  
 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. (P301+P330+P331)  
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. (P303+P361+P353)  
 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)  
 Immediately call a POISON CENTER or doctor. (P310)  
 Get medical advice/attention if you feel unwell. (P314)  
 Wash contaminated clothing before reuse. (P363)  
 In case of fire: Use specify appropriate media to extinguish. (P370+P378)

## Storage

: Store in a well-ventilated place. Keep cool. (P403+P235)  
 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  
Synonyms : Methanoic acid

Name	Concentration or Concentration range	Formula	Kanpo number		CAS RN
			CSCL no	ISHL no	
Formic acid	≥98%, ≤100%	HCOOH	(2)-670	Existing Chemical Substance	64-18-6

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 : Do NOT induce vomiting.  
Drink plenty of water.  
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.  
If possible, neutralize with slaked lime, soda ash, etc. before washing out.

**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 : Cool and dark place

**8. Exposure controls / Personal protection equipment**

Exposure limit values	
Formic acid	
Exposure limits (JSOH)	5ppm(9.4mg/m <sup>3</sup> )
Exposure limits (ACGIH)	TWA 5 ppm,STEL 10 ppm

- 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 acid 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, Impervious long boots

**9. Physical and chemical properties**

- Physical state : Liquid
- Appearance : Liquid
- Color : colorless transparent
- Odor : Irritating odor
- pH : Aqueous solution shows acidic.
- Melting point : 8.3 °C
- Freezing point : No data available
- Boiling point : 100.8 °C
- Flash point : ≈ 55 °C (tag closed cup)
- Auto-ignition temperature : No data available
- Decomposition temperature : No data available
- Flammability (solid, gas) : No data available
- Vapor pressure : No data available

Relative density	: No data available
Density	: 1.22 g/cm <sup>3</sup> (20°C)
Relative gas density	: No data available
Solubility	: Easily soluble in water. Easily soluble in ethanol. Easily soluble in diethyl ether.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Explosive limits (vol %)	: 18 – 57 vol % (90% aqueous solution)
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	: Decomposes on heating and on contact with strong acids. Reacts violently with oxidizing agents. Reacts violently with strong bases, causing fire and explosion hazard. Erodes many plastics and metals.
Conditions to avoid	: Sunlight, moisture, heat. Ignition sources such as spark, flame and static electricity. Contact with strong acids, oxidizing agents, strong bases and metals.
Incompatible materials	: Strong acids, Oxidizing agents, Strong bases, Metals
Hazardous decomposition products	: No data available

## 11. Toxicological information

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

Formic acid	
Acute toxicity (oral)	Category 4
Acute toxicity (dermal)	classification not possible
Acute toxicity (gas)	No classification
Acute toxicity (vapour)	Category 4
Acute toxicity (inhalation:dust/mist)	classification not possible
Skin corrosion/irritation	Category 1
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	classification not possible
STOT-single exposure	Category 1
STOT-repeated exposure	Category 2
Aspiration hazard	classification not possible

## 12. Ecological information

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

Formic acid	
Hazardous to Aquatic Environment - Acute Hazard	Category 3
Hazardous to Aquatic Environment - Chronic Hazard	No classification
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) : 1779
- Proper Shipping Name (IMDG) : FORMIC ACID
- Packing group (IMDG) : II
- Transport hazard class(es) (IMDG) : 8 (3)
- Hazard labels (IMDG) : 8,3
- Class (IMDG) : 8
- Subsidiary hazard (IMDG) : 3
- Packing instructions (IMDG) : P001
- IBC packing instructions (IMDG) : IBC02
- Tank instructions (IMDG) : T7
- Tank special provisions (IMDG) : TP2
- Stowage category (IMDG) : A
- Properties and observations (IMDG) : Colourless flammable liquid with a pungent odour. Pure FORMIC ACID: flashpoint 42°C c.c. Corrosive to most metals. Causes burns to skin, eyes and mucous membranes.
- MFAG-No : 153

##### Air transport(IATA)

- UN-No. (IATA) : 1779
- Proper Shipping Name (IATA) : Formic acid
- Packing group (IATA) : II
- Transport hazard class(es) (IATA) : 8 (3)
- Hazard labels (IATA) : 8, 3
- Class (IATA) : 8
- Subsidiary hazards (IATA) : 3
- PCA Excepted quantities (IATA) : E2
- PCA Limited quantities (IATA) : Y840
- PCA limited quantity max net quantity (IATA) : 0.5L
- PCA packing instructions (IATA) : 851
- PCA max net quantity (IATA) : 1L
- CAO packing instructions (IATA) : 855
- CAO max net quantity (IATA) : 30L
- ERG code (IATA) : 8F

**Marine pollutant** : Not 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

- Chemical Substances Control Law : Priority Assessment Chemical Substances (Law Article 2, Para.5)
- Industrial Safety and Health Law : Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18 Item 1, Item 2, Attached Table No.9)  
Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Item 1, Item 2, Attached Table No.9)  
Formic acid (Ordinance number : 132)  
Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4)

Japanese Poisonous and Deleterious Substances Control Law	:	Deleterious Substances (Designated Order Art.2) Formic acid and preparations containing it. (except for substances which contain 90% or less of formic acid)
Fire Service Law	:	Group 4 - Flammable liquids - 2nd Class petroleum - soluble (Law Art.2 Para.7, Attached Table 1, Group 4)
Air Pollution Control Law	:	Volatile organic compounds (Article 2, Paragraph 4 of the Act) (2002 VOC emission survey report)
Law Relating to Prevention of Marine Pollution and Maritime Disasters	:	Noxious Liquid Substances - Category Y (Law Art.3(3), Enforcement Order, Art.1-2, Attached Table No.1 Item 2)
Foreign Exchange and Foreign Trade Control Act	:	Export Trade Control Ordinance appendix 1-16
Ship Safety Act	:	Corrosive substances (Dangerous Goods Notification Schedule first second and third Article Dangerous Goods Regulations)
Civil Aeronautics Law	:	Corrosive substances (Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)
Port Regulation Law	:	Corrosive 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.)
Waste Management on Public Cleansing Law	:	Specially Controlled Industrial Wastes (Act Art.2, para 5, Enforcement Order Art.2-4)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)	:	Not applicable

## 16. Other information

Data sources	:	Handbook of 17423 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.