

Safety Data Sheet

1. Chemical product and company identification

Product name : Acetic anhydride

SDS code : A2-02

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 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	Category 1	
	Desensitized explosives	No classification	
	Health hazards	Acute toxicity (oral)	Category 4
		Acute toxicity (dermal)	No classification
		Acute toxicity (inhalation:gas)	No classification
Acute toxicity (inhalation:vapors)		Category 3	
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		classification not possible	
Germ cell mutagenicity		No classification	
Carcinogenicity	classification not possible		
Reproductive toxicity	classification not possible		
Specific target organ toxicity (single exposure)	Category 1 (respiratory system)		

	Specific target organ toxicity (repeated exposure)	Category 1 (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



GHS06



GHS08

Signal word (GHS JP)	:	Danger
Hazard statements (GHS JP)	:	Flammable liquid and vapor (H226) May be corrosive to metals (H290) Harmful if swallowed (H302) Causes severe skin burns and eye damage (H314) Toxic if inhaled (H331) Causes damage to organs (respiratory system) (H370) Causes damage to organs (respiratory system) through prolonged or repeated exposure (H372) 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 only in original container. (P234) 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) Absorb spillage to prevent material-damage. (P390)
Storage	:	Store in a well-ventilated place. Keep container tightly closed. (P403+P233) Store in a well-ventilated place. Keep cool. (P403+P235) Store locked up. (P405) Store in corrosive resistant container with a resistant inner liner. (P406)
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	
Acetic anhydride	≥ 93.0%	C4H6O3	(2)-690	Existing Chemical Substance	108-24-7

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 : Dry powder, Carbon dioxide.
- Unsuitable extinguishing media : Water
- Explosion hazard : May induce explosion of containers by heating.
May induce explosion of containers by water contamination.
- Reactivity in case of fire : Reacts violently with water.
- 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.
- 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.
Store in corrosive resistant container with a resistant inner liner.
- 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	
Acetic anhydride	
Exposure limits (JSOH)	【Ceiling】5ppm(21mg/m3)

- 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 : No data available
- Melting point : -73 °C
- Freezing point : No data available
- Boiling point : 140 °C
- Flash point : 49 °C (tag closed cup)
- Auto-ignition temperature : No data available
- Decomposition temperature : No data available
- Flammability : No data available
- Vapor pressure : 0.465 kPa (20°C)

Relative density	: No data available
Density	: 1.08 g/cm ³
Relative gas density	: No data available
Solubility	: Soluble in alcohol. Soluble in ether. Soluble in chloroform.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Explosive limits (vol %)	: 2.7 – 10.3 vol % (in air)
Viscosity, kinematic	: No data available
Particle characteristics	: No data available

10. Stability and reactivity

Reactivity	: No data available
Chemical stability	: It gradually reacts with water to become acetic acid. It is rapidly hydrolyzed by hot water, strong acids and strong alkalis to generate heat violently.
Possibility of hazardous reactions	: Reacts with strong oxidizing agents, alcohol, amine and strong bases.
Conditions to avoid	: Sunlight, high-temperature. Ignition sources such as spark, flame and static electricity. Contact with strong oxidizing agents, alcohol, amine and strong bases.
Incompatible materials	: Strong oxidizing agents, Alcohol, Amine, Strong bases
Hazardous decomposition products	: No data available

11. Toxicological information

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

Acetic anhydride	
Acute toxicity (oral)	Category 4
Acute toxicity (dermal)	No classification
Acute toxicity (gas)	No classification
Acute toxicity (vapour)	Category 3
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	classification not possible
Germ cell mutagenicity	No classification
Carcinogenicity	classification not possible
Reproductive toxicity	classification not possible
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.

Acetic anhydride	
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) : 1715
 Proper Shipping Name (IMDG) : ACETIC ANHYDRIDE
 Packing group (IMDG) : II
 Transport hazard class(es) (IMDG) : 8 (3)
 Hazard labels (IMDG) : 8,3
 Class (IMDG) : 8
 Subsidiary hazard (IMDG) : 3
 Limited quantities (IMDG) : 1 L
 Excepted quantities (IMDG) : E2
 Packing instructions (IMDG) : P001
 IBC packing instructions (IMDG) : IBC02
 Tank instructions (IMDG) : T7
 Tank special provisions (IMDG) : TP2
 Stowage category (IMDG) : A
 Flash point (IMDG) : 54°C c.c.
 Properties and observations (IMDG) : Colourless, flammable liquid with an irritating odour. Flashpoint: 54°C c.c. Immiscible with water. In the presence of moisture, corrosive to most metals. Vapour irritates mucous membranes.
- MFAG-No : 137

Air transport(IATA)

- UN-No. (IATA) : 1715
 Proper Shipping Name (IATA) : Acetic anhydride
 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 : 137

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)
 Dangerous or Harmful Substances for Notification of Chemical Name etc. on SDS (Law Art.57-2, Enforcement Order Art.18-2)
 Acetic anhydride
 Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4)

Industrial Safety and Health Law	Chemical substances that damage the skin, etc. Harmful substances that cause skin irritation (Ordinance on Industrial Safety and Health, Article 594-2, Para.1, list of substances applicable to No. 0704 Item 1, 4 based on July 4, 2023)
Japanese Poisonous and Deleterious Substances Control Law	: Deleterious Substances (Designated Order Art.2) Acetic acid anhydride and preparations containing it
Narcotics and Psychotropics Control Act	: Raw Materials(Law Art.2 (7) , Attached Table Art.4) Specified Raw Materials for Specified Narcotics and Psychotropics (Law Art.2 (40), Enforcement Order Art. 1)
Fire Service Law	: Group 4, Flammable Liquids, Class 2 petroleums, Water-insoluble liquids (Act, Art.2, Para.7, Appended Table 1, Group 4)
Law Relating to Prevention of Marine Pollution and Maritime Disasters	: Noxious Liquid Substances - Category Z (Law Art.3(3), Enforcement Order, Art.1-2, Attached Table No.1 Item 3)
Foreign Exchange and Foreign Trade Control Act	: Export Trade Control Ordinance appendix 1-16 Export Approval (Export Trade Control Order, Attached Table 2)
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)	: Class 1 Designated Chemical Substances (Act Art.2 para.2, Enforcement Order Art.1 Appended Table No.1) Acetic anhydride (100%)

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.