SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name 2,4,6-trimethyl-1,3,5-trioxane

1.2 Other means of identification

Product number -
Other names FEMA 2003; ALDEFRESH; Paraldehyde

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.
Uses advised against no data available

1.4 Supplier's details

Company Shanghai Yien Chemical Technology Co., Ltd
Address Building 6, 28 Yingong Road, Fengxian District, Shanghai Chemical Industry Zone, Shanghai, 201400, China
Telephone +86-400-133-2688

1.5 Emergency phone number

Emergency phone number +86-400-133-2688
Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 3

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word Warning
Hazard statement(s) H226 Flammable liquid and vapour
Precautionary statement(s)
Prevention P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.

	P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. P370+P378 In case of fire: Use ... to extinguish.
Storage	P403+P235 Store in a well-ventilated place. Keep cool.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
2,4,6-trimethyl-1,3,5-trioxane	2,4,6-trimethyl-1,3,5-trioxane	123-63-7	204-639-8	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

INHALATION AND INGESTION: Irritation, headache, bronchitis, pulmonary edema. Irritating to digestive tract. Hypnotic and analgesic properties. Incoordination and drowsiness, followed by sleep. Larger doses-coma-weak pulse and shallow respiration, cyanosis-death from respiratory paralysis. EYES: irritation-can cause serious injury. SKIN: Dermatitis (skin inflammation). (USCG, 1999)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Treatment is directed toward maintenance of airway, breathing, and circulation. Supportive care is the mainstay of therapy. Patients are often critically ill and must be under constant supervision.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use water spray, dry chemical, "alcohol resistant" foam, or carbon dioxide. Water may be ineffective. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Emits toxic fumes on heating. Behavior in Fire: Can react vigorously when exposed to heat or flame. Vapor is heavier than air and may travel a considerable distance to source of ignition and flash back. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Use water spray, alcohol-resistant foam, dry powder, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable non-plastic containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Remove all ignition sources. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable non-plastic containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Above 24°C use a closed system, ventilation and explosion-proof electrical equipment. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Separated from food and feedstuffs, bases and oxidants.PARALDEHYDE SHOULD BE STORED IN WELL-FILLED, TIGHT, LIGHT-RESISTANT GLASS CONTAINERS WITH A CAPACITY OF NO MORE THAN 30 ML, AT A TEMP NOT EXCEEDING 25 DEG C.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles or eye protection in combination with breathing protection.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid. Liquid.
Colour	Light yellow.
Odour	CHARACTERISTIC AROMATIC ODOR
Melting point/freezing point	12.6 °C
Boiling point or initial boiling point and boiling range	124.5 °C
Flammability	Highly flammable.
Lower and upper explosion limit/flammability limit	LOWER LIMIT, 1.3%.
Flash point	24 °C
Auto-ignition temperature	460° F (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	1.128 centipoise at 70 deg F
Solubility	120 g / L (20 °C)
Partition coefficient n-octanol/water	Log Kow = 0.67
Vapour pressure	25.89 psi (55 °C)
Density and/or relative density	0.99
Relative vapour density	1.52 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on heating. This produces toxic fumes. Decomposes under the influence of air and light. Reacts with bases and oxidants. Attacks plastics.

10.2 Chemical stability

On exposure to light & air, it decomp to acetaldehyde & is oxidized to acetic acid

10.3 Possibility of hazardous reactions

DANGEROUS, WHEN EXPOSED TO HEAT, FLAME OR OXIDIZERS.The vapour is heavier than air and may travel along the ground; distant ignition possible.PARALDEHYDE is an ether derivative. This compound is decomposed by light and air, on prolonged storage, to acetaldehyde and acetic acid. Incompatible with alkalis, hydrocyanic acid iodides and oxidizers. (NTP, 1992)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Paraldehyde is incompatible with many plastics

10.6 Hazardous decomposition products

Emits toxic fumes on heating.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat (male/female) - 2 711 mg/kg bw.
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the central nervous system.

STOT-repeated exposure

The substance may have effects on the nervous system. This may result in addiction. The substance may have effects on the kidneys and liver. This may result in impaired functions.

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Oncorhynchus mykiss (previous name: Salmo gairdneri) - 1 340 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 356 mg/L - 48 h.
- Toxicity to algae: no data available
- Toxicity to microorganisms: EC10 - Pseudomonas putida - > 1 000 mg/L - 18 h.

12.2 Persistence and degradability

Japanese MITI, initial concn 100 ppm, 14 days <30% BODT, activated sludge inoculum(1). A bacterium isolated from sewage, C. paraldehydium KY 4359, was found to degrade paraldehyde to acetaldehyde and acetic acid(2).

12.3 Bioaccumulative potential

Based on a water solubility of 125,000 mg/l at 25 deg C and a log Kow of 0.67, bioconcentration factors (BCF) of 0.8-2 were estimated for paraldehyde(1,2,3,SRC). These BCF values suggest that paraldehyde would not bioaccumulate significantly in aquatic organisms(SRC).

12.4 Mobility in soil

Soil adsorption coefficients (Koc) of 7-55 were estimated for paraldehyde using linear regression equations based on a water solubility of 125,000 mg/l at 25 deg C and a log Kow of 0.67(1,2,3,SRC). These Koc values suggest that paraldehyde would be very highly mobile in soil and that adsorption to suspended solids and sediments in water would be insignificant(4,SRC).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN1264 (For reference only, please check.)	IMDG: UN1264 (For reference only, please check.)	IATA: UN1264 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: PARALDEHYDE (For reference only, please check.)	IMDG: PARALDEHYDE (For reference only, please check.)	IATA: PARALDEHYDE (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)	IMDG: 3 (For reference only, please check.)	IATA: 3 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: III (For reference only, please check.)	IMDG: III (For reference only, please check.)	IATA: III (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No	IMDG: No	IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
2,4,6-trimethyl-1,3,5-trioxane	2,4,6-trimethyl-1,3,5-trioxane	123-63-7	204-639-8
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
Revision Date	July 15, 2019

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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