

## Safety Data Sheet

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### Section 1. Identification of the substance/mixture and of the company/undertaking

**Product identifier:**

Product name: Triethylenetetramine

Reference number(SDS):49180jis\_J\_E2-3

**Product type:**

Reagent

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of the product: Research and Development

Uses advised against: Do not use for other purposes.

**Details of the supplier of the safety data sheet**

Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.

Address: 1-6, Ohmano-cho, Koshigaya-shi, Saitama 343-0844, Japan

Division: Quality Assurance Department

Telephone number: +81-48-986-6161

FAX: +81-48-989-2787

e-mail address: shiyaku-t@junsei.co.jp

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### Section 2. Hazards identification

**GHS classification and label elements of the product****Classification of the substance or mixture****HEALTH HAZARDS**

Acute toxicity (Dermal): Category 3

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Skin sensitization: Category 1

Specific target organ toxicity – single exposure: Category 3 (Respiratory tract irritation)

**ENVIRONMENT HAZARDS**

Hazardous to the aquatic environment, short-term (acute): Category 3

Hazardous to the aquatic environment, long-term (chronic): Category 2

(Note) GHS classification without description: Not classified/Classification not possible

**Label elements**

Signal word: Danger

**HAZARD STATEMENT**

H311-Toxic in contact with skin

H314-Causes severe skin burns and eye damage

H318-Causes serious eye damage

H317-May cause an allergic skin reaction

H335-May cause respiratory irritation

H402-Harmful to aquatic life

H411-Toxic to aquatic life with long lasting effects

**PRECAUTIONARY STATEMENT****Prevention**

- Avoid release to the environment.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Use only outdoors or in a well-ventilated area.
- Wash contaminated parts thoroughly after handling.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/protective clothing/eye protection/face protection.

**Response**

- In case of fire: Use water mist, alcohol-resistant foam, dry powder, CO2 to extinguish.
- Collect spillage.
- Specific treatment is required.
- Immediately call a POISON CENTER/doctor/physician.
- Call a POISON CENTER/doctor/physician if you feel unwell.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF ON SKIN: Wash with plenty of soap and water.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- If skin irritation or rash occurs: Get medical advice/attention.
- Wash contaminated clothing before reuse.
- Take off immediately all contaminated clothing and wash it before reuse.
- Take off contaminated clothing and wash it before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**Storage**

- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.

**Disposal**

- Dispose of contents/container in accordance with local/national regulation.

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**Section 3. Composition/information on ingredients****Mixture/Substance selection:****Substance**

- Ingredient name:Triethylenetetramine
- Content (%):<= 100
- Chemical formula:C6H18N4
- ENCS:2-163
- CAS No.:112-24-3
- MW:146.23
- EC No.:203-950-6

Note : The figures shown above are not the specifications of the product.

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**Section 4. First-aid measures****Descriptions of first-aid measures****General measures**

- Immediately call a POISON CENTER/doctor/physician.
- Keep victim warm and quiet.

Call emergency medical service.

Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

#### IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Give artificial respiration if victim is not breathing.

Administer oxygen if breathing is difficult.

Call a POISON CENTER/doctor/physician if you feel unwell.

#### IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water or shower.

Wash with plenty of soap and water.

Immediately call a POISON CENTER/doctor/physician.

If skin irritation or rash occurs: Get medical advice/attention.

Remove and isolate contaminated clothing and shoes.

For minor skin contact, avoid spreading material on unaffected skin.

#### IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER/doctor/physician.

If eye irritation persists: Get medical advice/attention.

#### IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Sore throat. Cough. Burning sensation. Laboured breathing. Shortness of breath.

Burns in mouth and throat. Abdominal pain. Shock or collapse.

※Repeated or prolonged inhalation may cause asthma.

(Symptoms when skin and/or eye contact)

Redness. Pain. Loss of vision. Severe deep burns. Blisters.

Indication of any immediate medical attention and special treatment needed

Rest and medical observation are essential.

Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered.

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## Section 5. Fire-fighting measures

### Extinguishing media

#### Suitable extinguishing media

In case of fire, use water mist, alcohol-resistant foam, dry powder, CO2 to extinguish.

#### Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

### Specific hazards arising from the substance or mixture

Containers may explode when heated.

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may cause pollution.

### Advice for firefighters

#### Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

Cool container with water spray.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

Wear protective gloves/protective clothing/eye protection/face protection.

Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

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## Section 6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

PUBLIC SAFETY: Ventilate closed spaces before entering.

EVACUATION : Spill: See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Environmental precautions

Avoid release to headsprings, rivers, lakes, ocean and groundwater.

Fire or Explosion : Runoff may pollute waterways.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, etc.), then place in a chemical waste container.

Collect leaking liquid in sealable containers.

Preventive measures for secondary accident

Collect spillage.

Stop leak if you can do it without risk.

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Prevent entry into waterways, sewers, basements or confined areas.

Do not get water inside containers.

Keep out of low areas.

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## Section 7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Precautions)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Use personal protective equipment as required.

When using do not eat, drink or smoke.

Any incompatibilities

Acids, Strong oxidizing agents should not be mixed with the chemicals.

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Contaminated work clothing should not be allowed out of the workplace.

Take off immediately all contaminated clothing and wash it before reuse.

Storage

Conditions for safe storage

Store in a well-ventilated place. Keep container tightly closed.

Keep cool. Protect from sunlight.

Store in accordance with local/national regulation.

Store locked up.

Container and packaging materials for safe handling data is not available.

Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See

Section 8 for exposure controls and personal protection recommendations.

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## Section 8. Exposure controls/personal protection

Control parameters

Occupational Exposure Limit

JSOH

Not established

ACGIH

Not established

Exposure controls

Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures

Respiratory protection

Select and wear respiratory protection in accordance with approved standards (e.g. JIS T8150).

Recommended respiratory protection: Self-Contained Breathing Apparatus (SCBA)

Hand protection

Wear protective gloves. Recommended material(s): neoprene, butyl rubber, viton

Inspect before use and replace worn or damaged gloves.

Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions.

Chemical-resistant, impervious gloves complying with an approved standard (e.g. JIS T8116) should be used.

Eye protection

Wear chemical safety goggle.

Wear eye/face protection in accordance with approved standards (e.g. JIS T8147).

Skin and body protection

Wear impervious clothing and boots in case of repeated or prolonged treatment.

Personal protective equipment for the body and skin should be selected based on the task being performed and the risks involved.

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## Section 9. Physical and Chemical Properties

### Information on basic physical and chemical properties

Physical state: Viscous liquid

Color: Colorless ~ Yellow

Odor: Characteristic odor

Odor threshold data is not available.

Melting point/Freezing point:  $-35^{\circ}\text{C}$

Boiling point or initial boiling point:  $277^{\circ}\text{C}$

Boiling range data is not available.

Flammability: Ignitable

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 1.1 vol%

Flash point:  $135^{\circ}\text{C}(\text{C.C.})$

Auto-ignition temperature:  $335^{\circ}\text{C}$

Decomposition temperature:  $277^{\circ}\text{C}$

Self-Accelerating Decomposition Temperature/SADT data is not available.

pH: 10.7 (10 g/L)

Dynamic viscosity data is not available.

Kinematic viscosity:  $27.24\text{mm}^2/\text{s}(20^{\circ}\text{C})$

Solubility:

Solubility in water: 4770 g/L

Solubility in solvent: Soluble in alcohol.

Partition coefficient n-octanol/water:  $\log \text{Pow} = -2.65$

Vapor pressure: 1.3 Pa ( $20^{\circ}\text{C}$ )

Vapor density data is not available.

Density and/or relative density:  $0.977 \sim 0.984 \text{ g/mL}(20^{\circ}\text{C})$

Relative vapor density (Air=1): 5.04

Relative density of the Vapor/air - mixture at  $20^{\circ}\text{C}$  (Air = 1): 1.00

Particle characteristics data is not available.

### Other information

Critical temperature data is not available.

Evaporation rate data is not available.

VOC data is not available.

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## Section 10. Stability and Reactivity

### Reactivity

Reactivity data is not available.

### Chemical stability

Stable under normal storage/handling conditions.

Hygroscopic.

### Possibility of hazardous reactions

Decomposes on heating. This produces toxic fumes.

The substance is a strong base. It reacts violently with acid and is corrosive to aluminium, copper and zinc.

Triethylenetetramine, JUNSEI CHEMICAL CO., LTD., 49180jis\_J\_E2-3, 07/Aug/2025

Reacts violently with strong oxidants. This generates fire and explosion hazard. This produces toxic fumes.  
Attacks some coatings, some forms of plastic(e.g. Polyvinyl chloride) and rubber(e.g. Nitrile rubber).

Conditions to avoid

Contact with incompatible materials.

Open flames. Heating.

Incompatible materials

Acids. Strong oxidizing agents.

Hazardous decomposition products

Carbon oxides. Nitrogen oxides.

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## Section 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

##### Acute toxicity (Oral)

###### [Product]

Classification not possible (Insufficient data available or no data available).

###### [Data for components of the product]

###### [NITE-CHRIP]

rat LD50: 2500 mg/kg (source: NITE)

##### Acute toxicity (Dermal)

###### [Product]

Category 3, Toxic in contact with skin

###### [Data for components of the product]

###### [NITE-CHRIP]

rabbit LD50: 550 mg/kg (source: NITE)

##### Acute toxicity (Inhalation)

###### [Product]

Classification not possible (Insufficient data available or no data available).

###### [Data for components of the product]

No data available.

#### Irritant properties

##### Skin corrosion/irritation

###### [Product]

Category 1, Causes severe skin burns and eye damage

###### [Data for components of the product]

###### [NITE-CHRIP]

Category 1 (source: NITE)

##### Serious eye damage/irritation

###### [Product]

Category 1, Causes serious eye damage

###### [Data for components of the product]

###### [NITE-CHRIP]

Category 1 (source: NITE)

## Sensitization

## Respiratory sensitization

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

## Skin sensitization

[Product]

Category 1, May cause an allergic skin reaction

[Data for components of the product]

[NITE-CHRIP]

Category 1 (source: NITE)

## Germ cell mutagenicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

## Carcinogenicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

## Reproductive toxicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

## Specific target organ toxicity (STOT)

## STOT-single exposure

[Product]

Category 3, May cause respiratory irritation

[Data for components of the product]

[NITE-CHRIP]

Category 3 (Respiratory tract irritation) (source: NITE)

## STOT-repeated exposure

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

## Aspiration hazard

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

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**Section 12. Ecological Information**

## Ecotoxicity

## Aquatic toxicity

## [Product]

Category 3, Harmful to aquatic life

Category 2, Toxic to aquatic life with long lasting effects

## [Data for components of the product]

Hazardous to the aquatic environment, short-term (acute)

## [NITE-CHRIP]

Algae (*Raphidocelis subcapitata*) 72-hour ErC50: 27 mg/L (source: NITE)Fish (*Oryzias latipes*) 96-hour LC50: > 110 mg/L (source: NITE)

Hazardous to the aquatic environment, long-term (chronic)

## [NITE-CHRIP]

Algae (*Raphidocelis subcapitata*) 72-hour NOErC: 0.468 mg/L (source: NITE)

## Water solubility

## [Data for components of the product]

not poorly water-soluble (4770 g/L) (source: NITE)

## Persistence and degradability

Persistence and degradability data is not available.

## Bioaccumulative potential

## [Data for components of the product]

log Kow: -2.65 (source: NITE)

## Mobility in soil

Mobility in soil data is not available.

## Other adverse effects

Ozone depleting chemical data is not available.

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**Section 13. Disposal considerations**

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

## Waste treatment methods

Avoid release to the environment.

Dispose of contents/container in accordance with local/national regulation.

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**Section 14. Transport Information**

## UN No., UN CLASS

UN Number or ID Number : 2259

UN Proper Shipping Name :

TRIETHYLENETETRAMINE

Class or division (Transport hazard class) : 8

Packing group : II

ERG GUIDE No.: 153

## IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 2259

UN Proper Shipping Name :

TRIETHYLENETETRAMINE

Class or division (Transport hazard class) : 8

Packing group : II

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 2259

UN Proper Shipping Name :

TRIETHYLENETETRAMINE

Class or division (Transport hazard class) : 8

Hazard labels : Corrosive

Packing group : II

Environmental hazards

Marine pollutants (yes/no) : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Noxious Liquid Substances ; Cat. Y

Triethylenetetramine

MARPOL Annex V – HME (Harmful to the Marine Environment)

Hazardous to the aquatic environment – long-term (chronic): cat.1, 2

Triethylenetetramine

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#### Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

112-24-3

All components are listed or exempted.

Other regulatory information

We are not able to check up the regulatory information with regard to the substances in your country or region, therefore, we request this matter would be filled by your responsibility.

Regulatory information with regard to this substance in your country or in your region should be examined by your own responsibility.

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

Regulatory information in this section are limited to intentional ingredient(s), but does not contain information on non-intentional ingredients or impurities which are not informed by supplier(s).

Chemical safety assessment

Advice on safe handling for this product can be found in sections 7 and 8 of this SDS.

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#### Section 16. Other information

GHS classification and labelling

H311–Acute toxicity, Category 3: H311 Toxic in contact with skin

H314–Skin corrosion/irritation, Category 1: H314 Causes severe skin burns and eye damage

H318–Serious eye damage/eye irritation, Category 1: H318 Causes serious eye damage

H317–Skin sensitization, Category 1: H317 May cause an allergic skin reaction

H335–STOT – single exposure, Category 3, Respiratory tract irritation: H335 May cause respiratory irritation.

H402–Hazardous to the aquatic environment, short-term (acute), Category 3: H402 Harmful to aquatic life

H411–Hazardous to the aquatic environment, long-term (chronic), Category 2: H411 Toxic to

aquatic life with long lasting effects

#### References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN  
Recommendations on the TRANSPORT OF DANGEROUS GOODS 23rd edit., 2023 UN  
IMDG Code, 2024 Edition (Incorporating Amendment 42-24)  
IATA Dangerous Goods Regulations (66th Edition) 2025  
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)  
2025 TLVs and BEIs. (ACGIH)  
JIS Z 7252 : 2019  
JIS Z 7253 : 2019  
Recommendation of occupational exposure limits (2023-2024) (JSOH)  
Notification No. 0111-1 (January 11, 2022), Chemical Hazards Control Division, Industrial  
Safety and Health Department, Labour Standards Bureau, MHLW in Japan  
Supplier's data/information  
Chemicals safety data management system "GHS Assistant" Version 4.34  
(<https://www.asahi-ghs.com/>)  
NITE Chemical Risk Information Platform "NITE-CHRIP"  
([https://www.chem-info.nite.go.jp/chem/chrip/chrip\\_search/systemTop](https://www.chem-info.nite.go.jp/chem/chrip/chrip_search/systemTop))  
GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.1) (May. 2024, METI)

#### Abbreviations and acronyms

SDS (Safety Data Sheet)  
LD50 (Lethal Dose, 50%)  
LC50 (Lethal Concentration, 50%)  
IARC (International Agency for Research on Cancer)  
ACGIH (American Conference of Governmental Industrial Hygienists)  
EPA (US Environmental Protection Agency)  
NTP (US National Toxicology Program)  
METI (Ministry of Economy, Trade and Industry in Japan)  
MHLW (Ministry of Health, Labour and Welfare in Japan)  
MOE (Ministry of the Environment in Japan)  
JSOH (Japan Society for Occupational Health)  
ISHA (Industrial Safety and Health Act in Japan)  
CSCL (Chemical Substances Control Law in Japan)  
EU (European Union)  
EC50 (Effective Concentration, 50%)  
NOEC (No Observed Effect Concentration)  
BOD (Biochemical Oxygen Demand)  
COD (Chemical Oxygen Demand)  
BCF (Bioconcentration Factor)  
anh (anhydride)

#### General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety. The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties. The GHS classification data given here is based on current Data published in Japan



Triethylenetetramine, JUNSEI CHEMICAL CO., LTD., 49180jis\_J\_E2-3, 07/Aug/2025  
(National Institute of Technology and Evaluation (NITE) Chemical Risk Information Platform  
(NITE-CHRIP), up to FY2023).