

## Safety Data Sheet

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

Product identifier:

Product name: Toluene

Reference number(SDS):50070jis\_J\_E1-3

Product type:

Reagent

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

### Section 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL AND CHEMICAL HAZARDS

Flammable liquids: Category 2

HEALTH HAZARDS

Acute toxicity (Inhalation): Category 4

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 2B

Reproductive toxicity: Category 1A

Reproductive toxicity – effects on or via lactation: Additional category

Specific target organ toxicity – single exposure: Category 1(central nervous system)

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

Specific target organ toxicity – single exposure: Category 3 (Narcosis)

Specific target organ toxicity – repeated exposure: Category 1(central nervous system, kidney)

Aspiration hazard: Category 1

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment (Acute): Category 2

Hazardous to the aquatic environment (Long-term): Category 3

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

Label elements



Signal word: Danger

HAZARD STATEMENT

H225-Highly flammable liquid and vapor

H332-Harmful if inhaled

H315-Causes skin irritation

H320-Causes eye irritation

H360-May damage fertility or the unborn child

H362-May cause harm to breast-fed children

H370-Causes damage to organs

- H335–May cause respiratory irritation
- H336–May cause drowsiness or dizziness
- H372–Causes damage to organs through prolonged or repeated exposure
- H304–May be fatal if swallowed and enters airways
- H401–Toxic to aquatic life
- H412–Harmful to aquatic life with long lasting effects

#### PRECAUTIONARY STATEMENT

##### Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Avoid contact during pregnancy and while nursing.
- Avoid release to the environment.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Keep container tightly closed.
- Ground and bond container and receiving equipment.
- Use explosion–proof electrical/ventilating/lighting equipment.
- Use non–sparking tools.
- Take action to prevent static discharges.
- Do not breathe vapors.
- Use only outdoors or in a well–ventilated area.
- Wash contaminated parts thoroughly after handling.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Use personal protective equipment as required.
- Do not eat, drink or smoke when using this product.

##### Response

- In case of fire: Use foam, dry powder, CO2 to extinguish.
- Get medical advice/attention if you feel unwell.
- IF exposed or concerned: Get medical advice/attention.
- Call a POISON CENTER/doctor/physician if you feel unwell.
- IF exposed or concerned: Call a POISON CENTER/doctor/physician.
- 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 occurs: Get medical advice/attention.
- 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 eye irritation persists: Get medical advice/attention.
- IF SWALLOWED: Do NOT induce vomiting. Immediately call a POISON CENTER/doctor/physician.

##### Storage

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

##### Disposal

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

##### Specific Physical and Chemical hazards

- Highly flammable liquid. Vapor/air mixture may explode.

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### Section 3. Composition/information on ingredients

#### Mixture/Substance selection:

##### Substance

- Ingredient name:Toluene
- Content (%):99.0 <
- Chemical formula:C7H8

Chemicals No, Japan:3-2

CAS No.:108-88-3

MW:92.14

ECNO:203-625-9

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

Get medical advice/attention if you feel unwell.

Keep victim warm and quiet.

Call emergency medical service.

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.

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

If skin irritation occurs: Get medical advice/attention.

In case of burns, immediately cool affected skin for as long as possible with child water.

Do not remove clothing if adhering to skin.

Remove and isolate contaminated clothing and shoes.

###### IF IN EYES

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

If eye irritation persists: Get medical advice/attention.

###### IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

Immediately call a POISON CENTER/doctor/physician.

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

##### Most important symptoms and effects, both acute and delayed

###### (Symptoms when inhalation or ingestion)

Nausea. Abdominal pain. Headache. Drowsiness. Cough. Dizziness. Sore throat. Unconsciousness.

Burning sensation.

###### (Symptoms when skin and/or eye contact)

Dry skin. Conjunctival redness of the eyes. Redness of the skin. Pain of the eyes.

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#### Section 5. Fire-fighting measures

##### Extinguishing media

###### Suitable extinguishing media

In case of fire, use foam, dry powder, CO<sub>2</sub> to extinguish.

###### Unsuitable extinguishing media

Do not use direct water jet.

Water may be effective for cooling, but may not effect extinguishment.

##### 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 full face piece operated 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.
- Do not touch or walk through spilled material.

**Environmental precautions**

- Runoff to sewer may create fire or explosion hazard.
- Vapor explosion hazard indoors, outdoors or in sewers.
- Avoid release to headsprings, rivers, lakes, ocean and groundwater.

**Methods and materials for containment and cleaning up**

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.
- All equipment used when handling the product must be grounded.

**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.
- 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 vapors/fume.

(Protective measures against fire and explosion)

- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use non-sparking tools.
- Take action to prevent static discharges.

(Exhaust/ventilator)

- Exhaust/ventilator should be available.

(Safety treatments)

- Avoid contact with skin.
- Avoid contact with eyes.

**Safety Measures**

- Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.  
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

Strong oxidizing agents should not be mixed with the chemicals.

Advice on general occupational hygiene

Avoid contact during pregnancy and while nursing.  
Wash contaminated parts thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Take off 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

#### Control value

Japan control value (2009)  $\leq 20$ ppm

#### Adopted value

JSOH(2013) 50ppm; 188mg/m<sup>3</sup> (dermal)  
ACGIH(2020) TWA: 20ppm (CNS, visual, & hearing impair; female repro system eff; pregnancy loss)  
Notation...OTO

### 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

Wear respiratory protection.  
Wear positive pressure self-contained breathing apparatus (SCBA).

##### Hand protection

Wear protective gloves. Recommended material(s): 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.

##### Eye protection

Wear safety glasses with side-shields.  
Wear eye/face protection.

##### Skin and body protection

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

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## Section 9. Physical and Chemical Properties

### Information on basic physical and chemical properties

Physical state: Liquid

Color: Colorless

Odor: Characteristic odor

Odor threshold: 2.14 ppm (8 mg/m<sup>3</sup>)

Melting point/Freezing point: -95°C

Boiling point or initial boiling point: 111°C

Boiling range data is not available.

Flammability (gases, liquids and solids): Ignitable

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 1.1 vol %

Upper explosion limit: 7.1 vol %

Flash point: (C.C.) 4°C

Auto-ignition temperature: 480°C

Decomposition temperature data is not available.

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

pH data is not available.

Dynamic viscosity: 0.727 mPas (40°C)

Kinematic viscosity: 0.86 mm<sup>2</sup>/s (40°C)

Solubility:

Solubility in water: 526 mg/L (25°C)

Solubility in solvent: Very soluble in ethanol and diethyl ether.

n-Octanol/water partition coefficient: log Pow 2.73

Vapor pressure: 3.8 kPa (25°C)

Density and/or relative density: 0.87 g/cm<sup>3</sup> (20°C)

Relative vapor density (Air=1): 3.1

Relative density of the Vapor/air - mixture at 20°C (Air = 1): 1.01

Particle characteristics data is not available.

### Other information

Critical temperature: 591.75K

Evaporation rate data is not available.

VOC data is not available.

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## Section 10. Stability and Reactivity

### Reactivity

Runaway polymerization will not occur.

### Chemical stability

Stable under normal storage/handling conditions.

Highly flammable.

### Possibility of hazardous reactions

The vapour mixes well with air, explosive mixtures are easily formed.

As a result of flow, agitation, etc., electrostatic charges can be generated.

Reacts violently with strong oxidants. This generates fire and explosion hazard.

### Conditions to avoid

Contact with incompatible materials.

Open flames. Heating. Sparks.

### Incompatible materials

Strong oxidizing agents

### Hazardous decomposition products

Carbon oxides

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**Section 11. Toxicological Information****Information on toxicological effects****Acute toxicity****Acute toxicity (Oral)****[Product]**

Based on available data, the classification criteria are not met.

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

[GHS Cat. Japan, base data]

rat LD50=5000 mg/kg (MOE risk assessment vol. 1, 2002)

**Acute toxicity (Dermal)****[Product]**

Based on available data, the classification criteria are not met.

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

[GHS Cat. Japan, base data]

rabbit LD50=12400 mg/kg (EU-RAR, 2003)

**Acute toxicity (Inhalation)****[Product]**

Category 4, Harmful if inhaled

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

[GHS Cat. Japan, base data]

vapor: rat LC50=3319~8800ppm/4hr (EU-RAR, 2003 et al.)

**Labor standard law, Japan; Toxic**

Toluene

**Irritant properties****Skin corrosion/irritation****[Product]**

Category 2, Causes skin irritation

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

[GHS Cat. Japan, base data]

rabbit : moderate irritation (EU-RAR, 2003)

**Serious eye damage/irritation****[Product]**

Category 2B, Causes eye irritation

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

[GHS Cat. Japan, base data]

rabbit : slight eyes irritation (EU-RAR, 2003)

**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]**

Based on available data, the classification criteria are not met.

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

[GHS Cat. Japan, base data]

guinea pigs (EU guideline B6, GLP) : it was concluded that this substance was not a skin sensitizer.  
(EU-RAR, 2003)

**Germ cell mutagenicity****[Product]**

Based on available data, the classification criteria are not met.

## [Data for components of the product]

Mutagen [MHLW\_J Notice]

[GHS Cat. Japan, base data]

mice (in vivo germ cell mutagenicity test) : All negative (NITE risk assessment No. 87, 2006)

mice or rats (in vivo somatic cell mutagenicity test) : All negative (NITE risk assessment No. 87, 2006 et al.)

Reverse-mutation assay in bacteria (Ames test) : Negative (NITE risk assessment No. 87, 2006 et al.)

Chromosome aberration test (CHO cells) : Negative (NITE risk assessment No. 87, 2006)

## Carcinogenicity

[Product]

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

[Product data]

No data available.

[Data for components of the product]

[IARC]

Group 3 : Not classifiable as to its carcinogenicity to humans

[ACGIH]

A4(2020) : Not Classifiable as a Human Carcinogen

[EPA]

I; Inadequate information to assess carcinogenic potential (2005)

## Reproductive toxicity

[Product]

Category 1A, May damage fertility or the unborn child

Additional category, May cause harm to breast-fed children

[Data for components of the product]

[GHS Cat. Japan, base data]

cat. 1A; NITE Initial Risk Assessment Report 87, 2006

cat. add; SIDS(J), Access on Apr. 2012

## Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs

Category 3, May cause respiratory irritation

Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

central nervous system (IARC 47, 1989; IRIS tox. Review, 2005)

[cat.3 (resp. irrit.)]

[GHS Cat. Japan, base data]

(Toluene)

respiratory tract irritation (PATTY 5th, 2001)

[cat.3 (drow./dizz.)]

[GHS Cat. Japan, base data]

narcotic effect (EHC 52, 1985; IARC 47, 1989)

STOT-repeated exposure

[Product]

Category 1, Causes damage to organs through prolonged or repeated exposure

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

central nervous system, kidneys (Occupational medicine vol.36, 1994)

## Aspiration hazard

[Product]

Category 1, May be fatal if swallowed and enters airways



[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

cat. 1; hydrocarbon, kinematic viscosity =0.86 mm<sup>2</sup>/s (40°C)

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## Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 2, Toxic to aquatic life

Category 3, Harmful to aquatic life with long lasting effects

[Data for components of the product]

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

Crustacea (Ceriodaphnia dubia) EC50=3.78mg/L/48hr (NITE Initial Risk Assessment Report, 2006)

Hazardous to the aquatic environment (Long-term)

[GHS Cat. Japan, base data]

Crustacea (Ceriodaphnia dubia) NOEC=0.74mg/L/7days (NITE Initial Risk Assessment Report, 2006)

Water solubility

[Data for components of the product]

526 mg/L (25°C) (HSDB)

Persistence and degradability

[Data for components of the product]

BOD\_Degradation : 123% (METI existing chemical safety inspections in Japan)

Bioaccumulative potential

[Data for components of the product]

log Pow=2.73 (PHYSPROP DB, 2008)

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 No. or ID No.: 1294

UN Proper Shipping Name : TOLUENE

Class or division (Transport hazard class) : 3

Packing group : II

ERG GUIDE No.: 130

IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 1294

Proper Shipping Name : TOLUENE

Class or division : 3

Packing group : II

**IATA Dangerous Goods Regulations**

UN No.: 1294  
Proper Shipping Name : TOLUENE  
Class or division : 3  
Hazard labels : Flamm.liquid  
Packing group : II

**Environmental hazards**

MARPOL Annex III – Prevention of pollution by harmful substances  
Marine pollutants (yes/no) : no  
MARPOL Annex V – Prevention of pollution by garbage discharge  
Reproductive toxicity: cat.1, 1A, 1B  
Toluene  
Specific target organ toxicity – repeated exposure: cat.1  
Toluene

**Maritime transport in bulk according to IMO instruments**

Noxious Liquid ; Cat. Y  
Toluene(Y-299)  
Flammable Liquid  
Toluene(DANGEROUS-15)

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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  
108-88-3

All components are listed or exempted.

Superfund Amendments and Reauthorizations Act (SARA), Title III  
SARA 313 (TRI)  
Toluene

**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**

H225-Flammable liquids, Category 2: H225 Highly flammable liquid and vapour  
H332-Acute toxicity, Category 4: H332 Harmful if inhaled  
H315-Skin corrosion/irritation, Category 2: H315 Causes skin irritation  
H320-Serious eye damage/eye irritation, Category 2B: H320 Causes eye irritation  
H360-Reproductive toxicity, Category 1A: H360 May damage fertility or the unborn child  
H362-Reproductive toxicity – effects on or via lactation, Additional category : H362 May cause harm to breast-fed children  
H370-STOT – single exposure, Category 1: H370 Causes damage to organs  
H335-STOT – single exposure, Category 3, Respiratory tract irritation: H335 May cause respiratory irritation.

Toluene, JUNSEI CHEMICAL CO., LTD., 50070jis\_J\_E1-3, 18/Nov/2022

H336-STOT – single exposure, Category 3, Respiratory tract irritation: H336 May cause drowsiness or dizziness.

H372-STOT – Repeated exposure, Category 1: H372 Causes damage to organs through prolonged or repeated exposure

H304-Aspiration hazard, Category 1: H304 May be fatal if swallowed and enters airways

H401-Hazardous to the aquatic environment, short-term (acute), Category 2: H401 Toxic to aquatic life

H412-Hazardous to the aquatic environment, long-term (chronic), Category 3: H412 Harmful 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 21th edit., 2019 UN

IMDG Code, 2018 Edition (Incorporating Amendment 39-18)

IATA Dangerous Goods Regulations (62nd Edition) 2021

2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)

2022 TLVs and BEIs. (ACGIH)

JIS Z 7252 : 2019

JIS Z 7253 : 2019

2021 Recommendation on TLVs (JSOH)

Supplier's data/information

Chemicals safety data management system "GHS Assistant" Version 4.19 (<https://www.asahi-ghs.com/>)

NITE Chemical Risk Information Platform "NITE-CHRIP"

([https://www.nite.go.jp/en/chem/chrip/chrip\\_search/systemTop](https://www.nite.go.jp/en/chem/chrip/chrip_search/systemTop))

GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.0) (Mar. 2020, 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)

JSOH (Japan Society for Occupational Health)

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 Japan official data (NITE published in 2021).