

## Safety Data Sheet

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

**Product identifier:**

Product name: Benzene

Reference number(SDS): 68155jis\_J\_E2-2

**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 (Oral): Category 4

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 2A

Germ cell mutagenicity: Category 2

Carcinogenicity: Category 1A

Reproductive toxicity: Category 2

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

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

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

Aspiration hazard: Category 1

**ENVIRONMENT HAZARDS**

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

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**

H225-Highly flammable liquid and vapor

H302-Harmful if swallowed

H315-Causes skin irritation

H319-Causes serious eye irritation

H341-Suspected of causing genetic defects

H350-May cause cancer

- H361–Suspected of damaging fertility or the unborn child
- H370–Causes damage to organs
- 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
- H411–Toxic 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 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 dust/fume/gas/mist/vapors/spray.
- 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 water mist, foam, dry powder, CO2 to extinguish.
- Collect spillage.
- 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.
- Rinse mouth. Do NOT induce vomiting.
- IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
- IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.

##### 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: Benzene

Content (%): 99.5 <

Chemical formula: C<sub>6</sub>H<sub>6</sub>

Chemicals No, Japan: 3-1

CAS No.: 71-43-2

MW: 78.11

ECNO: 200-753-7

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. Dizziness. Shortness of breath.

Convulsions. Unconsciousness. Sore throat. Vomiting.

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

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

##### Indication of any immediate medical attention and special treatment needed

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

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#### Section 5. Fire-fighting measures

##### Extinguishing media

###### Suitable extinguishing media

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

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.

A vapor suppressing foam may be used to reduce vapors.

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.

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 acids, Oxidizing agents, Halogens should not be mixed with the chemicals.

Advice on general occupational hygiene

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.

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 (2004)  $\leq 1$ ppm

Adopted value

JSOH(1997) (Individual excess lifetime risk of cancer:  $10E-3$ ) Reference value: 1ppm;

(Individual excess lifetime risk of cancer:  $10E-4$ ) Reference value: 0.1ppm

ACGIH(1997) TWA: (0.5ppm);

STEL: (2.5ppm) (Leukemia)

Notation...Skin

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-clear

Odor: Characteristic odor

Odor threshold: 4.68ppm

Melting point/Freezing point: 6°C

Boiling point or initial boiling point: 80°C

Boiling range data is not available.

Flammability (gases, liquids and solids): Ignitable

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 1.2 vol %

Upper explosion limit: 8.0 vol %

Flash point: (c.c.)-11°C

Auto-ignition temperature: 498°C

Decomposition temperature data is not available.

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

pH data is not available.

Dynamic viscosity: 0.604mPas(25°C)

Kinematic viscosity: 0.69mm<sup>2</sup>/s(25°C)

Solubility:

Solubility in water: 0.18g/100 ml(25°C)

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

n-Octanol/water partition coefficient: log Pow2.13

Vapor pressure: 10kPa(20°C)

Density and/or relative density: 0.88g/cm<sup>3</sup>(20°C)

Relative vapor density (Air=1): 2.7

Relative density of the Vapor/air - mixture at 20°C (Air = 1): 1.2

Particle characteristics data is not available.

**Other information**

Critical temperature: 288.9°C

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.

Highly flammable.

**Possibility of hazardous reactions**

The vapour is heavier than air and may travel along the ground; distant ignition possible.

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

Reacts violently with oxidants, nitric acid, sulfuric acid and halogens. This generates fire and explosion hazard.

Attacks plastics (e.g. polyvinyl chloride) and rubber(e.g. natural rubber, nitrile rubber and butyl rubber).

## Conditions to avoid

Contact with incompatible materials.

Open flames. Heating. Sparks.

## Incompatible materials

Strong acids, Oxidizing agents, Halogens.

## Hazardous decomposition products

Carbon oxides

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**Section 11. Toxicological Information**

## Information on toxicological effects

## Acute toxicity

## Acute toxicity (Oral)

[Product]

Category 4, Harmful if swallowed

[Data for components of the product]

[GHS Cat. Japan, base data]

rat LD50=1620mg/kg (calcd.)

## 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>=8200 mg/kg (NICNAS, 2001)

## Acute toxicity (Inhalation)

[Product]

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

[Data for components of the product]

[GHS Cat. Japan, base data]

vapor : rat LC50=44.66 mg/L/4hr (EHC 150, 1993)

## Irritant properties

## Skin corrosion/irritation

[Product]

Category 2, Causes skin irritation

[Data for components of the product]

[GHS Cat. Japan, base data]

rabbit : irritation (NICNAS, 2001 et al)

## Serious eye damage/irritation

[Product]

Category 2A, Causes serious eye irritation

[Data for components of the product]

[GHS Cat. Japan, base data]

rabbit : moderate eyes irritation (NICNAS, 2001 et al)

## 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]

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

[Data for components of the product]

No data available.

## Germ cell mutagenicity

[Product]

Category 2, Suspected of causing genetic defects

[Data for components of the product]

[GHS Cat. Japan, base data]

cat. 2; EHC 150, 1993

## Carcinogenicity

[Product]

Category 1A, May cause cancer

[Data for components of the product]

[GHS Cat. Japan, base data]

cat.1A; IARC Gr.1 (IARC, 1987 et al.)

[IARC]

Group 1 : Carcinogenic to humans

[ACGIH]

A1(1997) : Confirmed Human Carcinogen

[JSOH]

Group 1: The agents which are carcinogenic to humans

[NTP]

Known : Known to be Human Carcinogens

[NTP]

K/L; Known/likely human carcinogen(1996)

[EU]

Category 1A; Substances known to have carcinogenic potential for humans

## Reproductive toxicity

[Product]

Category 2, Suspected of damaging fertility or the unborn child

[Data for components of the product]

[GHS Cat. Japan, base data]

cat. 2; ATSDR, 2005

## Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs

Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

respiratory system (NICNAS, 2001)

[cat.3 (narcotic effects)]

[GHS Cat. Japan, base data]

(Benzene)

narcotic effect (EHC 150, 1993)

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]

hematopoietic system, central nervous system (NICNAS, 2001)

## 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 =0.740 mm<sup>2</sup>/s (25°C)

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## Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 2, Toxic 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)

[GHS Cat. Japan, base data]

Fish (rainbow trout) LC50=5.3mg/L/96hr (EU-RAR, 2008)

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

[GHS Cat. Japan, base data]

Fish (Pimephales promelas) NOEC=0.8mg/L/32hr (EU-RAR, 2008)

Water solubility

[Data for components of the product]

0.18 g/100 ml (25°C) (ICSC, 2016)

Persistence and degradability

[Data for components of the product]

Not rapidly degradable [BOD\_Degradation: 40% (METI existing chemical safety inspections, 1979)]

Bioaccumulative potential

[Data for components of the product]

log Pow=2.13 (ICSC, 2016)

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 : 1114

UN Proper Shipping Name : BENZENE

Class or division (Transport hazard class) : 3

Packing group : II

ERG GUIDE No.: 130

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 1114

UN Proper Shipping Name : BENZENE

Class or division (Transport hazard class) : 3

Packing group : II

## IATA (Dangerous Goods Regulations)

UN Number or ID Number : 1114

UN Proper Shipping Name : BENZENE

Class or division (Transport hazard class) : 3

Hazard labels : Flamm.liquid

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

Benzene

Flammable Liquid

Benzene

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

Carcinogenicity: cat.1, 1A, 1B

Benzene

Specific target organ toxicity – repeated exposure: cat.1

Benzene

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

Benzene

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**Section 15. Regulatory Information**

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

## Labor Standards Act, Japan

Chemical substances or compounds (including alloys) causing disease (Regulation, Appended Table1-2-4-1)

Benzene

Carcinogen (Regulation, Appended Table 1-2-7)

Benzene

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

Chemicals listed in TSCA Inventory

71-43-2

All components are listed or exempted.

## Superfund Amendments and Reauthorizations Act (SARA), Title III

SARA 313 (TRI)

Benzene

## 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

Benzene, JUNSEI CHEMICAL CO., LTD., 68155jis\_J\_E2-2,25/Jul/2023

H302–Acute toxicity, Category 4: H302 Harmful if swallowed  
H315–Skin corrosion/irritation, Category 2: H315 Causes skin irritation  
H319–Serious eye damage/eye irritation, Category 2A: H319 Causes serious eye irritation  
H341–Germ cell mutagenicity, Category 2: H341 Suspected of causing genetic defects  
H350–Carcinogenicity, Category 1A: H350 May cause cancer  
H361–Reproductive toxicity, Category 2: H361 Suspected of damaging fertility or the unborn child  
H370–STOT – single exposure, Category 1: H370 Causes damage to organs  
H336–STOT – single exposure, Category 3, Narcotic effects: 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  
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 22nd edit., 2021 UN  
IMDG Code, 2020 Edition (Incorporating Amendment 40–20)  
IATA Dangerous Goods Regulations (64th Edition) 2023  
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)  
2023 TLVs and BEIs. (ACGIH)  
JIS Z 7252 : 2019  
JIS Z 7253 : 2019  
2022 Recommendation on TLVs (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 4.24  
(<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).