



Safety Data Sheet

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

Product identifier:

Product name: Benzene

SDS No. : 0783E-2

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN

Division: Safety Management Dept. of Chemicals

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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 apparatus/system)

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

Specific target organ toxicity – repeated exposure: Category 1(CNS; hematopoietic system)

Aspiration hazard: Category 1

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment (Acute): Category 2

Hazardous to the aquatic environment (Long-term): Category 2

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

Label elements

Signal word: Danger

HAZARD STATEMENT

Highly flammable liquid and vapor

Harmful if swallowed

Causes skin irritation

Causes serious eye irritation

Suspected of causing genetic defects

May cause cancer

Suspected of damaging fertility or the unborn child

Causes damage to organs after single exposure(respiratory apparatus/system)

May cause drowsiness or dizziness



Causes damage to organs through prolonged or repeated exposure(CNS; hematopoietic system)
May be fatal if swallowed and enters airways
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT**Prevention**

Avoid release to the environment.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
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.
Do not eat, drink or smoke when using this product.

Response

In case of fire: Use appropriate media other than water for extinction.
Collect spillage.
Get medical advice/attention if you feel unwell.
IF exposed or concerned: Get medical advice/attention.
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/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: Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

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

Disposal

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

Specific Physical and Chemical hazards

Highly flammable liquid. Vapor/air mixture may explode.

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

Ingredient name: Benzene

Content (%): 99(min)

Chemical formula: C₆H₆

Chemicals No, Japan: 3-1

CAS No.: 71-43-2

MW: 78.1

ECNO: 200-753-7

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



4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical attention/advice if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

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

IF ON SKIN (or hair)

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

Wash with plenty of soap and water.

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

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 or doctor/physician.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use foam, dry powder, CO2 to extinguish.

Unsuitable extinguishing media

Indoor firefighting equipment or outdoor firefighting equipment

Sprinkler equipment

Dry-powder firefighting equipment – except for phosphate etc.,hydrogen carbonate etc.

Straight stream water extinguisher

Water mist extinguisher

Reinforcing liquid jet extinguisher

Dry-powder extinguisher – except for phosphate etc.,hydrogen carbonate etc.

Bucket of water or tank of water

Specific hazards arising from the substance or mixture

Containers may explode when heated.

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

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters

Wear fire/flame resistant/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.

6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Ventilate area until material pick up is complete.

Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

Methods and materials for containment and cleaning up



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

Preventive measures for secondary accident

Collect spillage.

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/sparks/open flames/hot surfaces. – No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

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.

When using do not eat, drink or smoke.

Any incompatibilities

See "10.Stability and Reactivity"

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

Keep container tightly closed.

Store in a cool, dry place. Do not store in direct sunlight.

Container and packaging materials for safe handling

Glass

Iron

8. Exposure controls/personal protection

Control parameters

Adopted value

(Benzene)

ACGIH(1996) TWA: 0.5ppm;

STEL: 2.5ppm (Leukemia)

Notation

(Benzene)

Skin

OSHA-PEL

Benzene TWA: 10ppm; STEL: C 25ppm

Acceptable maximum peak: 50ppm; Maximum Duration: 10min

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.

Hand protection

Wear protective gloves.

Eye protection

Wear eye/face protection.

9. Physical and Chemical Properties**Information on basic physical and chemical properties**

Physical state: Liquid

Color: Colourless, Clear

Odor: Characteristic odour

pH data is not available.

Boiling point or initial boiling point: 80°C

Boiling range data is not available.

Melting point/Freezing point: 6°C

Decomposition temperature data is not available.

Flammability (gases, liquids and solids) data is not available.

Flash point: (Benzene)-11°C

Auto-ignition temperature: 498°C

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 1.2 vol %

Upper explosion limit: 8.0 vol %

Vapor pressure: 10kPa (20 °C)

Relative vapor density (Air=1): 2.7

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

Density and/or relative density: 0.88

Kinematic viscosity: 0.740mm²/s(25°C)

Solubility:

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

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

No Particle characteristics data is not available.

10. Stability and Reactivity**Reactivity**

Not available.

Chemical stability

Stable under normal storage/handling conditions.

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 and rubber. (ICSC 0015)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials



Oxidizing agents, Nitric acid, Sulfuric acid, Halogens
Hazardous decomposition products
Carbon oxides

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]

(Benzene)

rat LD50=1620mg/kg (cal.)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]

(Benzene)

rabbit irritation (NICNAS, 2001 et al)

Serious eye damage/irritation

[GHS Cat. Japan, base data]

(Benzene)

rabbit moderate eyes irritation (NICNAS, 2001 et al)

Allergenic and sensitizing effects data is not available.

Germ cell mutagenicity

[GHS Cat. Japan, base data]

(Benzene)

cat. 2; EHC 150, 1993

Carcinogenicity

[GHS Cat. Japan, base data]

(Benzene)

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

(Benzene)

IARC-Gr.1 : Carcinogenic to humans

(Benzene)

ACGIH-A1(1996) : Confirmed Human Carcinogen

(Benzene)

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

Reproductive toxicity

[GHS Cat. Japan, base data]

(Benzene)

cat. 2; ATSDR, 2005

STOT

STOT-single exposure

[cat.1]

[GHS Cat. Japan, base data]

(Benzene)

respiratory apparatus (NICNAS, 2001)

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

[GHS Cat. Japan, base data]

(Benzene)

narcosis (EHC 150, 1993)

STOT-repeated exposure

[cat.1]

[GHS Cat. Japan, base data]

(Benzene)



CNS; hematopoietic system (NICNAS, 2001)

Aspiration hazard

[cat.1]

[GHS Cat. Japan, base data]

(Benzene)

cat. 1; hydrocarbon, kinematic viscosity =0.740 mm²/s (25°C)

12. Ecological Information

Ecotoxicity

Aquatic toxicity

Toxic to aquatic life

Toxic to aquatic life with long lasting effects

Aquatic acute toxicity component(s) data

[GHS Cat. Japan, base data]

(Benzene)

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

Aquatic chronic toxicity component(s) data

[GHS Cat. Japan, base data]

(Benzene)

Fish (fat head minnow) NOEC=0.8mg/L/32hr (EU-RAR, 2008)

Water solubility

(Benzene)

0.18 g/100 ml (25°C) (ICSC, 2003)

Persistence and degradability

(Benzene)

Not degrade rapidly (BOD_Degradation: 40% (Registered chemicals data check & review, 1979))

Bioaccumulative potential

(Benzene)

log Pow=2.13 (ICSC, 2003)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

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 (– if this is not the intended use).

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

14. Transport Information

UN No.: 1114

Proper Shipping Name :

BENZENE

Class or division : 3

Packing group : II

ERG GUIDE No.: 130

IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 1114

Proper Shipping Name :

**BENZENE**

Class or division : 3

Packing group : II

IATA Dangerous Goods Regulations

UN No.: 1114

Proper Shipping Name :

BENZENE

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) : yes

MARPOL Annex V – Prevention of pollution by garbage discharge

Carcinogenicity: cat.1, 1A, 1B

Benzene

Specific target organ toxicity – repeated exposure: cat.1

Benzene

Hazardous to the aquatic environment – long-term hazard: cat.1, 2

Benzene

Transport in bulk according to Annex II of MARPOL73/78 and IBC Code

Noxious Liquid ; Cat. Y

Benzene

Oil

Benzene

Flammable Liquid

Benzene

15. Regulatory Information

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

US major regulations

Chemicals listed in TSCA Inventory

Benzene

Other regulatory information

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

16. Other information**GHS classification and labelling**

Flam. Liq. 2: H225 Highly flammable liquid and vapor

Acute Tox. 4: H302 Harmful if swallowed

Skin Irrit. 2: H315 Causes skin irritation

Eye Irrit. 2A: H319 Causes serious eye irritation

Muta. 2: H341 Suspected of causing genetic defects

Carc. 1A: H350 May cause cancer

Repr. 2: H361 Suspected of damaging fertility or the unborn child

STOT SE 1: H370 Causes damage to organs after single exposure

STOT SE 3: H336 May cause drowsiness or dizziness

STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure

Asp. Tox. 1: H304 May be fatal if swallowed and enters airways

Aquatic Acute 2: H401 Toxic to aquatic life

Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects

**Reference Book**

Globally Harmonized System of classification and labelling of chemicals, (6th ed., 2015), UN Recommendations on the TRANSPORT OF DANGEROUS GOODS 20th edit., 2017 UN IMDG Code, 2018 Edition (Incorporating Amendment 39-18)
IATA Dangerous Goods Regulations (60th Edition) 2019
Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)
2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2019 TLVs and BEIs. (ACGIH)
<http://monographs.iarc.fr/ENG/Classification/index.php>
Supplier's data/information

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 2018).