Date of issue: 20/07/2017

Safety Data Sheet

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

Product identifier:

Product name: Benzene

Product code(SDS NO): 68155jis_J_E2-1

Details of the supplier of the safety data sheet

Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.

Address: 1-6, Ohmano-Cho, Koshigaya, 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

2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL 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: Narcosis Category 3

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

Aspiration hazard: Category 1

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment - acute hazard: Category 2

Hazardous to the aquatic environment - long-term hazard: Category 2

(Note) GHS classification without description: Not applicable/Out of classification/Not classifiable

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

May cause drowsiness or dizziness
Causes damage to organs through prolonged or repeated exposure
May be fatal if swallowed and enters airways
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention

Do not handle until all safety precautions have been read and understood.
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 and face protection.
Wear 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 appropriate media for extinction.
Collect spillage.
Get medical advice/attention 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/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 or 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.

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(%):99.5 <
Chemical formula:C6H6
Chemicals No, Japan:3-1
CAS No.:71-43-2
MW:78.11

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 skin irritation 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

Rinse mouth. Do NOT induce vomiting.

Immediately call a POISON CENTER or doctor/physician.

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

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Dizziness. Drowsiness. Headache. Nausea. Shortness of breath. Convulsions. Unconsciousness. Abdominal pain. Sore throat. Vomiting.

(Symptoms when skin and/or eye contact)

Dry skin. Redness. Pain.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water mist, foam, dry powder, CO2, dry sand.

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/flame resistant/retardant clothing.

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

Firefighters should wear self-contained breathing apparatus with full face peace operated positive pressure mode.

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 after material pick up is complete.
Wear proper protective equipment.
PUBLIC SAFTY: Ventilate closed spaces before entering.

Environmental precautions

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

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.
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.

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 & 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.
Avoid breathing dust, fume, gas, mist or vapor.

Safety Measures/Incompatibility

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 or face protection.
Wear protective gloves and face protection.
Wear eye protection/face protection.
Use personal protective equipment as required.
When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities

Recommendation for storage

Store in a well-ventilated place. Keep container tightly closed.
Keep cool. Protect from sunlight.
Store locked up.

8. Exposure controls/personal protection

Control parameters

Control value
Japan control value (2004) <= 1ppm
Adopted value
JSOH(1997) (Individual excess lifetime risk of cancer : 10E-3) 1ppm;
(Individual excess lifetime risk of cancer : 10E-4) 0.1ppm
ACGIH(1996) TWA: 0.5ppm
STEL: 2.5ppm (Leukemia)
Notation…Skin
OSHA-PEL
TWA 1ppm; STEL 5ppm
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): impermeable or chemical resistant rubber
Consult with your glove and/or personnel equipment manufacturer for selection of appropriate compatible materials.
Eye protection
Wear safety glasses with side-shields.
Wear eye/face protection.
Safety and Health measures
Wash … thoroughly after handling.
Do not eat, drink or smoke when using this product.
Take off contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties

Information on basic physical and chemical properties
Physical properties
Appearance: Liquid
Color: ColorlessClear
Odor: Characteristic odor
pH data N.A.
Phase change temperature
Initial Boiling Point/Boiling point: 80℃
Melting point/Freezing point: 6℃
Decomposition temperature data N.A.
Flash point: (c.c.)-11℃
Auto-ignition temperature: 498℃
Explosive properties: Flammability or explosive limit
lower limit: 1.2 vol %
upper limit: 8.0 vol %
Vapor pressure: 10kPa(20℃)
Relative Vapor Density (Air=1): 2.7
Relative density of the Vapor/air-mixture at 20℃ (Air = 1): 1.2
Specific gravity/Density: 0.88g/cm3(20℃)
Solubility
Solubility in water: 0.18g/100 ml(25℃)

Solubility in solvent: Very soluble in ethanol and diethyl ether.
n-Octanol /water partition coefficient: log Pow2.13

10. Stability and Reactivity

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 and rubber (natural rubber, nitrile rubber and butyl rubber).

Conditions to avoid

Contact with incompatible materials.
Open flames. Heat. Sparks.

Incompatible materials

Strong acids, Oxidizing agents, Halogens.

Hazardous decomposition products

Carbon oxides

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]
rat LD50＝1620 mg/kg (cal.)

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]
rabbit LD50 >=8200 mg/kg(NICNAS, 2001)

Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]
vapor : rat LC50＝44.66 mg/L/4hr(EHC 150, 1993)

Labor standard law, Japan; Toxic

Benzene

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]
rabbit : irritating (NICNAS, 2001 et al.)

Serious eye damage /irritation

[GHS Cat. Japan, base data]
rabbit : moderate (NICNAS, 2001 et al.)

No Allergenic and sensitizing effects data available

Germ cell mutagenicity

[GHS Cat. Japan, base data]
cat.2; EHC 150, 1993

Carcinogenicity

[GHS Cat. Japan, base data]
cat.1A; IARC (1987) Gr.1 et al.
IARC-Gr.1 : Carcinogenic to humans
ACGIH-A1(1996) : Confirmed Human Carcinogen
JSOH-1: Classifiable as to Human Carcinogenicity

EU-Category 1A; Substances known to have carcinogenic potential for humans
EPA "Known/Likely" to be carcinogenic(1996)
NTP-Known To Be Human Carcinogen
Labor standard law, Japan : Carcinogen
Benzene
Reproductive toxicity
[GHS Cat. Japan, base data]
cat.2; ATSDR, 2005
Delayed and immediate effects and also chronic effects from short- and long-term exposure
STOT
STOT-single exposure
[cat.1]
[Japan published data]
respiratory apparatus/system (NICNAS, 2001)
[cat.3(drow./dizz.)]
[Japan published data]
Narcosis (EHC 150, 1993)
STOT-repeated exposure
[cat.1]
[Japan published data]
CNS; hematopoietic system (NICNAS, 2001)
Aspiration hazard
[cat.1]
[GHS Cat. Japan, base data]
cat.1; hydrocarbon, kinematic viscosity =0.740 mm2/s (25℃)(CERI calculated value)

12. Ecological Information

Toxicity
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]
Fish(rainbow trout) LC50=5.3 mg/L/96hr (EU-RAR, 2008)
Aquatic chronic toxicity component(s) data
[GHS Cat. Japan, base data]
Fish(fat head minnow)NOEC = 0.8 mg/L/32hr (EU-RAR, 2008)
Water solubility
0.18 g/100 ml (25℃) (ICSC, 2016)
Persistence and degradability
Not degrade rapidly [BOD_Degradation: 40% (Registered chemicals data check & review, Japan,1979)]
Bioaccumulative potential
log Pow=2.13 (ICSC, 2016)

13. Disposal considerations

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, UN CLASS

UN number: 1114
UN proper shipping name: BENZENE
Transport hazard class(es): 3
Packing group: II
ERG GUIDE NO.: 130
Transport in bulk according to Annex II of MARPOL73/78 and IBC Code
Noxious Liquid ; Cat. Y…Benzene
Flammable Liquid…Benzene

15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
TSCA
Benzene
Other regulatory information
We are not able to check up the regulatory information in 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.

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, (5th ed., 2013), UN Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN
Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)
2012 EMERGENCY RESPONSE GUIDEBOOK(US DOT)
2017 TLVs and BEIs. (ACGIH)
http://monographs.iarc.fr/ENG/Classification/index.php
Supplier's data/information
Chemical Risk Information Platform (CHRIP)(NITE) http://www.safe.nite.go.jp/japan/db.html
GHS Classification Guidance for Enterprises 2013 Revised Edition (August, 2013,METI)
General Disclaimer
This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own

purposes.
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 2015).