Date of issue: 2016/02/15
Date of revision: 2024/09/04

Safety Data Sheet

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

Product identifier:
Product name: Nitrobenzene
SDS No. : 5480E-4
Relevant identified uses of the substance or mixture and uses advised against
Research and Development
Details of the supplier of the safety data sheet
Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN
Division: Chemical Safety Management Department
Telephone number: +81-6-6946-8061
FAX: +81-6-6946-1607

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 4
HEALTH HAZARDS
Acute toxicity (Oral): Category 4
Acute toxicity (Dermal): Category 3
Acute toxicity (Inhalation): Category 4
Serious eye damage/eye irritation: Category 2B
Carcinogenicity: Category 2
Reproductive toxicity: Category 1B
Specific target organ toxicity - single exposure: Category 1 (blood system, male genitalia, liver, nervous system)
Specific target organ toxicity - single exposure: Category 3 (Narcotic effects)
Specific target organ toxicity - repeated exposure: Category 1 (blood system, male genitalia, liver, nervous system, respiratory system, kidneys)
ENVIRONMENT HAZARDS
Hazardous to the aquatic environment, short-term (acute): Category 2
Hazardous to the aquatic environment, long-term (chronic): Category 3
(Note) GHS classification without description: Not classified/Classification not possible
Label elements

Signal word: Danger
HAZARD STATEMENT
H227 Combustible liquid
H302 Harmful if swallowed
H311 Toxic in contact with skin
H332 Harmful if inhaled

H320 Causes eye irritation
H351 Suspected of causing cancer
H360 May damage fertility or the unborn child
H370 Causes damage to organs (blood system, male genitalia, liver, nervous system)
H336 May cause drowsiness or dizziness
H372 Causes damage to organs through prolonged or repeated exposure (blood system, male genitalia, liver, nervous system, respiratory system, kidneys)
H401 Toxic to aquatic life
H412 Harmful to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention

P202 Do not handle until all safety precautions have been read and understood.
P273 Avoid release to the environment.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.
P264 Wash contaminated parts thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P280 Use personal protective equipment as required.
P270 Do not eat, drink or smoke when using this product.

Response

P370 + P378 In case of fire: Use appropriate media to extinguish.
P314 Get medical advice/attention if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P312 Call a POISON CENTER/doctor/physician if you feel unwell.
P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor/physician.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P330 IF SWALLOWED: Rinse mouth.
P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.

Storage

P403 Store in a well-ventilated place.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container in accordance with local/national regulation.

Specific adverse human health effects

See "11. Toxicological Information".

Section 3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Ingredient name	Content (%)	CAS No.	ENCS	Chemical formula
Nitrobenzene	99(min)	98-95-3	3-436	C6H5NO2

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

Section 4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical advice/attention if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

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

IF ON SKIN

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 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.

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

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

In case of fire, use spraying loaded liquid, foam (water-soluble liquid: alcohol-resistant foam), inactive gases, dry powder, dry sand to extinguish.

*Fire Service Act Group 4 Hazardous Materials

Unsuitable extinguishing media

Indoor Fire Plug System or Outdoor Fire Plug System

Sprinkler System

Dry Chemical Extinguishing System-Others (except for phosphates etc., Hydrogen Carbonates etc.)

Fire Extinguisher Discharging Jet Water/Spraying Water

Fire Extinguisher Discharging Jet Loaded Liquid

Fire Extinguisher Discharging Dry Extinguishing agents-Others (except for phosphates etc., Hydrogen Carbonates etc.)

Water Bucket or Water Tank

*Cabinet Order Concerning the Control of Hazardous Materials (Attached Table 5) Group 4 Hazardous Materials

Specific hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.
Runoff from fire control or dilution water may cause pollution.
See "10.Stability and Reactivity".

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

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.

Section 6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.
Ventilate area until material pick up is complete.
Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses, low areas or rivers. To be careful not discharged to the environment without being properly handled waste water contaminated.

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.

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.

(Safety treatments)

Avoid contact with skin.
Avoid contact with eyes.

Safety Measures

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.
Wash hands et al thoroughly after handling.
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 immediately all contaminated clothing and wash it before reuse.

Storage
Conditions for safe storage
Keep container tightly closed.
Store locked up. (P405)
Store in a cool, dry place. Do not store in direct sunlight.
Storage in accordance with local/national regulation.
Container and packaging materials for safe handling
Use closed unbreakable containers.

Section 8. Exposure controls/personal protection

Control parameters
Control value and Concentration standard value
Concentration standard value TWA: 0.1ppm
Adopted value
JSOH(1988) 1ppm; 5mg/m3 (skin)
ACGIH(1996) TWA: 1ppm (MeHb-emia)
[ACGIH] 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
Recommend to use protective equipment in conformity with the standards.
Use appropriate protective equipment in accordance with local/national regulation.
Respiratory protection
Wear respiratory protection (dust-proof mask/gas mask). Select chemical cartridge corresponding to type of gases when using a gas mask.
Hand protection
Wear impervious protective glove.
Eye protection
Wear eye/face protection. Wear safety goggles in cases gas is generated.
Skin and body protection
Wear protective clothing.

Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties
Physical state: Liquid
Color: Pale yellow, clear
Odor: Characteristic odor
Melting point/Freezing point: 5℃
Boiling point or initial boiling point: (Nitrobenzene)211℃
Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.
Lower and upper explosion limit/flammability limit:
Lower explosion limit: 1.8 vol %
Upper explosion limit: 40 vol %
Flash point: (Nitrobenzene)(C.C.) 88℃
Auto-ignition temperature: (Nitrobenzene)480℃
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity data is not available.
Solubility:
Solubility in water: 0.2 g/100 ml
Solubility in solvent data is not available.
n-Octanol/water partition coefficient: log Pow1.86
Vapor pressure: 20 Pa (20℃)
Density and/or relative density: 1.2
Relative vapor density (Air=1): 4.2
Relative density of the Vapor/air - mixture at 20℃ (Air = 1): 1
Particle characteristics data is not available.
Other information
Other information is not available.

Section 10. Stability and Reactivity

Reactivity
Not available.
Chemical stability
Stable under normal storage/handling conditions.
Possibility of hazardous reactions
On combustion, forms toxic and corrosive fumes including nitrogen oxides. Reacts violently with strong oxidants and reducing agents. This generates fire and explosion hazard. Reacts violently with strong acids and nitrogen oxides. This generates explosion hazard. (ICSC 0065)
Conditions to avoid
Contact with incompatible materials.
Contact with fire source.
Incompatible materials
Strong acids, Strong oxidizing agents, Reducing agents, Nitrogen oxides
Hazardous decomposition products
Carbon oxides, Nitrogen oxides

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=588mg/kg (EU-RAR, 2007)

Acute toxicity (Dermal)
[Product]
Category 3, Toxic in contact with skin
[Data for components of the product]
[GHS Cat. Japan, base data]
rabbit LD50=760mg/kg (EHC 230, 2003)
Acute toxicity (Inhalation)
[Product]
Category 4, Harmful if inhaled
[Data for components of the product]
[GHS Cat. Japan, base data]
mist: rat LC50=2.79mg/L/4hr (MOE risk assessment vol.2, 2003)
Irritant properties
Skin corrosion/irritation data is not available.
Serious eye damage/irritation
[Product]
Category 2B, Causes eye irritation
[Data for components of the product]
[GHS Cat. Japan, base data]
rabbit/human mild eyes irritation (EHC 230, 2003 et al)
Allergenic and sensitizing effects data is not available.
Mutagenic effects data is not available.
Carcinogenicity
[Product]
Category 2, Suspected of causing cancer
[Data for components of the product]
[GHS Cat. Japan, base data]
cat.2; IARC Gr. 2B (IARC, 1996 et al.)
[IARC]
Group 2B : Possibly carcinogenic to humans
[ACGIH]
A3(1996) : Confirmed Animal Carcinogen with Unknown Relevance to Humans
[NTP]
RAHC : Reasonably Anticipated to be Human Carcinogens
[EU]
Category 2; Substances suspected human carcinogens
Reproductive toxicity
[Product]
Category 1B, May damage fertility or the unborn child
[Data for components of the product]
[GHS Cat. Japan, base data]
cat. 1B; NITE risk assessment, 2008
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]

blood system, male genitalia, liver, nervous system (NITE Initial Risk Assessment Report, 2005; MOE Environmental Risk Assessment for Chemical Substances vol.2, 2003; EHC 230, 2003)

[cat.3 (narcotic effects)]

[GHS Cat. Japan, base data]

narcotic effect (MOE Environmental Risk Assessment for Chemical Substances vol.2, 2003)

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]

blood system, male genitalia, liver, nervous system, respiratory system, kidneys (CERI/NITE Hazard Assessment Report, 2008; MOE Environmental Risk Assessment for Chemical Substances vol.2, 2003)

Aspiration hazard data is not available.

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, short-term (acute)

[GHS Cat. Japan, base data]

Crustacea (Mysidopsis bahia) LC50=6.68mg/L/96hr (NITE Initial Risk Assessment Report, 2005)

Water solubility

0.2 g/100 ml (ICSC, 2006)

Persistence and degradability

[Data for components of the product]

Not rapidly degradable (BOD_Degradation : 3.3% (METI existing chemical safety inspections, 1976))

Bioaccumulative potential

[Data for components of the product]

log Pow=1.86 (ICSC, 2006); BCF=7.7 (Check & Review, Japan)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

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 as industrial waste. Accordance with local/national regulation.

Section 14. Transport Information

UN Number or ID Number : 1662
UN Proper Shipping Name :
NITROBENZENE
Class or division (Transport hazard class) : 6.1
Packing group : II
ERG GUIDE No.: 152

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 1662
UN Proper Shipping Name :
NITROBENZENE
Class or division (Transport hazard class) : 6.1
Packing group : II

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 1662
UN Proper Shipping Name :
NITROBENZENE
Class or division (Transport hazard class) : 6.1
Hazard labels : Toxic
Packing group : II

Environmental hazards

Marine pollutants (yes/no) : no

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

Applicable

Other regulatory information

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

Section 16. Other information

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, 2022 Edition (Incorporating Amendment 41-22)
IATA Dangerous Goods Regulations (65th Edition) 2024
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2024 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
2023 Recommendation on TLVs (JSOH)
Supplier's data/information

General Disclaimer

All chemicals have unknown hazard. Handle the product with care.
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 2022).