Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
   Product identifier:
   
   Product name: Di-n-butylamine
   Product code(SDS NO): 2223E-1

   Details of the supplier of the safety data sheet
   Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
   Address: 3-1, Honmachibashi, Chuo-ku, Osaka 540-0029, JAPAN
   Division: Safety Management Dept. of Chemicals
   Telephone number: +81-6-6946-8061
   FAX: +81-6-6946-1607
   e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification
   GHS classification and label elements of the product
   Classification of the substance or mixture
   Physical and chemical hazards
   Flammable liquids: Category 3
   HEALTH HAZARDS
   Acute toxicity Oral: Category 4
   Acute toxicity Dermal: Category 3
   Acute toxicity Inhalation: Category 2
   Skin corrosion/irritation: Category 1
   Serious eye damage/eye irritation: Category 1
   Specific target organ toxicity – single exposure: Category 1 (respiratory apparatus/system)
   ENVIRONMENT HAZARDS
   Hazardous to the aquatic environment – acute hazard: Category 2
   (Note) GHS classification without description: Not applicable/Out of classification/Not classifiable
   Label elements

   Signal word: Danger
   HAZARD STATEMENT
   Flammable liquid and vapor
   Harmful if swallowed
   Toxic in contact with skin
   Fatal if inhaled
   Causes severe skin burns and eye damage
   Causes serious eye damage
   Causes damage to organs after single exposure
   Toxic to aquatic life
   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.
In case of inadequate ventilation wear respiratory protection. (as specified by the manufacturer/supplier or the competent authority.)
Use only outdoors or in a well-ventilated area.
Wash contaminated parts thoroughly after handling.
Wear protective gloves, protective clothing or face protection.
Wear 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.
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.
Take off immediately all 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 SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
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.

Physical and Chemical hazards
Flammable liquid. Vapor/air mixture may explode.

3. Composition/information on ingredients

Mixture/Substance selection:
Substance
Ingredient name: Di-n-butylamine
Content(%): 98(min)
Chemical formula: C8H19N
Chemicals No, Japan: 2-137
CAS No.: 111-92-2
MW: 129.25
ECNO: 203-921-8
Note: The figures shown above are not the specifications of the product.

4. First-aid measures

Descriptions of first-aid measures
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**
Rinse mouth. Do NOT induce vomiting.
Call a POISON CENTER or doctor/physician if you feel unwell.

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**5. Fire-fighting measures**

**Extinguishing media**

**Suitable extinguishing media**
Use appropriate extinguishing media suitable for surrounding facilities.

**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.

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**6. Accidental release measures**

**Personnel precautions, protective equipment and emergency procedures**
Ventilate area after material pick up is complete.
Wear proper protective equipment.

**Methods and materials for containment and cleaning up**
Absorb spill with inert material (dry sand, earth, etc), then place in a chemical waste
container.

**Preventive measures for secondary accident**
Collect spillage.

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**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/Incompatibility**
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing or face protection.
When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities
Recommendation for storage
Keep container tightly closed.
Store in a cool, dry place. Do not store in direct sunlight.

8. Exposure controls/personal protection

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.

Safety and Health measures
Wash ... thoroughly after handling.
Do not eat, drink or smoke when using this product.
Take off immediately all contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical properties
Appearance: Liquid
Color: Colorless~Pale yellow
Odor: Characteristic odor

Phase change temperature
Initial Boiling Point/Boiling point: 159°C
Melting point/Freezing point: -59°C
Decomposition temperature data N.A.
Flash point: (Di-n-butylamine) 47°C
Auto-ignition temperature: 260°C

Explosive properties: Flammability or explosive limit
Lower limit: 1.1 vol %
Vapor pressure: 0.27 kPa (20°C)
Vapor density data N.A.
Relative Vapor Density (Air=1): 4.5
Specific gravity/Density: 0.76

Solubility
Solubility in water: 0.35 g/100 ml
n-Octanol /water partition coefficient: log Pow 2.83
10. Stability and Reactivity

Chemical stability

Hygroscopic (absorbs moisture from the air).

Possibility of hazardous reactions

Decomposes on burning. This produces toxic fumes including nitrogen oxides. The substance is a strong base. It reacts violently with acid and is corrosive. Reacts violently with strong oxidants. Attacks many metals. (ICSC 1337)

Conditions to avoid

Contact with incompatible materials.
Contact with fire source.

Incompatible materials

Acids, Strong oxidizing agents

Hazardous decomposition products

Nitrogen oxides

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]
(Di-n-butylamine)
rat LD50=550 mg/kg (Patty, 2001)

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]
(Di-n-butylamine)
rat LD50=768 mg/kg (IUCLID, 2000)

Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]
(Di-n-butylamine)
vapor: rat LC50=217 ppm (IUCLID, 2000)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]
(Di-n-butylamine)
rabbit Draize test: corrosive (IUCLID, 2000)

Serious eye damage /irritation

[GHS Cat. Japan, base data]
(Di-n-butylamine)
rabbit severe (IUCLID, 2000)

No Allergenic and sensitizing effects data available
No Mutagenic effects data available
No Carcinogenic effects data available
No Teratogenic effects data available
No reproductive toxicity data available
Delayed and immediate effects and also chronic effects from short- and long-term exposure

STOT

STOT—single exposure

[cat.1]

[Japan published data]
(Di-n-butylamine) respiratory apparatus/system (IUCLID, 2000)

No Aspiration hazard data available
12. Ecological Information
   Ecotoxicity
   Aquatic toxicity
     Toxic to aquatic life
     Aquatic acute toxicity component(s) data
       [GHS Cat. Japan, base data]
       (Di-n-butylamine)
       Algae (Scenedesmus) EC50 = 1.16 mg/L/96hr (IUCLID, 2000)

Water solubility
   (Di-n-butylamine)
   0.35 g/100 ml (ICSC, 1998)

Persistence and degradability
   (Di-n-butylamine)
   BOD degradation: 83, 95% (Registered chemicals data check & review, Japan 1991)

Bioaccumulative potential
   (Di-n-butylamine)
   log Pow=2.83 (ICSC, 1998)

No Mobility in soil data available
Ozone depleting chemical data not available

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 number: 2248
   UN proper shipping name:
     DI-n-BUTYLAMINE
   Transport hazard class(es): 8
   Transport subsidiary risks: 3
   Packing group: II
   ERG GUIDE NO.: 132
   Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code
     Noxious Liquid ; Cat. Y
     Di-n-butylamine

15. Regulatory Information
   Safety, health and environmental regulations/legislation specific for the substance or mixture
   US major regulations
     TSCA
     Di-n-butylamine
   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. 3: H226 Flammable liquid and vapor
- Acute Tox. 4: H302 Harmful if swallowed
- Acute Tox. 3: H311 Toxic in contact with skin
- Acute Tox. 2: H330 Fatal if inhaled
- Skin Corr. 1: H314 Causes severe skin burns and eye damage
- Eye Dam. 1: H318 Causes serious eye damage
- STOT SE 1: H370 Causes damage to organs after single exposure
- Aquatic Acute 2: H401 Toxic to aquatic life

Reference Book
- Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN
- Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th ed., 2015 UN
- Classification, labelling and packaging of substances and mixtures (table3–1 ECNO6182012)
- 2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
- 2017 TLVs and BEIs. (ACGIH)
- Supplier's data/information

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 determine 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 2016).