



## Safety Data Sheet

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

#### Product identifier:

Product name: Loffler's methylene blue solution

SDS No. : E0063E-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

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

Serious eye damage/eye irritation: Category 2

Carcinogenicity: Category 1A

Reproductive toxicity: Category 1A

Specific target organ toxicity – single exposure: Category 2 (blood system)

Specific target organ toxicity – repeated exposure: Category 1 (liver)

Specific target organ toxicity – repeated exposure: Category 2 (central nervous system; blood system)

#### Label elements



Signal word: Danger

#### HAZARD STATEMENT

Flammable liquid and vapor

Causes serious eye irritation

May cause cancer

May damage fertility or the unborn child

May cause damage to organs (blood system)

Causes damage to organs through prolonged or repeated exposure (liver)

May cause damage to organs through prolonged or repeated exposure (central nervous system; blood system)

#### PRECAUTIONARY STATEMENT

##### Prevention

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.  
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 to extinguish.  
Get medical advice/attention if you feel unwell.  
IF exposed or concerned: Get medical advice/attention.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
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.

**Storage**

Store in a well-ventilated place. Keep cool.

**Disposal**

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

**Specific Physical and Chemical hazards**

Flammable liquid. Vapor/air mixture may explode.

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

Ingredient name: Methylene blue  
Content (%): 1.1  
Chemical formula:  $C_{16}H_{18}ClN_3S \cdot nH_2O$   
Chemicals No, Japan: 5-1995  
CAS No.: 61-73-4  
MW: -  
ECNO: 200-515-2

Ingredient name: Ethanol  
Content (%): 18  
Chemical formula:  $C_2H_5OH$   
Chemicals No, Japan: 2-202  
CAS No.: 64-17-5  
MW: 46.07  
ECNO: 200-578-6

Ingredient name: Potassium hydroxide  
Content (%): 0.0081  
Chemical formula:  $KOH$   
Chemicals No, Japan: 1-369  
CAS No.: 1310-58-3  
MW: 56.1  
ECNO: 215-181-3

Ingredient name: Water  
Content (%): 81  
Chemical formula:  $H_2O$   
CAS No.: 7732-18-5  
MW: 18.02



ECNO:231-791-2

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

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#### 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 (or hair)

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

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.

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#### 5. Fire-fighting measures

##### Extinguishing media

###### Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

###### 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.

##### 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 full face piece operated positive pressure mode.

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#### 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.



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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, 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

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.

### 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

Polyethylene

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## 8. Exposure controls/personal protection

### Control parameters

#### Adopted value

(Ethanol)

ACGIH(2009) STEL: 1000ppm (URT irr)

(Potassium hydroxide)

ACGIH(1992) STEL: C 2mg/m<sup>3</sup> (URT, eye & skin irr)

#### OSHA-PEL

(Ethanol)

TWA: 1000ppm, 1900mg/m<sup>3</sup>

### 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.

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## 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Liquid  
Color: Blue  
Odor: Characteristic odor  
Melting point/Freezing point data is not available.  
Boiling point or initial boiling point data is not available.  
Boiling range data is not available.  
Flammability (gases, liquids and solids) data is not available.  
Lower and upper explosion limit/flammability limit data is not available.  
Flash point: (reference) about 37°C  
Auto-ignition temperature data is not available.  
Decomposition temperature data is not available.  
pH data is not available.  
Kinematic viscosity data is not available.  
Solubility:  
    Solubility in water: Soluble  
n-Octanol/water partition coefficient data is not available.  
Vapor pressure data is not available.  
Density and/or relative density: 0.95  
Relative vapor density (Air=1) data is not available.  
Particle characteristics data is not available.

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## 10. Stability and Reactivity

Reactivity

Not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

(Ethyl alcohol)

The vapour mixes well with air, explosive mixtures are easily formed.

Reacts slowly with calcium hypochlorite, silver oxide and ammonia. This generates fire and explosion hazard. Reacts violently with strong oxidants such as nitric acid, silver nitrate, mercuric nitrate and magnesium perchlorate. This generates fire and explosion hazard. (ICSC 0044)

(Potassium hydroxide)

The solution in water is a strong base. It reacts violently with acid and is corrosive to metals such as aluminium, tin, lead and zinc. This produces a combustible/explosive gas (hydrogen). Reacts with ammonium salts. This produces ammonia. This generates fire hazard.

Contact with moisture and water may generate heat. (ICSC 0357)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Acids, Strong oxidizing agents, Calcium hypochlorite, Silver oxide, Ammonia, Metals,

Ammonium salts

Hazardous decomposition products

Hydrogen, Ammonia



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## 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

##### Acute toxicity (Oral)

[GHS Cat. Japan, base data]

(Methylene blue)

rat LD50=1180mg/kg (NTP TR 540, 2008)

(Potassium hydroxide)

rat LD50=273mg/kg (SIDS, 2004)

#### Irritant properties

##### Skin corrosion/irritation

[GHS Cat. Japan, base data]

(Potassium hydroxide)

rabbit/human corrosive (SIDS, 2004; ECETOC TR66, 1995; JSOH, 1978; PATTY 6th, 2012)

##### Serious eye damage/irritation

[GHS Cat. Japan, base data]

(Ethanol)

rabbit recover within 7 days (ECETOC TR No.48(2), 1998 et al)

(Potassium hydroxide)

rabbit corrosive (SIDS, 2004; JSOH, 1978; PATTY 6th, 2012)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

#### Carcinogenicity

[GHS Cat. Japan, base data]

(Ethanol)

cat.1A; (IARC, 2010)

(Ethanol)

IARC-Gr.1 : Carcinogenic to humans

(Ethanol)

ACGIH-A3(2009) : Confirmed Animal Carcinogen with Unknown Relevance to Humans

#### Reproductive toxicity

[GHS Cat. Japan, base data]

(Methylene blue)

cat. 2; mouse : HSDB, 2009

(Ethanol)

cat. 1A; human : PATTY 6th, 2012

#### STOT

##### STOT-single exposure

[cat.1]

[GHS Cat. Japan, base data]

(Methylene blue)

blood system (NTP TR 540, 2008; HSDB, 2009)

[cat.3 (resp. irrit.)]

[GHS Cat. Japan, base data]

(Ethanol)

respiratory tract irritation (PATTY 6th, 2012)

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

[GHS Cat. Japan, base data]

(Ethanol)

narcotic effect (PATTY 6th, 2012; SIDS, 2005)

##### STOT-repeated exposure

[cat.1]

[GHS Cat. Japan, base data]



(Methylene blue)  
blood system (NTP TR 540, 2008)  
(Ethanol)  
liver (DFGOT vol.12, 1999)

[cat.2]

[GHS Cat. Japan, base data]  
(Ethanol)  
central nervous system (HSDB, Access on Jun. 2013)

Aspiration hazard

[cat.1]

[GHS Cat. Japan, base data]  
(Potassium hydroxide)  
cat. 1; ACGIH 7th, 2001; SIDS, 2004

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## 12. Ecological Information

Ecotoxicity

Aquatic toxicity

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]  
(Methylene blue)  
Fish (striped bass) LC50=12mg/L/96hr (Aquire, 2012)  
(Ethanol)  
Algae (Chlorella) EC50=1000mg/L/96hr (SIDS, 2005)

Hazardous to the aquatic environment (Long-term)

[GHS Cat. Japan, base data]  
(Ethanol)  
Crustacea (Ceriodaphnia reticulata) NOEC=9.6mg/L/10days (SIDS, 2005)

Water solubility

(Potassium hydroxide)  
110 g/100 ml (25°C) (ICSC, 2010)  
(Ethanol)  
miscible (ICSC, 2000)

Persistence and degradability

(Methylene blue)  
Not degrade rapidly (BIOWIN)  
(Ethanol)  
Degrade rapidly (BOD\_Degradation : 89% (Registered chemicals data check & review, 1993))

Bioaccumulative potential

(Ethanol)  
log Pow=-0.32 (ICSC, 2000)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

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## 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

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



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**14. Transport Information**

UN No. or ID No.: 1170

UN Proper Shipping Name :

ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Class or division (Transport hazard class) : 3

Packing group : III

ERG GUIDE No.: 127

Special provisions No.: 144; 223

**IMDG Code (International Maritime Dangerous Goods Regulations)**

UN No.: 1170

Proper Shipping Name :

ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Class or division : 3

Packing group : III

Special provisions No.: 144; 223

**IATA Dangerous Goods Regulations**

UN No.: 1170

Proper Shipping Name :

ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Class or division : 3

Hazard labels : Flamm.liquid

Packing group : III

Special provisions No.: A3; A58; A180

**Environmental hazards****MARPOL Annex III – Prevention of pollution by harmful substances**

Marine pollutants (yes/no) : no

**MARPOL Annex V – Prevention of pollution by garbage discharge**

Carcinogenicity: cat.1, 1A, 1B

Ethanol

Reproductive toxicity: cat.1, 1A, 1B

Ethanol

Specific target organ toxicity – repeated exposure: cat.1

Ethanol

**Maritime transport in bulk according to IMO instruments**

Noxious Liquid ; Cat. Y

Potassium hydroxide

Noxious Liquid ; Cat. Z

Ethanol

Non Noxious Liquid ; Cat. OS

Water

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**15. Regulatory Information**

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

Chemicals listed in TSCA Inventory

Methylene blue; Ethanol; Potassium hydroxide; Water

Other regulatory information

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





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

Flam. Liq. 3: H226 Flammable liquid and vapor

Eye Irrit. 2: H319 Causes serious eye irritation

Carc. 1A: H350 May cause cancer

Repr. 1A: H360 May damage fertility or the unborn child

STOT SE 2: H371 May cause damage to organs

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

STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure

**Reference Book**

Globally Harmonized System of classification and labelling of chemicals, UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 21th edit., 2019 UN

IMDG Code, 2018 Edition (Incorporating Amendment 39-18)

IATA Dangerous Goods Regulations (62nd Edition) 2021

2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)

2021 TLVs and BEIs. (ACGIH)

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 2019).