



Safety Data Sheet

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

Product identifier:

Product name: N,N-Dimethylformamide

SDS No. : 2493E-3

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 3

HEALTH HAZARDS

Acute toxicity (Inhalation): Category 3

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 2B

Germ cell mutagenicity: Category 2

Carcinogenicity: Category 1B

Reproductive toxicity: Category 1B

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

Specific target organ toxicity – single exposure: Category 2(respiratory apparatus)

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

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

Label elements

Signal word: Danger

HAZARD STATEMENT

Flammable liquid and vapor

Toxic if inhaled

Causes skin irritation

Causes eye irritation

Suspected of causing genetic defects

May cause cancer

May damage fertility or the unborn child

Causes damage to organs after single exposure(liver)

May cause damage to organs after single exposure(respiratory apparatus)

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

PRECAUTIONARY STATEMENT**Prevention**

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.
Do not eat, drink or smoke when using this product.

Response

In case of fire: Use appropriate media other than water for extinction.
Get medical advice/attention if you feel unwell.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor/physician.
IF exposed or concerned: Call a POISON CENTER or doctor/physician.
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.

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

Flammable liquid. Vapor/air mixture may explode.

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

Ingredient name:N,N-Dimethylformamide

Content (%):99(min)

Chemical formula:HCON(CH₃)₂

Chemicals No, Japan:2-680

CAS No.:68-12-2

MW:73.09

ECNO:200-679-5

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.
Call a POISON CENTER or doctor/physician.

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.

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

5. Fire-fighting measures**Extinguishing media****Suitable extinguishing media**

In case of fire, use water mist, 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 or 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

(N,N-Dimethylformamide)

ACGIH(2017) TWA: 5ppm (Liver dam; eye & URT irr)

Notation

(N,N-Dimethylformamide)

Skin

OSHA-PEL

N,N-DimethylformamideTWA: 10ppm, 30mg/m³

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: Colorless to yellow

Odor: Characteristic odour

pH data is not available.

Boiling point or initial boiling point: 153°C

Boiling range data is not available.

Melting point/Freezing point: -61°C

Decomposition temperature data is not available.

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

Flash point: (N,N-Dimethylformamide)(C.C.) 58°C

Auto-ignition temperature: 440°C

Lower and upper explosion limit/flammability limit data is not available.

Vapor pressure: 0.49 kPa (25 °C)

Relative vapor density (Air=1): 2.5

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

Density and/or relative density: 0.95

Kinematic viscosity data is not available.

Solubility:

Solubility in water: Miscible

n-Octanol/water partition coefficient: log Pow-0.87

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

Decomposes on heating. This produces toxic fumes including nitrogen oxides. Reacts violently with strong oxidants, halogens, halogenated hydrocarbons and nitrates. Attacks some plastics and rubber. (ICSC 0457)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Strong oxidizing agents, Halogens, Halogenated hydrocarbons, Nitrates

Hazardous decomposition products

Carbon oxides, Nitrogen oxides

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]



(N,N-Dimethylformamide)
rat LD50=3500mg/kg (MOE risk assessment vol.1, 2002)

Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
vapor: mouse LC50=4.7mg/L/4hr (HSDB, 2005)

Irritant properties

Skin corrosion/irritation
[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
human mild to moderate irritation (ACGIH, 2018 et al)

Serious eye damage/irritation

[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
rabbit big water blister recover after 48 hours (REACH registration information, Accessed Dec. 2018)

Allergenic and sensitizing effects data is not available.

Germ cell mutagenicity

[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
cat. 2; CERI/NITE risk assessment No.8, 2005

Carcinogenicity

[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
cat.1B; (MHLW carcinogenicity examination, 2000)
(N,N-Dimethylformamide)
IARC-Gr.2A : Probably carcinogenic to humans
(N,N-Dimethylformamide)
ACGIH-A3(2017) : Confirmed Animal Carcinogen with Unknown Relevance to Humans

Reproductive toxicity

[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
cat. 1B; CERI/NITE risk assessment No.8, 2005

STOT

STOT-single exposure

[cat.1]
[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
liver (CERI/NITE risk assessment, 2005)

[cat.2]

[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
respiratory apparatus (CERI/NITE risk assessment No.8, 2005)

STOT-repeated exposure

[cat.1]
[GHS Cat. Japan, base data]
(N,N-Dimethylformamide)
liver (CERI/NITE risk assessment, 2005)

Aspiration hazard data is not available.



12. Ecological Information

Ecotoxicity

Aquatic toxicity

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

(N,N-Dimethylformamide)

Fish (top minnow) LC50 > 100mg/L/96hr (MOE Japan, 1995)

Water solubility

(N,N-Dimethylformamide)

100 g/100 ml (PHYSPROP_DB, 2005)

Persistence and degradability

Persistence and degradability data is not available.

Bioaccumulative potential

(N,N-Dimethylformamide)

log Pow=-0.87 (ICSC, 2014)

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

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

14. Transport Information

UN No.: 2265

Proper Shipping Name :

N,N-DIMETHYLFORMAMIDE

Class or division : 3

Packing group : III

ERG GUIDE No.: 129

IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 2265

Proper Shipping Name :

N,N-DIMETHYLFORMAMIDE

Class or division : 3

Packing group : III

IATA Dangerous Goods Regulations

UN No.: 2265

Proper Shipping Name :

N,N-DIMETHYLFORMAMIDE

Class or division : 3

Hazard labels : Flamm.liquid

Packing group : III

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



N,N-Dimethylformamide
Reproductive toxicity: cat.1, 1A, 1B
N,N-Dimethylformamide
Specific target organ toxicity – repeated exposure: cat.1
N,N-Dimethylformamide
Transport in bulk according to Annex II of MARPOL73/78 and IBC Code
Noxious Liquid ; Cat. Y
N,N-Dimethylformamide

15. Regulatory Information

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

US Federal Regulations

Chemicals listed in TSCA Inventory

N,N-Dimethylformamide

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. 3: H331 Toxic if inhaled

Skin Irrit. 2: H315 Causes skin irritation

Eye Irrit. 2B: H320 Causes eye irritation

Muta. 2: H341 Suspected of causing genetic defects

Carc. 1B: H350 May cause cancer

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

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

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

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 (61th Edition) 2020

Classification, labelling and packaging of substances and mixtures (Table 3 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).