Date of issue: 2017/11/15
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Safety Data Sheet

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

Product identifier:

Product name: Formaldehyde solution(37%)

SDS No. : 3263E-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 2

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 2

Respiratory sensitization: Category 1

Skin sensitization: Category 1

Germ cell mutagenicity: Category 2

Carcinogenicity: Category 1A

Reproductive toxicity: Category 1B

Specific target organ toxicity - single exposure: Category 1 (nervous system, central nervous system, organ of vision, respiratory system, systemic toxicity)

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

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
H330 Fatal if inhaled
H314 Causes severe skin burns and eye damage
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317 May cause an allergic skin reaction
H341 Suspected of causing genetic defects
H350 May cause cancer
H360 May damage fertility or the unborn child
H370 Causes damage to organs (nervous system, central nervous system, organ of vision, respiratory system, systemic toxicity)
H372 Causes damage to organs through prolonged or repeated exposure (central nervous system, organ of vision, respiratory system)
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.
P284 In case of inadequate ventilation wear respiratory protection.
P271 Use only outdoors or in a well-ventilated area.
P264 Wash contaminated parts thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
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.
P310 Immediately call a POISON CENTER/doctor/physician.
P312 Call a POISON CENTER/doctor/physician if you feel unwell.
P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor/physician.
P342 + P311 If experiencing respiratory symptoms: 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.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P363 Wash contaminated clothing before reuse.
P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.
P362 + P364 Take off 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.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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:

Mixture

Ingredient name	Content (%)	CAS No.	Chemicals No, Japan	Chemical formula
Formaldehyde	37	50-00-0	2-482	CH2O
Water	residue	7732-18-5	-	H2O

Note : The figures shown above are not the specifications of the product. The content of products may exceed the figures shown above.

Stabilizing additives

Methanol 5.0-10% (CAS No.67-56-1)

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.

If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician.

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.

Do NOT induce vomiting.

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 Combustible liquids

Unsuitable extinguishing media

Extinguishers which discharge straight stream/mist of water
Extinguishers which discharge straight loaded liquid
Extinguisher which discharge dry chemical fire extinguishing agents-Others (except for phosphates etc., hydrogen carbonates etc.)
Water buckets or tanks
*Ministerial Ordinance for Enforcement of the Fire Service Act (Appended Table 2) Combustible liquids

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.
Contaminated work clothing should not be allowed out of the workplace.
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
Adopted value
(Formaldehyde)
ACGIH(2017) TWA: 0.1ppm;
STEL: 0.3ppm (URT & eye irr; URT cancer)
(Methanol)
ACGIH(2009) TWA: 200ppm;
STEL: 250ppm (Headache; eye dam; dizziness; nausea)
Notation
(Formaldehyde)
DSEN; RSEN
(Methanol)
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.
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: Colorless, Clear
Odor: Irritant 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: 64-68℃
Auto-ignition temperature data is not available.
Decomposition temperature data is not available.
pH: about 3-4
Kinematic viscosity data is not available.
Solubility:

Solubility in water: Soluble
Solubility in solvent data is not available.

n-Octanol/water partition coefficient data is not available.
Vapor pressure data is not available.
Density and/or relative density: 1.08
Relative vapor density (Air=1) data is not available.
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

(Formaldehyde)
The gas mixes well with air, explosive mixtures are easily formed.
The substance polymerizes in contact with alkalies and if dissolved in water. Upon heating, toxic fumes are formed. Reacts violently with strong oxidants, strong acids and strong bases. This generates explosion hazard. (ICSC 0275)
(Methanol)
The vapour mixes well with air, explosive mixtures are easily formed.

Reacts violently with strong oxidants, acids and reducing agents. This generates fire and explosion hazard. (ICSC 0057)

Conditions to avoid

Contact with incompatible materials.
Contact with fire source.

Incompatible materials

Acids, Bases, Strong oxidizing agents, Reducing agents

Hazardous decomposition products

Carbon 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]

(Formaldehyde)

rat LD50=600-700mg/kg, 800mg/kg (SIDS, 2003)

(Methanol)

human LD50=ca. 1400mg/kg (DFGOT vol.16, 2001)

Acute toxicity (Dermal)

[Product]

Category 3, Toxic in contact with skin

[Data for components of the product]

[GHS Cat. Japan, base data]

(Formaldehyde)

rabbit LD50=270mg/kg (HSDB, Access on Jun. 2017)

(Methanol)

rabbit LD50=15800mg/kg (DFGOT vol.16, 2001)

Acute toxicity (Inhalation)

[Product]

Category 2, Fatal if inhaled

[Data for components of the product]

[GHS Cat. Japan, base data]

(Formaldehyde)

gas: rat LC50=480ppm/4hr (SIDS, 2003)

(Methanol)

vapor: rat LC50>31500ppm/4hr (DFGOT vol.16, 2001)

Irritant properties

Skin corrosion/irritation

[Product]

Category 1, Causes severe skin burns and eye damage

[Data for components of the product]

[GHS Cat. Japan, base data]

(Formaldehyde)

rat (37% aqueous solution) skin damage/40min, (2.5% or more) microvascular leak (REACH Registration dossier, Accessed Oct. 2022)

Serious eye damage/irritation
[Data for components of the product]
[GHS Cat. Japan, base data]
(Formaldehyde)
human/rabbit eyes irritation (EHC 89, 1989)
(Methanol)
rabbit category 2 : Draize test (EHC 196, 1997)

Sensitization
Respiratory sensitization
[Product]
Category 1, May cause allergy or asthma symptoms or breathing difficulties if inhaled
[Data for components of the product]
[GHS Cat. Japan, base data]
(Formaldehyde)
cat. 1; JSOH airway Gr.2, 2007; CICAD 40, 2002; DFGOT, 2014, Access on Jun. 2017

Skin sensitization
[Product]
Category 1, May cause an allergic skin reaction
[Data for components of the product]
[GHS Cat. Japan, base data]
(Formaldehyde)
cat. 1A; JSOH Occupational sensitizers/skin Group 1 (OEL Documentations (JSOH), 2021);
Formalin (37% formaldehyde aqueous solution): mouse/positive (LLNA) (EU CLP CLH, 2021)

Germ cell mutagenicity
[Product]
Category 2, Suspected of causing genetic defects
[Data for components of the product]
[GHS Cat. Japan, base data]
(Formaldehyde)
cat. 2; NITE Initial Risk Assessment Report, 2006; NICNAS, 2006; ATSDR, 1999

Carcinogenicity
[Product]
Category 1A, May cause cancer
[Data for components of the product]
[GHS Cat. Japan, base data]
(Formaldehyde)
cat.1A; IARC Gr.1 (IARC 100F, 2012); NTP K (NTP RoC, 14th, 2016); ACGIH A1 (ACGIH 7th, 2017)
[IARC]
(Formaldehyde)
Group 1 : Carcinogenic to humans
[ACGIH]
(Formaldehyde)
A1(2017) : Confirmed Human Carcinogen
[NTP]
(Formaldehyde)
Known : Known to be Human Carcinogens
[EU]
(Formaldehyde)
Category 1B; Substances presumed to have carcinogenic potential for humans

Reproductive toxicity

[Product]
Category 1B, May damage fertility or the unborn child
[Data for components of the product]
[GHS Cat. Japan, base data]
(Methanol)
cat. 1B; mouse : PATTY 5th, 2001

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]
Category 1, Causes damage to organs
[Data for components of the product]
[cat.1]
[GHS Cat. Japan, base data]
(Formaldehyde)
nervous system, respiratory system (NITE Initial Risk Assessment Report, 2006; SIDS, 2003; EHC 89, 1989)
(Methanol)
central nervous system, organ of vision, systemic toxicity (DFGOT vol.16, 2001)
[cat.3 (narcotic effects)]
[GHS Cat. Japan, base data]
(Methanol)
narcotic effect (PATTY 5th, 2001)

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]
(Formaldehyde)
central nervous system, respiratory system (JSOH, 2007; ACGIH 7th, 2015; NITE Initial Risk Assessment Report, 2006; CICAD 40, 2002; CaPSAR, 1999, EHC 89, 1989; MOE Environmental Risk Assessment for Chemical Substances, vol.1, 2002)
(Methanol)
central nervous system, organ of vision (ACGIH 7th, 2001)

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]
(Formaldehyde)
Algae (Desmodesmus subspicatus) ErC50=4.89mg a.i./L/72hr(a.i.: active ingredient)
(Ecotoxicol Environ Safety 54: 346-354)
(Methanol)

Crustacea (Brine shrimp) LC50=900.73mg/L/24hr (EHC196, 1998)
Hazardous to the aquatic environment, long-term (chronic)
[GHS Cat. Japan, base data]
(Formaldehyde)
Crustacea (Ceriodaphnia dubia) NOEC=1.0mg/L/7days (AICIS IMAP, 2006)

Water solubility
(Formaldehyde)
Miscible (ICSC, 2012); not poorly water-soluble (400000 mg/L (SRC PHYSPROP Database, 2005))
(Methanol)
100 g/100 ml (PHYSPROP_DB, 2009)

Persistence and degradability
[Data for components of the product]
(Formaldehyde)
Rapidly degradable (BOD_Degradation：87 - 96% (METI Existing Chemical Substances Safety Inspections Data, 1988))

Bioaccumulative potential
[Data for components of the product]
(Formaldehyde)
log Kow=0.35 (SRC PHYSPROP Database, 2005)
(Methanol)
log Pow=-0.82/-0.66 (ICSC, 2000)

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 : 2209
UN Proper Shipping Name :
FORMALDEHYDE SOLUTION with not less than 25% formaldehyde
Class or division (Transport hazard class) : 8
Packing group : III
ERG GUIDE No.: 153

IMDG Code (International Maritime Dangerous Goods Regulations)
UN Number or ID Number : 2209
UN Proper Shipping Name :
FORMALDEHYDE SOLUTION with not less than 25% formaldehyde
Class or division (Transport hazard class) : 8
Packing group : III

IATA (Dangerous Goods Regulations)
UN Number or ID Number : 2209
UN Proper Shipping Name :
FORMALDEHYDE SOLUTION with not less than 25% formaldehyde
Class or division (Transport hazard class) : 8
Hazard labels : Corrosive
Packing group : III
Special provisions No.: A803
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
Formaldehyde; Methanol; Water
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, 2020 Edition (Incorporating Amendment 40-20)
IATA Dangerous Goods Regulations (64th Edition) 2023
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2023 TLVs and BEIs. (ACGIH)
Supplier's data/information
General Disclaimer
Please provide SDS to customers for selling or transferring.
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).