

Safety Data Sheet

1. Product and company identification

Product name : Methanol
Name of manufacturer : KANTO CHEMICAL CO., INC.
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SDS No. : GE00019

2. Summary of danger and Hazard

GHS classification

Physical and chemical hazard

Flammable liquids : Category 2
Pyrophoric liquids : Out of category

Human health hazard

Acute toxicity(oral) : Category 4
Acute toxicity(dermal)
: Out of category

Acute toxicity(inhalation:vapors)
: Out of category

Serious eye damage/eye irritation
: Category 2A

Skin sensitization : Out of category

Reproductive toxicity
: Category 1B

Specific target organ systemic toxicity(single exposure)
: Category 1 , Category 3 (anesthetic action)

Specific target organ systemic toxicity(repeated exposure)
: Category 1

Environmental hazard

Hazardous to the aquatic environment-acute hazard
: Out of category

Hazardous to the aquatic environment-chronic hazard
: Out of category

Pictogram or symbol



Signal word : Danger
Hazard statement : Highly flammable liquid and vapor

Harmful if swallowed
Causes serious eye irritation
May damage fertility or the unborn child
Causes damage to organs (central nervous system, visual organs, systemic toxicity)
May cause drowsiness and dizziness
Causes damage to organs (central nervous system, visual organs) through prolonged or repeated exposure

Cautions

- Safety measurements : Do not handle until all safety precautions have been read and understood.
Keep away from ignition sources such as heat, sparks, or open flame.
Keep containers tightly closed.
Ground container and receiving equipment in case of transport and stirring.
Use explosion-proof apparatus.
Use only non-sparking tools.
Do not breathe dust, mist, and vapor.
Use only in a well-ventilated area.
Do not eat, drink or smoke when using this product.
Wear appropriate protective gloves, glasses, clothing, face shield, or mask.
Wash hands thoroughly after handling.
- First-aid measures : If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical treatment if you feel unwell.

If swallowed: Rinse mouth. Get medical treatment if you feel unwell.
If in eyes : Rinse cautiously with water for several minutes. Get medical treatment.
If on skin : Remove contaminated clothing and the substance. Get medical treatment, if you feel unwell.
Wash hands thoroughly after handling.
If exposed, get medical treatment.
Get medical treatment, if you feel unwell.
- Storage : Tightly container closed and store in a well-ventilated area.
Store locked up.
- Disposal : Dispose of contents and containers appropriately in accordance with related regulations.

3. Composition/Information on ingredients

- Substance/Mixture : Substance
Chemical name or commercial name : Methanol
Synonyms : Methyl alcohol
Ingredients and composition : Methanol min. 99.9%
Chemical formula : CH₃OH

CAS No. : 67-56-1
TSCA Inventory : Registered
EINECS No. : 2006596
Dangerous and hazardous ingredients
: Methanol

4. First aid measures

Inhalation : Remove the victim to fresh air, and make him blow his nose and gargle.
Skin contact : Wash the affected areas under running water.
Eye contact : Wash the affected areas under running water for at least 15 minutes.
If necessary, get medical treatment.
Ingestion : Give the victim water or salt water and make him vomit. Do not give an unconscious victim anything to drink and do not induce vomiting. Get medical attention.

Anticipated acute and delayed symptoms

: Inhalation may cause cough, headache, dizziness, breath shortness, and nausea, these symptoms may be late to develop.

Protection for first aid person

: Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Extinguishing media : Water, dry chemical powder, carbon dioxide, dry sand, alcohol resistant foam

Prohibited extinguishing media

: Foam extinguisher

Particular fire fighting : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Alcohol-resistant foam extinguisher is effective for a large scale fire.

Protection for firefighters

: Wear breathing apparatus.

6. Accidental release measures

Cautions for personnel : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Cautions for environment : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Removal measure : Absorb spill with inert material (e.g., diatomaceous earth, sand) and flush spillage area with copious amounts of water.

Prevention of second accident

: Remove nearby sources of ignition and prepare extinguishing media.

7. Cautions of handling and storage

Handling

Engineering measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Fire is strictly prohibited.
Ventilate well at working places.
Prevent build-up of electrostatic charges (e.g. by grounding).

Cautions for safety handling

: Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas.

Cautions : Do not allow contact with oxidizing substances.

Storage

Adequate storage condition

: Store in a dark, cool place and tightly closed.

Safety adequate container materials

: Glass, fluorine resin, stainless steel

Do not use vinyl chloride resin, acrylic resin, polystyrene etc.

8. Exposure control/Personal protection

Engineering measures : Use with an enclosed system or a local exhaust ventilation.

Control parameters

ACGIH(2015) : 200ppm(TLV-TWA)
250ppm (TLV-STEL)
Transdermal absorption

Protective equipment

Respiration protective equipment

: If necessary, wear chemical cartridge respirator with an organic vapor cartage

Hands protective equipment

: Impervious protective gloves

Eyes protective equipment

: Safety goggles

Skin and body protective equipment

: Protective clothing, protective boots

9. Physical and chemical properties

Appearance : Liquid

Color : Colorless

Odor : Aromatic odor

Boiling point : 64.51°C

Melting point : -97.49°C

Flash point : 12°C

Auto-ignition point : 470°C

Explosion characteristics

Explosion limit : upper : 36.5vol% lower : 6.0vol%

Vapor pressure : 128hPa(20°C)

Vapor density : 1.1

Density : 0.793g/cm³ (20°C)
Solubility
Solubility in solvents : Water ; Miscible
Organic solvents ; Miscible with many kinds of organic solvents like ethanol, diethyl ether.
log Pow : -0.82
Other data : Viscosity : 0.5945cP(20°C)

10. Stability and reactivity

Stability : Stable under normal conditions.
Reactivity : Reacts with oxidizing substances.
Incompatible conditions : Light, heat
Incompatible materials : Oxidizing substances
Hazardous decomposition products
: Carbon monoxide

11. Toxicological information

Acute toxicity : Harmful if swallowed(category 4)
Dermal : Out of category
Inhalation(vapor) : Out of category
Inhalation(dust, mist) : Not possible to classify because of insufficient data.
As the result of animal experiments, acute oral toxicity is classified into out of category, however, the toxic effects of methanol in primates is more pronounced, therefore it was classified into category 4.

rat oral LD50=6200mg/kg
human oral LD50=1400mg/kg
rat inhalation LC50>31500ppm/4H
rabbit skin LD50=15800mg/kg

Skin corrosion/irritation : Not possible to classify because of insufficient data.

Although there is an unpublished report that when applied to the skin of rabbits under occlusive conditions for up to 20-hour the substance was not irritating, classification was not possible due to lack of data in a skin irritation test. As relevant information, although there is a report that application to rabbit skin for 24-hour under occlusive conditions caused moderate skin irritation, this irritation was probably a result of the defatting action of methanol.

Serious eye damage/eye irritation

: Causes serious eye irritation(category 2A)

In a rabbit Draize test, mean scores of conjunctivitis were judged to be 2 and higher (2.1) at 24, 48 and 72-hour after installation. Chemosis (score of 2.00) observed up to 4-hour had decreased significantly by 72-hour (score of 0.50). Based on the data, the substance was classified into category 2A.

Respiratory sensitization or Skin sensitization

: Respiratory sensitization : Not possible to classify because of insufficient data.

Skin sensitization : Out of category

- Based on the description that Methanol has no skin sensitization by maximization test using guinea pig, it was set into out of category.
- Mutagenicity : Not possible to classify because of insufficient data.
Methanol is negative in mouse erythrocyte micronucleus tests (in vivo somatic cell mutagenicity tests) by inhalation exposure and by intraperitoneal administration.
- Carcinogenic effects : Not possible to classify because of insufficient data
- Effects on the reproductive system : May damage fertility or the unborn child(category 1B)
In a developmental toxicity test by inhalation exposure to mice during organogenesis period, fetal resorptions and exencephaly were observed. Additionally, similar effects including cleft palate were reported in other inhalation and oral exposure tests.
For effects of methanol on reproduction, scientific decisions concerning health risks are generally based on what is known as weight-of-evidence approach. Recognizing the lack of human data and the clear evidence of laboratory animal effects, it was concluded that methanol may adversely affect human development if exposures are sufficiently high. Based on the information, the substance was considered to be a presumed human reproductive toxicant and it was classified into category 1B.
- Specific target organ system toxicity single exposure : Cause damage to organs (central nervous system, visual organs, systemic toxicity)(category 1)
May cause drowsiness and dizziness(category 3)
The symptoms of acute poisoning from the substance include CNS-depression. Formate accumulates in the blood during a latency period which leads to metabolic acidosis, visual impairment or even total blindness, headaches, dizziness, nausea, vomiting, Kussmaul breathing and coma. In some cases death is the final outcome. Further, CNS disorders, especially parkinsonism-like extrapyramidal symptoms were reported. Morphological changes, necrosis in the white substance of the brain were demonstrated. Based on the human information, the substance was classified into category 1 (central nervous system).
Additionally, the eye was regarded as a target organ since visual impairment is a characteristic effect. Additionally, systemic toxicity is regarded as a target organ based on the reports of headache, nausea, vomiting, tachypnea and coma as signs of metabolic acidosis. The effects of single exposures by inhalation include narcosis. As an acute toxicity in humans, a narcotic effect results from central nervous system depression. Based on the data, the substance was classified into category 3 (narcotic effects).
- Specific target organ systemic toxicity repeated exposure : Cause damage to organs (central nervous system, visual organs) through prolonged or repeated exposure(category 1)
Based on a report that the most noted health consequence of longer-term exposure to lower levels of methanol is a broad range of ocular effects, and that cases of chronic poisoning from occupational exposure to methanol were manifested by bilateral blindness, it was classified into category 1 (visual organs).
Additionally, based on the report that cases of chronic poisoning from repeated exposure to methanol vapour are manifested by headache, giddiness, insomnia, and gastric disturbances, it was classified into category 1 (central nervous system).
- Aspiration hazard : Not possible to classify because of insufficient data.
12. Ecological information
Ecotoxicity

Fish toxicity : Acute aquatic toxicity : Out of category
Chronic aquatic toxicity : Out of category
Crustacea (brown shrimp) LC50=1340mg/L/96H

Persistence and degradability

: High biodegradability
92% by BOD

Bioaccumulative potential : Low or no bioconcentration or bioaccumulation potential in fish or shells.

Mobility in soil : Expected to have high mobility. (Koc:2.75)

13. Disposal consideration

Residual disposal : Burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.

Containers : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

UN class : Class 3 (Flammable liquids) P. G. II

UN number : 1230

Marine regulation information

UN No. : 1230

Proper shipping name : METHANOL

Class : 3

Sub risk : 6.1

Packing group : II

Marine pollutant : Not applicable

Aviation regulation information

UN No. : 1230

Proper shipping name : Methanol

Class : 3

Sub risk : 6.1

Packing group : II

15. Regulatory information

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

16. Other information

References

Solvents Handbook, T, Asahara et al, Kodansha Scientific Ltd. (1976)

Handbook of dangerous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001)

Dangerous Properties of Industrial Materials, 6th ed. N. I. Sax Van Nostrand Reinhold Company (1984)

Handbook of Dangerous Substances Springer-Verlag Tokyo (1991)

Handbook of 16817 Chemical Products, The Chemical Daily Co. (2017)

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253, and it has the same required elements on the Material Safety Data Sheet (MSDS) which is prepared based on JIS Z7250:2010.