

Safety Data Sheet

1. Product and company identification

Product name : DEHYDRATED SOLVENT O

Part No. : E327340-A, E327340-B

Company information

Name of supplier : HIRANUMA Co., Ltd.

Address : 1739 Motoyoshida, Mito, Ibaraki, 310-0836, JAPAN

Name of section : Quality assurance department

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Mail address : info-f2@hiranuma.com

Name of Manufacturer : KANTO CHEMICAL CO., INC.

Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo,
103-0022, JAPAN

Recommended use : For research use only

Restrictions on use : Seek expert judgment when using the product for
applications other than those recommended.

2. Summary of danger and Hazard

GHS classification

Physical and chemical hazard

Flammable liquids : Category 2

Human health hazard

Acute toxicity (oral)
: Category 4

Acute toxicity (inhalation : vapors)
: Category 4

Skin corrosion/irritation
: Category 2

Serious eye damage/eye irritation
: Category 1

Germ cell mutagenicity
: Category 2

Carcinogenicity : Category 2

Reproductive toxicity
: Category 1B

Specific target organ toxicity (single exposure)

: Category 1 (central nervous system, visual organ, respiratory organs, cardiovascular, liver, kidneys, systemic toxicity),
Category 3 (anesthetic action)

Specific target organ toxicity (repeated exposure)

: Category 1 (central nervous system, visual organs, kidneys, liver, respiratory organs)

Environmental hazard

Aquatic acute : Category 3

Aquatic chronic : Category 1

Pictograms or symbols



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor

Harmful if swallowed

Harmful if inhaled

Causes skin irritation

Causes serious eye damage

Suspected of causing genetic defects

Suspected of causing cancer

May damage fertility or the unborn child

Causes damage to organs (central nervous system, visual organs, respiratory organs, cardiovascular, liver, kidneys, systemic toxicity)

May cause drowsiness and dizziness

Causes damage to organs (central nervous system, visual organs, kidneys, liver, respiratory organs) through prolonged or repeated exposure

Harmful to aquatic life

Very toxic to aquatic life with long lasting effects

Precautionary statements

Prevention : Do not handle until all safety precautions have been read and understood.

Keep away from ignition sources such as heat, sparks, or open flame.

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.

Avoid release to the environment.

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

Wear appropriate protective gloves, glasses, clothing, face shield, or mask.

Wash protective equipment thoroughly after use.

Wash hands thoroughly after handling.

Response : 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. Immediately get medical treatment.

If exposed, get medical treatment.

Get medical treatment, if you feel unwell.

Collect leakage

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 : Mixture

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Chloroform	≥ 55	CHCl ₃	Listed	200-663-8	67-66-3
Methanol	≥ 44	CH ₃ OH	Listed	200-659-6	67-56-1

4. First aid measures

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. Get medical attention.
- Protection for first aid person : Savers wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Extinguishing media : Dry chemical powder, carbon dioxide, dry sand, foam

Prohibited extinguishing media : Water spray

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. Foam extinguisher is effective for a large scale fire.

Protection for firefighters

: Wear breathing apparatus.

6. Accidental release measures

Cautions for personnel

: Wear proper equipment and avoid contact with skin and inhalation of vapor. Keep personnel removed from and upwind of fire. Shut off all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Cautions for environment

: Attention should be given not to cause damage to the environment by flowing of spillage to rivers. In case of the dilution of copious water, do not cause damage to the environment by untreated wastewater.

Methods and Equipment for Containment and Cleaning up

For containment : Absorb spill with inert material (e.g., diatomaceous earth, sand) and flush residual 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 equipment not to contact with skin or inhale the vapor. Fire is strictly prohibited.

Ventilate well at working places.

Cautions for safety handling

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

Cautions

: Do not contact with oxidizing substances.

Storage

Adequate storage condition

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

Safety adequate container materials

: Glass, fluorine resin

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

8. Exposure control/Personal protection

Chloroform	ACGIH TWA : 10ppm
Methanol	ACGIH TWA : 200ppm ACGIH STEL : 250ppm Remark : Skin

Engineering measures

: Use only with adequate ventilation and in closed systems.

Protective equipment

Respiration protective equipment

: If necessary, wear chemical cartridge respirator.

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

Physical state : Liquid
Color : Colorless
Odor : Aromatic odor
pH ; No data available
Melting point ; No data available
Freezing point : No data available
Boiling point : No data available
Flash point : 15.5 °C
Auto ignition temperature
: 470 °C (as Methanol)
Decomposition temperature
: No data available
Flammability : Flammable
Vapor pressure : 128hPa (20 °C)
Density : 1.03g/cm³ (20 °C)
Relative gas density : 2.7
Solubility
Solubility in solvents
: Water ; Freely soluble
Partition coefficient n-octanol/water (log Pow)
: -0.82 (as Methanol)
Explosive limits (vol %)
Explosion limit : upper : 36.5vol% lower : 6.0vol% (as Methanol)
Viscosity, kinematic : No data available
Particle characteristics
: No data available

10. Stability and reactivity

Reactivity : React with oxidizing substances.
Chemical Stability : Stable under normal usage.
Possibility of hazardous reactions
: React with oxidizing substances.
Conditions to avoid : Light, heat

Incompatible materials : Oxidizing substances
Hazardous decomposition products
: Carbon monoxide, chlorine, hydrogen chloride

11. Toxicological information

Acute toxicity (oral) : Harmful if swallowed (category 4)

Acute toxicity (dermal)
: No classification

Acute toxicity (inhalation)

: Toxic if inhaled(vapor) (category 4)

: Inhalation (dust, mist) : Classification not possible

The toxic effects of methanol in primates is more pronounced than in rodents and a dose of 1400mg/kg was lethal in approximately half of the cases. Based on the data, it was classified into category 4.

(as Methanol)

rat oral LD50=7939mg/kg (as calculated value)

rat inhalation LC50>31500ppm/4H(vapor)

rabbit skin LD50=15800mg/kg

(as Chloroform)

rat oral LD50=635mg/kg

rat inhalation LC50=9636ppm/4H(vapor)

rabbit skin LD50=3980mg/kg

Skin corrosion/irritation

: Causes skin irritation(category 2)

In the skin irritation test using rabbits, as a result of a stock solution of chloroform was applied for 24 hours, there was the report that mild hyperemia, necrosis and crust formation were observed. And is the report that severe irritation was observed by applied stock solution of chloroform. In addition, as a result which was applied 1-4 times of this material to the ear of the rabbit, minor redness and skin peeling was observed. From the above data, it was classified into category 2.

Serious eye damage/eye irritation

: Causes serious eye damage (category 1)

Based on the description that as a result of eye irritation test of chloroform using a rabbit, mydriasis, keratitis, semi-transparent and pyogenic bleeding like emissions of the cornea

were observed, and causes severe irritation, it was classified in to category 1.

Respiratory sensitization

: Classification not possible

Skin sensitization

: Classification not possible

Although methanol is classified into out of category, it is not possible to classify because of chloroform has no data.

Germ cell mutagenicity

: Suspected of causing genetic defects(category 2)

Chloroform is positive in somatic cell in vivo mutagenicity tests (micronucleus and chromosome aberration tests).

Carcinogenicity

: Suspected of causing cancer(category 2)

Japan Society for Occupational Health classifies chloroform as the group 2B.(The chemical is probably carcinogenic to humans.)

Reproductive toxicity

: May damage fertility or the unborn child (category 1B)

In a developmental toxicity test of methanol 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, it was considered to be a presumed human reproductive toxicant, therefore it was classified into category 1B.

Specific target organ toxicity (single exposure)

: Cause damage to organs (central nervous system, visual organ, respiratory organs, cardiovascular, liver, kidneys, systemic toxicity)(category 1)

May cause drowsiness and dizziness(category 3)

In human, there is a history that chloroform has been used as an anesthetic. By inhalation exposure, there is the description of anesthetic action, cough, dizziness, lethargy, hypoesthesia,

headache, nausea, vomiting, abdominal pain, weakness, loss of consciousness, coma, seizures, increase respiration, respiratory center paralysis, impaired consciousness, acute respiratory failure, arrhythmias, cardiovascular inhibitory action, ventricular fibrillation, jaundice, liver cell degeneration and necrosis, there is a renal tubular necrosis, renal failure.

The symptoms of acute poisoning from methanol 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, it 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, it was classified into category 3 (narcotic effects).

Specific target organ toxicity (repeated exposure)

: Cause damage to organs (central nervous system, visual organs, kidneys, liver, respiratory organs) through prolonged or repeated exposure (category 1)

In human, worker who were exposure for 1-6 months in chloroform, symptoms such as development of hepatitis, jaundice, nausea, vomiting were observed. There is the description that onset of hepatitis causes at exposure concentration of 2-205ppm (9.7-1,000mg/m³). In experimental animals, in 13-week forced oral administration test, drinking water administration test, 3 weeks forced oral administration to rats, effects on liver (liver swelling of the cell, modified, fat reduction, such as initial cirrhosis like change), kidney(chronic inflammation, degeneration of the proximal tubule, necrosis, etc.),

spleen (atrophy of the white pulp, reduction of antibody-producing cell number) were observed at dose of corresponding to Category 2(converted guidance value:14.8–60 mg/kg/day). 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, From the above results, it was classified into category 1(central nervous system, visual organs, kidneys, liver, respiratory organs).

Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute : Toxic to aquatic life (category 3)

Aquatic chronic : Very toxic to aquatic life with long lasting effects(category 1)
(as Chloroform)

Chlamydomonas EC50=13.3mg/L/72H

Fish(rainbow trout) NOEC=0.059mg/L/21days

Persistence and degradability

: Chloroform dose not rapid biodegradability.

Bioaccumulative potential

: No data available

Mobility in soil : No data available

Hazardous to the ozone layer

: Classification not possible

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

International Regulations

Transport by sea (IMDG)

UN-No. (IMDG) : 2929

Proper Shipping Name (IMDG)
: TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S. (chloroform and methanol)

Packing group (IMDG)
: II

Transport hazard class(es) (IMDG)
: 3 (6.1)

Air transport(IATA)

UN-No. (IATA) : 2929

Proper Shipping Name (IATA)
: TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S. (chloroform and methanol)

Packing group (IATA)
: II

Transport hazard class(es) (IATA)
: 3 (6.1)

Marine pollutant : Applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollutant category : Y

MFAG-No : 131

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

References

- 1) Company data on file (SDS provided by manufacturer)
- 2) NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

* 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 concentrations or ranges of concentrations shown in "3. Composition/Information on ingredients" are examples calculated based on the amounts used at the time of manufacture and do not guarantee the concentrations in

the product. The total value may not be 100% due to fractional processing. The Safety Data Sheet(SDS) is prepared based on JIS Z7253.