Safety Data Sheet

1. Product and company identification

Product name : AQUALYTE STANDARD WATER-METHANOL SOLUTION FACTOR 2

Part No. : D312141-1

Company information

Name of supplier : HIRANUMA Co., Ltd.

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

Name of section : Quality assurance department

Telephone number : +81-29-247-7343

Facsimile number : +81-29-240-0381

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

Serious eye damage/eye irritation
: Category 2A

Reproductive toxicity
: Category 1B

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

Specific target organ toxicity (repeated exposure)
: Category 1

Pictograms or symbols

Signal word : Danger

Hazard statements : 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

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.
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.

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.
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 : Mixture

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Methanol	99.7	CH_3OH	Listed	200-659-6	67-56-1
Water	0.3	H_2O	Listed	231-791-2	7732-18-5

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 waste water into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment : 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 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 controls/Personal protection equipment

Methanol	ACGIH TWA : 200ppm ACGIH STEL : 250ppm

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

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

(As methanol)

Appearance : Liquid
Color : Colorless
Odor : Aromatic odor
pH : No data available
Melting point : -97.49 °C
Freezing point : No data available

Boiling point : 64.51 °C
Flash point : 12 °C
Auto-ignition temperature
: 470 °C
Decomposition temperature
: No data available
Flammability : Flammable
Vapor pressure : 128hPa (20 °C)
Relative density : No data available
Density : 0.79g/cm^3 (20℃)
Relative gas density : 1.1
Solubility : Water : Miscible
Organic solvents : Miscible with many kinds of organic solvents like ethanol, diethyl ether.
Partition coefficient n-octanol/water (log Pow)
: -0.82
Explosive limits (vol %)
: 6.0 - 36.5 vol%
Viscosity, kinematic : No data available
Particle characteristics
: No data available

10. Stability and reactivity

Reactivity : React with oxidizing substances.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions
: React with oxidizing substances
Conditions to avoid : Light, heat
Incompatible materials : Oxidizing substances
Hazardous decomposition products
: Carbon monoxide

11. Toxicological information

Acute toxicity (oral) : Harmful if swallowed
(as methanol)
rat LD50=6200mg/kg
human LD50=1400mg/kg

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.

Acute toxicity (Dermal)

: No classification
(as methanol)
rabbit LD50=15800mg/kg

Acute toxicity (Inhalation)

: No classification (vapor)
(as methanol)
rat LC50>31500ppm/4H(vapor)
Classification not possible (dust, mist)

Skin corrosion/irritation

: Classification not possible
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
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

: Classification not possible

Skin sensitization : No classification
Based on the description that Methanol has no skin sensitization by maximization test using guinea pig, it was set into out of category.

Germ cell mutagenicity

: Classification not possible
Methanol is negative in mouse erythrocyte micronucleus tests (in vivo somatic cell mutagenicity tests) by inhalation exposure and by intraperitoneal administration.

Carcinogenicity : Classification not possible

Reproductive toxicity : May damage fertility or the unborn child
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 toxicity (single exposure)
: Cause damage to organs (central nervous system, visual organ, systematic toxicity)
May cause drowsiness and dizziness
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 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 vapor are manifested by headache, giddiness, insomnia, and gastric disturbances, it was classified into category 1 (central nervous system).

Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute : No classification
Crustacea (brine shrimp) LC50=1340mg/L/96H

Aquatic chronic : No classification

Persistence and degradability
: Readily biodegradable BOD : 92%

Bioaccumulative potential
: Low bioconcentration log Pow : -0.82

Mobility in soil : High mobility Koc : 2.75

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) : 1230

Proper shipping name(IMDG)

METHANOL

Packing group(IMDG)

: Ⅱ

Transport hazard class(es) (IMDG)

: 3 (6.1)

Air transport(IATA)

UN No.(IATA) : 1230

Proper shipping name(IATA)

: Methanol

Packing group(IATA)

: Ⅱ

Transport hazard class(es) (IATA)

: 3 (6.1)

Marine pollutant : Not 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.