Safety Data Sheet

1. Product and company identification

Product name : AQUALYTE KF 5
Part No. : D312133-1

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

Human health hazard
Acute toxicity (inhalation : vapor)
: Category 3
Skin corrosion/irritation
: Category 1C
Serious eye damage/eye irritation
: Category 1
Skin sensitization : Category 1
Reproductive toxicity
: Category 2
Specific target organ toxicity (single exposure)
: Category 2 (respiratory organs, nervous system)
Specific target organ toxicity (repeated exposure)
: Category 1(thyroid gland), Category 2 (respiratory organs)
Environmental hazard
Aquatic acute : Category 2
Aquatic chronic : Category 2

Pictograms or symbols

Signal word : Danger

Hazard statements : Toxic if inhaled
Causes severe skin burns and eye damage
Causes serious eye damage
May cause an allergic skin reaction
Suspected of damaging fertility or the unborn child
May cause damage to organs (respiratory organs, nervous system)
Causes damage to organs (thyroid gland) through prolonged or repeated exposure
May cause damage to organs (respiratory organs) through prolonged or repeated exposure
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention : Do not handle until all safety precautions have been read and understood.
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.
Contaminated work clothing should not be allowed out of the workplace.
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. Immediately get medical treatment.
If swallowed: Rinse mouth, do not induce vomiting. Immediately get medical treatment.
If in eyes : Rinse continuously 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
2-(2-Ethoxyethoxy) ethanol	60-70	$HOCH_2CH_2O$ $CH_2CH_2OCH_2CH_3$	Listed	203-919-7	111-90-0
Propylene glycol	3-8	$CH_3CH(OH)CH_2OH$	Listed	200-338-0	57-55-6
Imidazole	5-15	$C_3H_4N_2$	Listed	206-019-2	288-32-4
Sulfur dioxide	3-8	SO_2	Listed	231-195-2	7446-09-5
Iodine	5-15	I_2	Listed	231-442-4	7553-56-2

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 : Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.

Protection for first aid person

: Savers wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

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

Prohibited extinguishing media
: None

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 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 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, stainless steel

Do not use polyvinyl chloride resin, polystyrene.

8. Exposure control/Personal protection

Sulfur dioxide	ACGIH STEL : 0.25ppm
Iodine	ACGIH TWA : 0.01ppm ACGIH STEL : 0.1ppm

Engineering measures

: Use only with adequate ventilation and in closed systems.

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

Physical state : Liquid

Color : Dark brown

Odor : Acrid odor

pH ; No data available

Melting point ; No data available

Freezing point : No data available

Boiling point : No data available

Flash point : 111 °C

Auto ignition temperature

: No data available

Decomposition temperature

: No data available

Flammability : Flammable

Vapor pressure : No data available

Density : 1.06g/cm^3 (20 °C)

Relative gas density : No data available

Solubility

Solubility in solvents

: Water ; Soluble

Partition coefficient n-octanol/water (log Pow)

: No data available

Explosive limits (vol %)

Explosion limit : Upper limit : 23.5vol% lower limit : 1.2vol%(as 2-(2-Ethoxyethoxy)ethanol)

Viscosity, kinematic : No data available

Particle characteristics

: No data available

10. Stability and reactivity

Reactivity : May react with oxidizing substances.

Chemical Stability : Stable under normal usage.

Possibility of hazardous reactions

: May react with oxidizing substances.

Conditions to avoid : Light, heat

Incompatible materials : Oxidizing substances

Hazardous decomposition products

: Carbon monoxide,

11. Toxicological information

Acute toxicity (oral) : No classification

Acute toxicity (dermal)

: Classification not possible

Acute toxicity (inhalation)

: Toxic if inhaled(vapor) (category 3)

: Inhalation (dust, mist) : Classification not possible

(as 2-(2-Ethoxyethoxy)ethanol)
rat oral LD50=5500mg/kg
rabbit skin LD50=8500mg/kg
(as Propylene glycol)
rat oral LD50>20g/kg
rabbit skin LD50=20800mg/kg
(as Imidazole)
rat oral LD50=960mg/kg
(as Iodine)
rat oral LD50=315mg/kg
rat skin LD50=3333mg/kg
rat inhalation LC50=35ppm/4H(vapor)

Skin corrosion/irritation
: Causes severe skin burns and eye damage(category 1C)
Since imidazole causes corrosivity to the skin, it was classified into category 1C.

Serious eye damage/eye irritation
: Causes serious eye damage (category 1)
Since the solution causes severe irritation to the eyes, it was classified into category 1.

Respiratory sensitization
: Classification not possible

Skin sensitization : May cause an allergic skin reaction(category 1)
Iodine is listed in the 2nd skin group of the sensitization substance of Recommendation of Acceptable Concentration of Japanese Society for Occupational Health.

Germ cell mutagenicity
: Classification not possible

Carcinogenicity : Classification not possible

Reproductive toxicity
: Suspected of damaging fertility or the unborn child(category 2)
Since 2-(2-ethoxyethoxy)ethanol may cause reproductive and developmental toxicity, the classification is set to category 2.

Specific target organ toxicity (single exposure)
: May cause damage to organs (respiratory organs, nervous system)(category 2)
It is unlikely that the product generates sulfur dioxide. Based on the evidence that in the inhalation exposure test of sulfur

dioxide using guinea pigs dogs, rabbits, and rats, airway mucosa irritation, increased airway resistance and respiratory ciliary loss are seen by the concentration of the guidance value of category 1, and that decreased respiratory function, such as an increase in airway resistance was seen also in the inhalation exposure test in humans. the classification is set to category 1 (respiratory organs).

And since imidazole may cause nervous effect, it was classified into category 2(nervous system).

Thus, the product was classified into category 2 (respiratory organs, nervous system), taking into account the concentrations of sulfur dioxide and imidazole.

Specific target organ toxicity (repeated exposure)

: Cause damage to organs (thyroid gland) through prolonged or repeated exposure(category 1)

May cause damage to organs (respiratory organs) through prolonged or repeated exposure(category 2)

It is unlikely that the product generates sulfur dioxide. Based on the evidence that in the inhalation exposure test of sulfur dioxide using rats, and guinea pigs, pneumonia and bronchitis were observed with the concentration in category 1 guidance value range, it was classified into category 1(respiratory organs). And based on the description that iodine may cause thyroid disease (hypothyroidism, hyperfunction, or thyroiditis) is caused by ingestion in human, the classification is set to category 1 (thyroid gland). Thus, the product was classified into category 1 (thyroid gland) and category 2 (respiratory organs), taking into account the concentrations of sulfur dioxide and iodine.

Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute : Toxic to aquatic life (category 2)

Aquatic chronic : Toxic to aquatic life with long lasting effects (category 2)

(as iodine)

Daphnia magna LC50=0.16mg/L/48H

Persistence and degradability

: No data available

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) : 1760

Proper Shipping Name (IMDG)

: CORROSIVE LIQUID, N.O.S. (contains imidazole and iodine)

Packing group (IMDG)

: Ⅲ

Transport hazard class(es) (IMDG)

: 8

Air transport(IATA)

UN-No. (IATA) : 1760

Proper Shipping Name (IATA)

: CORROSIVE LIQUID, N.O.S. (contains imidazole and iodine)

Packing group (IATA)

: Ⅲ

Transport hazard class(es) (IATA)

: 8

Marine pollutant : Not applicable

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

Pollutant category : Z

MFAG-No : 154

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.