Safety Data Sheet

1. Product and company identification

Product name : AQUALYTE KF 5K
Part No. : D312134-1

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 (oral)
: Category 4

Acute toxicity (inhalation : vapor)
: Category 1

Skin corrosion/irritation
: Category 1C

Serious eye damage/eye irritation
: Category 2A

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 (respiratory organs, thyroid gland)

Environmental hazard

Aquatic acute : Category 2

Aquatic chronic : Category 2

Pictograms or symbols

Signal word : Danger

Hazard statements : Harmful if swallowed
Fatal 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 (respiratory organs, thyroid gland) 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 cautiously with water for several minutes. Get medical treatment.
If on skin : Remove contaminated clothing and the substance. Immediately get medical treatment.
Wash hands thoroughly after handling.
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	65-75	$HOCH_2CH_2O$ $CH_2CH_2OCH_2CH_3$	Listed	203-919-7	111-90-0
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

: Rescuers should 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. 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 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.
Use in well-ventilated areas.

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 : 94℃(as 2-(2-ethoxyethoxy)ethanol)
Auto ignition temperature
: No data available
Decomposition temperature
: No data available
Flammability : No data available
Vapor pressure : No data available
Density : No data available
Relative gas density : No data available
Solubility
Solubility in solvents
: No data available
Partition coefficient n-octanol/water (log Pow)
: No data available
Explosive limits (vol %)
Explosion limit : No data available
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 conditions.
Possibility of hazardous reactions
: May react with oxidizing substances.
Conditions to avoid : Light, heat
Incompatible materials : Oxidizing substances
Hazardous decomposition products
: Carbon monoxide, nitrogen oxides, sulfur oxides, iodine, hydrogen iodide

11. Toxicological information

Acute toxicity (oral) : Harmful if swallowed(category 4)
Acute toxicity (dermal)
: Classification not possible
Acute toxicity (inhalation)

: Fatal if inhaled(vapor)(category 1)
: Inhalation (dust, mist) : Classification not possible
(as imidazole)
rat oral LD50=960mg/kg
(as iodine)
rat oral LD50=315mg/kg
rat inhalation LC50=35ppm/4H(vapor)

Skin corrosion/irritation
: Causes severe skin burns and eye damage(category 1C)
In the rabbit test, 4-hour application of 0.5 mL of 80% imidazole as paste form with water to rabbit skin, severe erythema appeared after one night and lasted until day 8 at the end of observation period, and mild necrosis appeared after one night and necrosis extending to all layers was pathologically observed at the end of observation period. Thus, the product was classified into category 1C.

Serious eye damage/eye irritation
: Causes serious eye irritation(category 2A)
Based on the evaluation of irritation with an irritation index MMAS of 59.3 in a test in which undiluted imidazole (100 mg) was applied to rabbit eyes, the product was classified into category 2A.

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. Thus, the product was classifed into category 1.

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)
Imidazole : In acute toxicity tests in rats orally exposed to 500-5000mg/kg, within 1 hour of exposure, convulsions, imbalance, lateral position, death, and in case of surviving animals, torpor, slight imbalance, and stimulated respiration were observed. In oral administration tests in mice, at 1000mg/kg, irregular respiration, piloerection, eyelid closure (some animals) were observed after 15-30 minutes of exposure, and at 2000 mg/kg, crouching position (some animals) and death (one animal) were observed. In summary, based on symptoms observed with the dose of the guidance value range of category 2, it was classified into category 2 (nervous system).
Sulfur dioxide : In the inhalation exposure test using guinea pigs, dogs, rabbits, and rats, airway mucosa irritation, increased airway resistances and respiratory ciliary loss are seen by the concentration of the guidance value range of Category 1, and that decreases respiratory function, such as an increase in airway resistance, was seen also in the inhalation exposure test in humans. Thus, it was classified into category 1 (respiratory organs).
The product was classified into category 2 (respiratory organs, nervous system) based on each content.

Specific target organ toxicity (repeated exposure)
: Cause damage to organs (respiratory organs, thyroid gland) through prolonged or repeated exposure(category 1)
2-(2-Ethoxyethoxy)ethanol : In a 28-day inhalation exposure test in rats (6 hours/day, 5 days/week: estimated to be vapor), mild irritation of the larynx and nasal turbinates, and necrosis of the ventral laryngeal cartilage (2/5-3/5 cases) were observed beginning at 270 mg/m3. Thus, it was classified into category 1 (respiratory organs).
Sulfur dioxide : Based on the description that in the inhalation exposure test using the rat and guinea pig, pneumonia and bronchitis were observed with the concentration in the category 1 guidance value range, it was classified into category 1 (respiratory organs).
Iodine : Human studies have shown that chronic overdose of iodine may cause hyperthyroidism (at doses above 8

mg/kg/day (about 560 mg/day)) or hypothyroidism (at doses below 8 mg/kg/day). Thus, it was classified into category 1 (thyroid gland).
The product was classified into category 1 (respiratory organs, thyroid gland) based on each content.

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) : 3289

Proper Shipping Name (IMDG)

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

Packing group (IMDG)

: I

Transport hazard class(es) (IMDG)

: 6.1 (8)

Air transport(IATA)

UN-No. (IATA) : 3289

Proper Shipping Name (IATA)

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

Packing group (IATA)

: I

Transport hazard class(es) (IATA)

: 6.1 (8)

Marine pollutant : 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.