Date of issue : 4 Jun. 2020
Date of revision : 1 Jan. 2021

Safety Data Sheet

1. Product and company identification

Product name : AQUALYTE KF5K
Part No. : D312134-1
Name of manufacturer : 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-f@hiranuma.com

2. Summary of danger and Hazard

GHS classification

Physical and chemical hazard

Flammable liquids : Out of category
Pyrophoric liquids : Out of category

Human health hazard

Acute toxicity (oral)
: Category 4
Acute toxicity (dermal)
: Out of category
Acute toxicity (inhalation : vapors)
: Category 1
Acute toxicity (inhalation:dust, mists)
: Out of category
Skin corrosion/irritation
: Category 1C
Serious eye damage/eye irritation
: Category 2A
Skin sensitization : Category 1
Reproductive toxicity
: Category 2
Specific target organ systemic toxicity (single exposure)
: Category 2

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

Environmental hazard

Hazardous to the aquatic environment-acute hazard
: Category 2

Hazardous to the aquatic environment-chronic hazard
: Category 2

Pictogram or symbol

Signal word　: Danger

Hazard statement　: 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

Cautions

Safety measurements
: 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.

First-aid measures : 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 or commercial name
: 2-(2-Ethoxyethoxy)ethanol solution of following composition

Ingredients and composition
: 2-(2-Ethoxyethoxy)ethanol 65-75%
Imidazole 5-15%
Sulfur dioxide 3-8%
Iodine 5-15%

Chemical formula : 2-(2-Ethoxyethoxy)ethanol $HOCH_2CH_2OCH_2CH_2OCH_2CH_3$
Imidazole $C_3H_4N_2$
Sulfur dioxide SO_2
Iodine I_2

CAS No. : 2-(2-Ethoxyethoxy)ethanol 111-90-0
Imidazole 288-32-4
Sulfur dioxide 7446-09-5
Iodine 7553-56-2

Dangerous and hazardous ingredients
: 2-(2-Ethoxyethoxy)ethanol, Imidazole, Sulfur dioxide, Iodine

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 : 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.

Removal measure : 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 protective equipment to avoid contact with skin or inhalation of 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 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 polyvinyl chloride resin, polystyrene.

---

8. Exposure control/Personal protection

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

Control parameters

ACGIH(2015) : 0.01ppm(IFV)(TLV-TWA), 0.1ppm(V)(TLV-STEL)(as iodine)
0.25ppm(TLV-STEL)(as sulfur dioxide)

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	: Dark brown
Odor	: Acrid odor
Boiling point	: Not available
Flash point	: 94℃(as 2-(2-ethoxyethoxy)ethanol)
Auto-ignition point	: Not available
Explosion characteristics	
Explosion limit	: Not available
Vapor pressure	: Not available
Density	: Not available

---

10. Stability and reactivity

Stability	: Stable under normal conditions.
Reactivity	: May react with oxidizing substances.
Incompatible conditions	: Light, heat
Incompatible materials	: Oxidizing substances
Hazardous decomposition products	: Carbon monoxide, nitrogen oxides, sulfur oxides, iodine, hydrogen iodide

---

11. Toxicological information

Acute toxicity : Harmful if swallowed(category 4)
Dermal : Out of category
Fatal if inhaled(vapor)(category 1)
Inhalation(dust, mist) : Out of category
(as imidazole)
rat oral LD50=960mg/kg
(as iodine)
rat oral LD50=315mg/kg
rat inhalation LC50=35ppm/4H(vapor)

Skin corrosiveness/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 or Skin sensitization

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

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.

Mutagenicity : Not possible to classify because of insufficient data.

Carcinogenic effects : Not possible to classify because of insufficient data

Effects on the reproductive system

: Suspected of damaging fertility or the unborn child(category 2)

In oral administration developmental toxicity tests of imidazole in rats on gestation days 6-19, at 180mg/kg/day, the highest dose level which caused general toxicity in the form of reduced food consumption and suppression of body weight gain in dams, high incidence of late resorption and increased post-implantation loss were observed. In addition, anasarca, cleft palate, and decreased scapula were markedly observed, suggesting external teratogenicity and skeletal malformations. Thus, the product was classified into category 2.

Specific target organ systemic 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 systemic 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 : Not possible to classify because of insufficient data.

12. Ecological information

Ecotoxicity

Fish toxicity : Toxic to aquatic life (category 2)
Toxic to aquatic life with long lasting effects (category 2)
(as iodine)
Daphnia magna LC50=0.16mg/L/48H

Persistence and degradability
: Not available

Bioaccumulative potential
: Not available

Mobility in soil : Not available

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 6.1(Toxic substances) P. G. Ⅰ

UN number : 3289

Marine regulation information

UN No. : 3289

Proper shipping name
: TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S.

Class : 6.1

Sub risk : 8

Packing group : I

Marine pollutant : P

Aviation regulation information

UN No. : 3289

Proper shipping name
: Toxic liquid, corrosive, inorganic, n.o.s.

Class : 6.1

Sub risk : 8
Packing group : I

15. Regulatory information

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

16. Other information

References

1) Company data on file (SDS provided by manufacturer)
2) NITE: 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 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.