

Safety Data Sheet

1. Product and company identification

Product name : AQUALYTE GRO-A
Part No. : D311173-A02, D311173-A12

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
Acute toxicity (inhalation) : Category 3

Skin corrosion/irritation : Category 2

Serious eye damage/eye irritation : Category 1

Skin sensitization : Category 1

Carcinogenicity : Category 2

Reproductive toxicity : Category 1B

Specific target organ toxicity (single exposure) : Category 1, Category 2, Category 3 (anesthetic action)

Specific target organ toxicity (repeated exposure)
: Category 1, Category 2

Environmental hazard

Aquatic acute : Category 2
Aquatic chronic : Category 2

Pictograms or symbols



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor
Harmful if swallowed
Toxic if inhaled
Causes skin irritation
Causes serious eye damage
May cause an allergic skin reaction
Suspected of causing cancer
May damage fertility or the unborn child
Causes damage to organs (central nervous system, visual organs, systemic toxicity, liver)
May cause damage to organs (kidney, respiratory organs)
May cause drowsiness and dizziness
Causes damage to organs (central nervous system, visual organs, respiratory organs) through prolonged or repeated exposure
May cause damage to organs (blood, kidney, liver, 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.
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.

	<p>Use explosion-proof apparatus.</p> <p>Use only non-sparking tools.</p> <p>Do not breathe dust, mist, and vapor.</p> <p>Use only in a well-ventilated area.</p> <p>Avoid release to the environment.</p> <p>Do not eat, drink or smoke when using this product.</p> <p>Contaminated work clothing should not be allowed out of the workplace.</p> <p>Wear appropriate protective gloves, glasses, clothing, face shield, or mask.</p> <p>Wash protective equipment thoroughly after use.</p> <p>Wash hands thoroughly after handling.</p>
Response	<p>: If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical treatment.</p> <p>If swallowed: Rinse mouth. Get medical treatment if you feel unwell.</p> <p>If in eyes : Rinse continuously with water for several minutes. Get medical treatment.</p> <p>If on skin : Remove contaminated clothing and the substance. Immediately get medical treatment.</p> <p>If exposed, get medical treatment.</p> <p>Get medical treatment, if you feel unwell.</p> <p>Collect leakage</p>
Storage	<p>: Tightly container closed and store in a well-ventilated area.</p> <p>Store locked up.</p>
Disposal	<p>: Dispose of contents and containers appropriately in accordance with related regulations.</p>

3. Composition/Information on ingredients

Substance/Mixture : Mixture

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Methanol	51	CH ₃ OH	Listed	200-659-6	67-56-1
Hexyl alcohol	22	CH ₃ (CH ₂) ₅ OH	Listed	203-852-3	111-27-3
Imidazole	1-5	C ₃ H ₄ N ₂	Listed	206-019-2	288-32-4
2,2'-Iminodiethanol	8-15	(HOCH ₂ CH ₂) ₂ NH	Listed	203-868-0	111-42-2
Sulfur dioxide	4-8	SO ₂	Listed	231-195-2	7446-09-5
Iodine	1-5	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. 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.

Anticipated acute and delayed symptoms

: When the steam of the methanol is inhaled, the cough, headache, dizziness, losing breath, and the evil intention, etc. might be caused. The symptom might appear delaying.

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, 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 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 protective 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 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 control/Personal protection

Methanol	ACGIH TWA : 200ppm ACGIH STEL : 250ppm
Hexyl alcohol	Not established
Imidazole	Not established
2,2'-Iminodiethanol	ACGIH TWA : 1mg/m ³
Sulfur dioxide	ACGIH STEL : 0.25ppm
Iodine	ACGIH TWA : 0.01ppm ACGIH STEL : 0.1ppm

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

Physical state : Liquid
Color : Yellow
Odor : Aromatic odor
pH ; No data available
Melting point ; No data available
Freezing point ; No data available
Boiling point : No data available
Flash point : 12°C(as methanol)
Auto ignition temperature

: 470°C(as methanol)

Decomposition temperature

: No data available

Flammability

: Flammable

Vapor pressure

: No data available

Density

: No data available

Relative gas density

: No data available

Solubility

:

Partition coefficient n-octanol/water (log Pow)

: No data available

Explosive limits (vol %)

: No data available

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, nitrogen oxides, sulfur oxides, iodine,
hydrogen iodide

11. Toxicological information

Acute toxicity (oral) : Harmful if swallowed

(as methanol)

rat LD50=6200mg/kg

As far as animal studies are concerned, methanol is considered to be out of category in acute toxicity (oral). However, as methanol shows strong toxicity in primates, the product was classified into category 4.

(as imidazole)

rat LD50=960-970mg/kg

(as iodine)

rat LD50=315mg/kg

Acute toxicity (dermal)

: No classification

Acute toxicity (inhalation)

: Toxic if inhaled(vapor)

(as iodine)

rat LC50=35ppm/4H

No classification (dust, mist)

Skin corrosion/irritation

: Causes skin irritation

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.

The product was classified into category 2 based on its content.

Serious eye damage/eye irritation

: Causes serious eye damage

In the test which is applied 0.1g of undiluted 2,2'-iminodiethanol to the eyes of rabbits, severe irritation was observed in the cornea, iris and conjunctiva. Eye irritation index (maximum value is 110, corresponding to AOI) is 50–56, until 24 to 72 hours, in addition, there is 41–45, until 96 to 168 hours. It is considered that pH of this substance is 11 at 0.1N aqueous solution, the product was classified into category 1..

Respiratory sensitization

: Classification not possible

Skin sensitization

: May cause an allergic skin reaction

Iodine is listed in the 2nd skin group of the sensitization substance of Recommendation of Acceptable Concentration of Japanese Society for Occupational Health. Thus, this product was classified into category 1.

Germ cell mutagenicity

: Classification not possible

Carcinogenicity

: Suspected of causing cancer

IARC classifies 2,2'-iminodiethanol as group 2B (possibly

carcinogenic to humans). Thus, the product was classified into category 2.

Reproductive toxicity

: May damage fertility or the unborn child
In inhalation exposure tests of methanol in pregnant mice during organogenetic period, fetal resorption, exencephaly etc. were observed. In another inhalation or oral exposure test, similar results including cleft palate were observed. Based on evidence from animal studies, it is considered that methanol may cause adverse effects on human reproduction if the exposure amount is sufficient. Thus, the product was classified into category 1B.

Specific target organ toxicity (single exposure)

: Cause damage to organs (central nervous system, visual organ, systematic toxicity, liver)

May cause damage to organs (kidney, respiratory organs)

May cause drowsiness and dizziness

Methanol : 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 (anesthetic action).

2,2'-Iminodiethanol : By oral administration to rats, appeared minor failure in liver parenchymal cells at 200–1600mg/kg, large fat droplets and localized cytoplasmic degeneration in liver

cells at 1600 mg/kg, the tubules cell necrosis of kidney at 400mg/kg or more, increase of urea in serum, SGOT, and LDH were observed. From above information, effects at dosage of guidance value of category 1 for the liver, and guidance value of category 2 for kidneys were reported, it was classified into category 1 (liver), category 2 (kidney). In addition, in the case of deaths, by the inhalation exposure 1476 ppm (6.35mg/L) (4 hours converted value: 2.778mg/L) for 105 minutes, lethargy, incoordination, characterized by gasps and rale, slow breathing as a characteristic findings were appeared to rats. As a characteristic findings, an increase in the lowering of the heart rate, significant respiratory distress, systolic blood pressure increase were observed. Since there is the description that the main histopathological findings was a pulmonary edema, exposure concentration was corresponds to the guidance value category 2, it was classified into category 2 (respiratory organs).

The product was classified into category 1 (central nervous system, visual organs, systemic toxicity, liver), category 2 (kidney, respirator organs), and category 3 (anesthetic action) based on each content.

Specific target organ toxicity (repeated exposure)

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

May cause damage to organs (blood, kidneys, liver, thyroid gland) through prolonged or repeated exposure

2,2'-Iminodiethanol : In a study for 3 months inhalation exposure(mist) to rats, the larynx of squamous metaplasia were observed at dosage of 0.015 mg/L/6h or more, severe inflammation was observed in pharynx and airway at dosage of 0.15 mg/L/6h or more. Since dosage is within guidance value of category 1, it was classified into category 1(respiratory organs). In addition, in 49- days drinking water administration test of 42-550 mg/kg/day to rats, normocytic anemia, destruction of renal tubular epithelial cells, extensions and various early necrotic changes in the distal tubule, which was accompanied by a glass cylinder, and various early necrotic

changes, degenerative changes of the early characterized by loss of cloudy swelling and basic of liver cells were observed at dosage of 155 mg/kg/day (90 days corresponding value: 84.3 mg/kg/day) or more. In three months drinking water administered test the 25–436 mg/kg/day in rats, based on the report that dose-dependent generation of microcytic anemia, kidney disease, renal tubular necrosis, and incidence or degree of enhancement of mineralized were observed, since effect dosage was corresponding to the guidance value of category 2, it was classified into category 2(blood, kidney, liver).

Methanol : 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).

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 (central nervous system, visual organs, respiratory organs), and category 2 (blood, kidney, liver, thyroid gland) based on each content.

Aspiration hazard : Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	: Toxic to aquatic life (as iodine)
	Daphnia magna LC50=0.16mg/L/48H (as 2,2'-iminodiethanol)
	Daphnia pulex LC50=2.15mg/L/48H

Aquatic chronic : Toxic to aquatic life with long lasting effects

Persistence and degradability

: (as methanol) Readily biodegradable BOD : 92%

Bioaccumulative potential

: (as methanol) Low bioconcentration log Pow : -0.82

Mobility in soil : (as methanol) 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) : 1992

Proper Shipping Name (IMDG)

: FLAMMABLE LIQUID, TOXIC, N.O.S.(Methanol, Hexyl alcohol, Solution)

Packing group (IMDG)

: II

Transport hazard class(es) (IMDG)

: 3 (6.1)

Air transport(IATA)

UN-No. (IATA) : 1992

Proper Shipping Name (IATA)

: Flammable liquid,toxic, n.o.s.(Methanol, Hexyl alcohol, Solution)

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-CH RIP), 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.