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Safety Data Sheet

1. Product and company identification

Product name : AQUALYTE RS-A
Part No. : D327660-A02, D327660-A12
Name of manufacturer : HIRANUMA Co., Ltd.
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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 : vapors)
: Category 3

Skin corrosion/irritation
: Category 1B

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 severe skin burns and eye damage
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 tract) 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.
Use explosion-proof apparatus.
Use only non-sparking tools.
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.
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

Distinction of substance or mixture : Mixture

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Methanol	75	CH_3OH	Listed	200-659-6	67-56-1
Imidazole	1-5	$C_3H_4N_2$	Listed	206-019-2	288-32-4
2,2'-Iminodiethanol	8-15	$(HOCH_2CH_2)_2NH$	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

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 immediately and induce vomiting. Get medical treatment.

Anticipated acute and delayed symptoms

: Inhalation of methanol vapor may cause cough, headache, dizziness, breathlessness, and nausea. Symptoms may be delayed.

Protection for first aid person

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

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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.

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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. 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 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 equipment not to contact with skin or inhale the 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.

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 control/Personal protection

Methanol	ACGIH TWA : 200ppm ACGIH STEL : 250ppm
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 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

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9. Physical and chemical properties

Appearance	: Liquid
Color	: Yellow
Odor	: Aromatic odor
pH	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 60 °C
Flash point	: 18 °C
Auto-ignition temperature	: 470 °C (as methanol)
Decomposition temperature	: No data available
Flammability	: Flammable
Vapor pressure	: 128hPa (20 °C) (as methanol)
Relative density	: No data available
Density	: 0.93g/cm^3 (20 °C)
Relative gas density	: No data available
Solubility	: Water : Soluble Organic solvents : Miscible with many kinds of organic solvents like ethanol, diethyl ether.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Explosive limits (vol %)	: 5.5 - 26.5 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 usage.

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, hydrogen iodide

11. Toxicological information

Acute toxicity (oral) : Harmful if swallowed

Based on animal studies, 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 methanol)

rat oral LD50=6200mg/kg

Acute toxicity (dermal)

: No classification

(as methanol)

rabbit skin LD50=15800mg/kg

Acute toxicity (inhalation)

: Toxic if inhaled (vapor)

(as iodine)

rat inhalation LC50=35ppm/4H

Classification not possible (dust, mist)

Skin corrosion/irritation

: Causes severe skin burns and eye damage

Imidazole : In a test in which 0.5mL of paste containing 80% Imidazole with water was applied to rabbit skin for 4 hours, 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. As a result, imidazole was judged to be corrosive and was classified into category 1B. The product was also classified into category

1B.

Serious eye damage/eye irritation

: Causes serious eye damage (category 1)
Studies with 2,2'-iminodiethanol indicate severe irritation in rabbits, and redness, a pain, severe burns and caustics in humans. Thus, 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 (substances which probably induce allergic reactions in humans) of Japan Society for Occupational Health's recommendation of occupational exposure limits. Thus, the product was classified into category 1.

Germ cell mutagenicity

: Classification not possible
Methanol gave negative results in micronucleus examinations in mouse erythrocytes. However, the classification is not possible because there is no data for other ingredients.

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
Methanol : 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, liver)
May cause damage to organs (kidney, respiratory organs)
May cause drowsiness and dizziness
Methanol : Central nervous system depression and visual organ disorder were observed by acute oral or inhalation exposure of methanol by humans. Metabolic acidosis was observed in human evidence of exposure. Anesthetic actions were identified by the rat, mouse, and Macaca mulatta. Thus, the product was classified into category 1 (central nervous system, visual organs, systemic toxicity) and category 3 (narcotic effects).
2,2'- Iminodiethanol: In orally administered rats, slight damage in hepatic parenchyma cells at 200-1600 mg/kg, large fat droplets and focal cytoplasmic degradation in hepatic cells at 1600 mg/kg, tubular cell necrosis in kidney at 400 mg/kg and above, and increases in serum urea, SGOT, and LDH levels at 800 mg/kg were observed. Effects on liver were observed within the guidance value range of category 1, and effects on kidney were observed within the guidance value range of category 2. Thus, the product was classified into category 1 (liver) and category 2 (kidney).
Moreover, inhalation exposure of rats to 1476 ppm (6.35 mg/L) for 105 minutes (4-hour equivalent: 2.778 mg/L) caused lethargy, incoordination, and irregular bradypnea characterized by rales and panting in fatal cases. As characteristic findings, an increase followed by a decrease in heart rate, severe respiratory distress and an increase in systolic blood pressure were noted. Predominant histopathological findings was pulmonary edema. Exposure concentrations fall under category 2 guidance values. Thus, the product was classified into category 2 (respiratory organs).
Sulfur dioxide: Airway mucosa irritation, increased airway resistances and respiratory ciliary loss were observed in the inhalation exposure test in guinea pigs, dogs, rabbits, and rats at the concentration of the guidance value range of category 1. Because of the sulfur dioxide concentration, the product was classified into category 2 (respiratory organs).

Specific target organ toxicity (repeated exposure)
: Cause damage to organs (central nervous system, visual organs, respiratory tract) through prolonged or repeated

exposure
May cause damage to organs (blood, kidney, liver, thyroid gland) through prolonged or repeated exposure
Methanol: Long-term exposure to humans caused central nervous system depression and visual organ disorder. Thus, the product was classified into category 1 (central nervous system, visual organs).
2,2'- Iminodiethanol: In a 3-month inhalation exposure (mist) test in rats, squamous metaplasia in the larynx at 0.015 mg/L/6h and above, severe inflammation in the pharynx and respiratory tract at 0.15 mg/L/6h and above were observed, within the guidance value range of category 1. Thus, the product was classified into category 1 (respiratory tract).
Moreover, in the test of drinking water administration to the rat for 49 days at 42-550 mg/kg/day, normocytic anemia, destruction of tubular epithelium cells, dilatation and early necrotic changes of the distal tubule with hyaline casts, hepatocellular cloudy swelling and early degenerative changes characterized by basophilic loss were seen at 155 mg/kg/day (90-day equivalent: 84.3 mg/kg/day) and above, within the guidance value range of category 2. Thus, the product was classified into category 2 (blood, kidney, liver).
Iodine: Oral ingestion in humans caused thyroid desease (hypothyroidism, hyperfunction, or thyroiditis). Thus, the product was classified into category 2 (thyroid gland).

Aspiration hazard : Classification not possible

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12. Ecological information

Ecotoxicity

Aquatic acute : Toxic to aquatic life
(as 2,2'-iminodiethanol)
Daphnia pulex LC50=2150μg/L/48H

Aquatic chronic : Harmful 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

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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.

Contaminated container and packaging

: In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

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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 : Applicable

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

Pollutant category : Y

MFAG-No : 131

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15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

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16. Other information

References

1) Company data on file.
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 Safety Data Sheet(SDS) is prepared based on JIS Z7253.