SAFETY DATA SHEET

PRODUCT NAME **KEM AQUA Anolyte AKE**

Data of issue 6/11/2018

Date of revision/ Last confirmation 3/4/2025

1. Identification of the substance or mixture and the supplier

Product name	KEM AQUA Anolyte AKE
SDS No.	GHS-0072E
Name of supplier	Kyoto Electronics Manufacturing Co., Ltd.
Address	68 Ninodan-cho, Shinden, Kisshoin, Minami-ku, Kyoto, Japan
Division	Quality Assurance Department
Phone	+81-75-691-4121
Fax	+81-75-691-4127
Emergency phone	+81-75-691-4125

Recommended uses and restrictions on use

Recommended use	For analysis
Restrictions on use	When using for purposes other than those recommended, consult a specialist.

2. Hazard identification

GHS classification

Health hazards

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)
	Category 3(Narcotic effects)
Specific target organ toxicity (repeated exposure	Category 2(Thyroid gland, respiratory tract system)

Environmental hazards

Short-term (acute) aquatic hazard	Category 2

GHS label elements

Hazard pictograms

Signal words Warning

Hazard statements	H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H336 May cause drowsiness or dizziness. H361 Suspected of damaging fertility or the unborn child. H371 May cause damage to organs (Respiratory organs). H373 May cause damage to organs (Thyroid gland, respiratory tract system) through prolonged or repeated exposure. H401 Toxic to aquatic life.
Precautionary statement	
Prevention	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe mist or vapors. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothing should not be allowed out of the workplace. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response	P302 + P352 IF ON SKIN: Wash with plenty of water. P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor. P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention. P337 + P313 If eye irritation persists: Get medical advice/ attention. P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage	P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
Disposal	P501 Dispose of contents/ container to an approved waste disposal plant.
Other hazards which do not result in classification	None known.

3. Composition/Information on ingredients

substance / mixture mixture

Components

No.	Chemical name	CAS No.	Concentration (% w/w)	ENCS / ISHL number
1	Propylene carbonate	108-32-7	40-50	5-524
2	2-(2-ethoxyethoxy)ethanol	111-90-0	30-40	2-422, 7-97
3	4,4'-(propane-1,3-diyl)dipyridine	17252-51-6	5-10	– 8-(1)-1741
4	N,N-dimethylpyridin-4-amine	1122-58-3	5-10	5-5479 8-(1)-586
5	Iodine	7553-56-2	1-5	–
6	Sulfur Dioxide	7446-09-5	1-5	1-536

4. First-aid measures

General advice	Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Do not leave the victim unattended.
If inhaled	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
In case of skin contact	If skin irritation or rash occurs: Get medical advice/ attention. Wash off with soap and plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse.
In case of eye contact	If eye irritation persists: Get medical advice/ attention. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for several minutes.
If swallowed	Rinse mouth. Take victim immediately to hospital.

	If swallowed, DO NOT induce vomiting.
Most important symptoms and effects, both acute and delayed	None known.
Notes to physician	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	Carbon dioxide (CO_2) Dry sand Regular foam Vermiculite
Unsuitable extinguishing media	High volume water jet
Specific hazards during fire fighting	Do not allow run-off from fire fighting to enter drains or water courses.
Specific extinguishing methods	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	Use personal protective equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Use personal protective equipment. Remove all sources of ignition.
Environmental precautions	Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling

Advice on protection against fire and explosion	Normal measures for preventive fire protection.
Advice on safe handling	Keep away from fire, sparks and heated surfaces. Take precautionary measures against static discharges. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product.
Avoidance of contact	No data available
Hygiene measures	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

Storage

Conditions for safe storage	Keep container tightly closed. Keep in a well-ventilated place. Store at room temperature. To maintain product quality, do not store in heat or direct sunlight.
Further information on storage stability	No decomposition if stored and applied as directed.

8. Exposure controls/Personal protection

Threshold limit value and permissible exposure limits for each component in the work environment

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Reference concentration / Permissible concentration	Basis
sulphur dioxide	7446-09-5	STEL	0.25 ppm	ACGIH
iodine	7553-56-2	OEL-M	0.1 ppm 1 mg/m^3	JP OEL JSOH
	Further information: Skin sensitizing agent; Group 2 substances which probably induce allergic reactions in humans.			
		OEL-M	1 ppm 1 mg/m^3	JP OEL JSOH
	Further information: Skin sensitizing agent; Group 2 substances which probably induce allergic reactions in humans.			
		TWA(Inhalable fraction and vapor)	0.01 ppm	ACGIH
		STEL(Vapor)	0.1 ppm	ACGIH
		TWA(Inhalable	1 ppm	ACGIH

		fraction and vapor)		
		STEL(Vapor)	1 ppm	ACGIH

Personal protective equipment

Respiratory protection	Suitable respiratory equipment
Hand protection material	Protective gloves
Eye protection	Safety glasses
Skin and body protection	Protective suit

9. Physical and chemical properties

Physical state	Liquid.
Color	yellow, red brown, transparent
Odor	Pungent
Melting point / Freezing point	No data available
Initial boiling point and boiling range	No data available
Flammability (liquids)	No data available
Lower explosion limit and upper explosion limit / flammability limit	
Upper explosion limit / Upper flammability limit	No data available
Lower explosion limit / Lower flammability limit	No data available
Flash point	105.0 ℃
Decomposition temperature	No data available
pH	No data available
Autoignition temperature	No data available
Self-Accelerating decomposition temperature (SADT)	No data available
Viscosity	
Viscosity, kinematic	5.316 mm^2/s
Solubility(ies)	
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Vapor pressure	No data available
Density and / or relative density Relative density	1.141 (20 ℃)
Density	No data available
Relative vapor density	No data available
Particle characteristics Particle size	No data available

10. Stability and reactivity

Reactivity	No decomposition if stored and applied as directed.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	No decomposition if stored and applied as directed.
Conditions to avoid	No data available
Incompatible materials	No data available
Hazardous decomposition products	No data available

11. Toxicological information

Acute toxicity	Not classified based on available information.
Product	
Acute oral toxicity	Acute toxicity estimate >2,000 mg/kg (Calculation method)
Acute inhalation toxicity	Acute toxicity estimate 20,000 ppm (Calculation method), Exposure time 4 h, Test atmosphere gas
Acute dermal toxicity	Acute toxicity estimate >2,000 mg/kg (Calculation method)
propylene carbonate	
Acute oral toxicity	LD50 (Rat) >5,000mg/kg
Acute inhalation toxicity	LC0 (Rat) 0.041mg/L，Exposure time 8 h, Test atmosphere vapor
Acute dermal toxicity	LD50 (Rabbit) >20,000mg/kg
	LD50 (Rabbit) >3,000mg/kg
2-(2-ethoxyethoxy)ethanol	
Acute oral toxicity	LD50 (Rat) 5,540mg/kg
Acute inhalation toxicity	LC50 (Rat) >1.39mg/L，Exposure time 4 h, Test atmosphere dust / mist
Acute dermal toxicity	LD50 (Rabbit) 8,500 mg/kg
N,N-dimethylpyridin-4-amine	
Acute oral toxicity	LD50 (Rat) 250mg/kg
	The component/mixture is toxic after single ingestion.
iodine	
Acute oral toxicity	LD50 (Rat) 14,000mg/kg
Acute inhalation toxicity	LC50 (Rat) >4.588mg/L，Exposure time 4 h, Test atmosphere dust / mist
	LCLo (Rat) 800mg/m^3, Exposure time 1h, Test atmosphere vapor
Acute dermal toxicity	LD50 (Rabbit) 1,450 mg/kg
sulphur dioxide	
Acute inhalation toxicity	LC50 (Rat) 593 - 1319ppm，Exposure time 4 h, Test atmosphere gas
Skin corrosion/irritation	Not classified based on available information.
Product	May cause skin irritation and/or dermatitis.

iodine	Skin irritation
Serious eye damage/eye irritation	Causes serious eye irritation.
Product	Causes serious eye irritation.
propylene carbonate	Causes serious eye irritation.
2-(2-ethoxyethoxy)ethanol	Causes eye irritation.
iodine	Causes serious eye irritation.
sulphur dioxide	Causes serious eye irritation.
Respiratory or skin sensitization	
Skin sensitization	May cause an allergic skin reaction.
Respiratory sensitization	Not classified based on available information.
Product	Causes sensitization.
iodine	Probability or evidence of skin sensitization in humans
Germ cell mutagenicity	Not classified based on available information.
Carcinogenicity	Not classified based on available information.
Reproductive toxicity	Suspected of damaging fertility or the unborn child.
iodine	Suspected human reproductive toxicant
STOT-single exposure	May cause drowsiness or dizziness. May cause damage to organs (Respiratory organs).
2-(2-ethoxyethoxy)ethanol	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.
iodine	Target Organs Respiratory organs The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.
sulphur dioxide	Target Organs Respiratory organs The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.
STOT-repeated exposure	May cause damage to organs (Thyroid gland, respiratory tract system) through prolonged or repeated exposure.
iodine	Target Organs Thyroid The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.
sulphur dioxide	Target Organs Respiratory organs The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.
Aspiration toxicity	Not classified based on available information.
Remarks	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic

effects.

Solvents may degrease the skin.

12. Ecological information

Ecotoxicity	
propylene carbonate	
Toxicity to fish	LC50 (Cyprinus carpio (Carp)) >1,000 mg/L, Exposure time 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)) >1,000 mg/L, Exposure time 48 h Tested according to Directive 92/69/EEC.
Toxicity to algae/aquatic plants	EC50 (Desmodesmus subspicatus (green algae)) >900 mg/L, Exposure time 72 h
2-(2-ethoxyethoxy)ethanol	
Toxicity to fish	LC50 (Pimephales promelas (fathead minnow)) 9,650 mg/L, Exposure time 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 3,340 mg/L, Exposure time 48 h
iodine	
Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) 0.53 mg/L, Exposure time 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 0.16 mg/L, Exposure time 48 h
M-Factor (Acute aquatic toxicity)	1
Persistence and degradability	
propylene carbonate	rapidly biodegradable, Biodegradation 92 %, Exposure time 28 d (OECD Test Guideline 301C), GLP yes
2-(2-ethoxyethoxy)ethanol	rapidly biodegradable
Bioaccumulative potential	
propylene carbonate	Partition coefficient: n-octanol/water log Pow = - 0.41
2-(2-ethoxyethoxy)ethanol	Partition coefficient: n-octanol/water log Pow = - 0.54
N,N-dimethylpyridin-4-amine	Partition coefficient: n-octanol/water log Pow = 1.34
iodine	Partition coefficient: n-octanol/water log Pow = - 2.49
Mobility in soil	No data available
Hazardous to the ozone layer	Not applicable
Other adverse effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

13. Disposal considerations

Waste from residues	Can be incinerated, when in compliance with local regulations. Send to a licensed waste management company.
Contaminated packaging	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

14. Transport information

International Regulations

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

Not applicable for product as supplied.

Domestic regulation	Please refer to the law and local regulations, etc. in each country
Special precautions for user	Not applicable

15. Regulatory information

16. Other information

Citations/References

NITE-Gmiccs (National Institute of Technology and Evaluation)

NITE-CHRIP (National Institute of Technology and Evaluation)

Workplace Safety Site (Ministry of Health, Labor and Welfare)

SDS from various upstream manufacturers

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