

SAFETY DATA SHEET

PRODUCT NAME KEM AQUA Anolyte AGE	Data of issue 6/11/2018 Date of revision 2/4/2024 (Confirmation)
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1. Identification of the substance or mixture and the supplier

Product name	KEM AQUA Anolyte AGE
SDS No.	GHS-0071E
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
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

Physical hazards

Flammable liquids	Category 2
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Health hazards

Acute toxicity / Oral	Category 4
Acute toxicity / Inhalation	Category 4
Serious eye damage / Eye irritation	Category 2A
Skin sensitization	Category 1
Carcinogenicity	Category 2
Reproductive toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 1(Systemic toxicity, Central nervous system, Visual organs) Category 2(Liver, Respiratory organs) Category 3(Narcotic system)
Specific target organ toxicity (repeated exposure)	Category 1(Central nervous system, Visual organs) Category 2(Thyroid gland, Respiratory tract system)

Environmental hazards

Short-term (acute) aquatic hazard	Category 3
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GHS label elements

Hazard pictograms



Signal words

Danger

Hazard statements

- H225 Highly flammable liquid and vapor.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H302 + H332 Harmful if swallowed or if inhaled.
- H336 May cause drowsiness or dizziness.
- H351 Suspected of causing cancer.
- H360 May damage fertility or the unborn child.
- H370 Causes damage to organs (Central nervous system, Visual organs, Systemic toxicity).
- H371 May cause damage to organs (Liver, Respiratory organs).
- H372 Causes damage to organs (Central nervous system, Visual organs) through prolonged or repeated exposure.
- H373 May cause damage to organs (Thyroid gland, respiratory tract system) through prolonged or repeated exposure.
- H402 Harmful 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.
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 Keep container tightly closed.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
- P242 Use non-sparking tools.
- P243 Take action to prevent static discharges.

	<p>P260 Do not breathe mist or vapors.</p> <p>P264 Wash skin thoroughly after handling.</p> <p>P270 Do not eat, drink or smoke when using this product.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P272 Contaminated work clothing should not be allowed out of the workplace.</p> <p>P273 Avoid release to the environment.</p> <p>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.</p>
Response	<p>P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.</p> <p>P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.</p> <p>P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.</p> <p>P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.</p> <p>P337 + P313 If eye irritation persists: Get medical advice/ attention.</p> <p>P362 + P364 Take off contaminated clothing and wash it before reuse.</p> <p>P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.</p>
Storage	<p>P403 + P233 Store in a well-ventilated place. Keep container tightly closed.</p> <p>P403 + P235 Store in a well-ventilated place. Keep cool.</p> <p>P405 Store locked up.</p>
Disposal	<p>P501 Dispose of contents/ container to an approved waste disposal plant.</p>
Other hazards which do not result in classification	<p>None known.</p>

3. Composition/Information on ingredients

substance / mixture

mixture

Components

No.	Chemical name	CAS No.	Concentration (% w/w)	ENCS / ISHL number
1	Methanol	67-56-1	50-60	2-201
2	Propylene carbonate	108-32-7	10-20	5-524
3	2,2'-iminodiethanol	111-42-2	5-15	2-302, 2-354
4	1,3-dimethylimidazolidin-2-one	80-73-9	5-15	5-5427 8-(2)-422
5	4,4'-(propane-1,3-diyl)dipyridine	17252-51-6	5-15	– 8-(1)-1741
6	Sulfur Dioxide	7446-09-5	3-8	1-536
7	Iodine	7553-56-2	1-2	–

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

Wash off with soap and plenty of water.

If skin irritation or rash occurs: Get medical advice/ attention.

Remove contaminated clothing and shoes.

Wash contaminated clothing before reuse.

In case of eye contact

Remove contact lenses, if present and easy to do. Continue rinsing.

Rinse cautiously with water for several minutes.

If eye irritation persists: Get medical advice/ attention.

If swallowed

Take victim immediately to hospital.

Rinse mouth.

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) Regular foam Vermiculite Dry sand
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. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
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. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not allow uncontrolled discharge of product into the environment. Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. Handling and storage

Handling

Advice on protection against fire and explosion	<p>Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).</p> <p>Keep away from open flames, hot surfaces and sources of ignition.</p>
Advice on safe handling	<p>Take precautionary measures against static discharges.</p> <p>Keep away from fire, sparks and heated surfaces.</p> <p>Wash skin thoroughly after handling.</p> <p>Do not eat, drink or smoke when using this product.</p> <p>Use only in area provided with appropriate exhaust ventilation.</p>
Avoidance of contact	No data available
Hygiene measures	<p>When using do not eat or drink.</p> <p>When using do not smoke.</p> <p>Wash hands before breaks and at the end of workday.</p>
Storage	
Conditions for safe storage	<p>Keep container tightly closed.</p> <p>Keep in a well-ventilated place.</p> <p>Store at room temperature.</p> <p>To maintain product quality, do not store in heat or direct sunlight.</p>
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
methanol	67-56-1	ACL	200ppm	JP OEL ISHL
		OEL-M	200ppm	JP OEL JSOH
			260mg/m ³	
	Further information: Group 2: Substances presumed to cause reproductive toxicity in humans, Skin absorption			
		TWA	200ppm	ACGIH
		STEL	250ppm	ACGIH
2,2'-iminodiethanol	111-42-2	TWA(Inhalable fraction and vapor)	1mg/m ³	ACGIH
sulphur dioxide	7446-09-5	STEL	0.25pm	ACGIH
iodine	7553-56-2	OEL-M	0.1ppm	JP OEL

		1mg/m ³	JSOH
Further information: Skin sensitizing agent; Group 2 substances which probably induce allergic reactions in humans.			
	OEL-M	1ppm 1mg/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)	0.01ppm	ACGIH
	STEL(Vapor)	0.1ppm	ACGIH
	TWA(Inhalable fraction and vapor)	1ppm	ACGIH
	STEL(Vapor)	1ppm	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	light 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	13.5°C
Decomposition temperature	No data available
pH	No data available
Autoignition temperature	No data available
Viscosity	
Viscosity, kinematic	2.26mm ² /s (14°C)

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 0.97 (20°C)
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

11. Toxicological information

Acute toxicity	Harmful if inhaled.
Product	
Acute oral toxicity	Acute toxicity estimate >2,000 mg/kg (Calculation method)
Acute inhalation toxicity	Acute toxicity estimate 10,560 ppm (Calculation method), Exposure time 4 h, Test atmosphere gas
Acute dermal toxicity	Acute toxicity estimate >2,000 mg/kg (Calculation method)
methanol	
Acute oral toxicity	LD50 1,400mg/kg
Acute inhalation toxicity	LC50 (Rat) 64,000ppm, Exposure time 4 h, Test atmosphere vapor LC50 (Rat) 145,000ppm, Exposure time 1 h, Test atmosphere dust / mist
Acute dermal toxicity	LDLo 393mg/kg
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'-iminodiethanol	
Acute oral toxicity	LD50 (Rat) 1,600mg/kg
Acute inhalation toxicity	LC50 (Rat) <1,476ppm, Exposure time 1.75 h, Test atmosphere dust/mist

Acute dermal toxicity	LD50 (Rabbit) 13,000mg/kg
sulphur dioxide	
Acute inhalation toxicity	LC50 (Rat) 593 - 1319ppm, Exposure time 4 h, Test atmosphere gas
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
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.
methanol	Causes eye irritation.
propylene carbonate	Causes serious eye irritation.
2,2'-iminodiethanol	Causes serious eye irritation.
sulphur dioxide	Causes serious eye irritation.
iodine	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	Suspected of causing cancer.
2,2'-iminodiethanol	Suspected human carcinogens
Reproductive toxicity	May damage fertility or the unborn child.
methanol	Presumed human reproductive toxicant
2,2'-iminodiethanol	Suspected human reproductive toxicant
iodine	Suspected human reproductive toxicant
STOT-single exposure	May cause drowsiness or dizziness.
	Causes damage to organs (Central nervous system, Visual organs, Systemic toxicity).
	May cause damage to organs (Liver, Respiratory organs, respiratory system).
methanol	Target Organs Systemic toxicity, Central nervous system, Visual organs
	The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.
	The substance or mixture is classified as specific target organ toxicant, single

	exposure, category 3 with narcotic effects.
sulphur dioxide	Target Organs Respiratory organs The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.
iodine	Target Organs Respiratory organs The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.
STOT-repeated exposure	Causes damage to organs (Central nervous system, Visual organs) through prolonged or repeated exposure. May cause damage to organs (Thyroid gland, respiratory tract system) through prolonged or repeated exposure.
methanol	Target Organs Central nervous system, Visual organs The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.
2,2'-iminodiethanol	Target Organs Liver, Blood, Kidney The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.
sulphur dioxide	Target Organs Respiratory organs The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.
iodine	Target Organs Thyroid 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

methanol

Toxicity to fish	LC50 (Lepomis macrochirus (Bluegill sunfish)) 15,400 mg/L, Exposure time 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)) > 10,000 mg/L, Exposure time 48 h
Toxicity to algae/aquatic	EC50 (Chaetoceros calcitrans) > 10,000 - < 20,000 mg/L, Exposure time 96 h

plants	NOEC (Skeletonema costatum (marine diatom)) 1,400mg/L, End point Growth inhibition, Exposure time 96 h
Toxicity to fish (Chronic toxicity)	NOEC (Oreochromis mossambicus) 23.75 mg/L, End point Growth inhibition Exposure time 90 Days
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'-iminodiethanol	
Toxicity to fish	LC50 1,370 mg/L, Exposure time 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Ceriodaphnia dubia (Water flea)) 30 mg/L, Exposure time 48 h
Toxicity to algae/aquatic plants	EC50 (Pseudokirchneriella subcapitata (green algae)) 2.2mg/L, Exposure time 96 h NOEC (Pseudokirchneriella subcapitata (green algae)) 0.6mg/L, End point Growth inhibition, Exposure time 72 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)) 0.78mg/L, End point Reproductive inhibition, Exposure time 21Days
1,3-dimethylimidazolidin-2-one	
Toxicity to fish	LC50 100 mg/L, Exposure time 96 h
Ecotoxicology Assessment	
Acute aquatic toxicity	Harmful to aquatic life.
Chronic aquatic toxicity	Harmful to aquatic life with long lasting effects.
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	
methanol	Biochemical oxygen demand rapidly biodegradable, Biodegradation 92 %, Exposure time 14 d
propylene carbonate	rapidly biodegradable, Biodegradation 92 %, Exposure time 28 d (OECD Test Guideline 301C), GLP yes
2,2'-iminodiethanol	rapidly biodegradable

Bioaccumulative potential

methanol	Species Cyprinus carpio (Carp), Bioconcentration factor (BCF) < 10, Exposure time: 72 h
	Partition coefficient: n-octanol/water log Pow = - 0.77
propylene carbonate	Partition coefficient: n-octanol/water log Pow = - 0.41
2,2'-iminodiethanol	Partition coefficient: n-octanol/water log Pow = - 2.18 (25.0°C)
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

IATA-DGR

UN / ID No.	UN2924
Proper shipping name	Flammable liquid, corrosive, n.o.s. (Methanol, Sulphur dioxide, mixture)
Class	3
Subsidiary risk	8
Packing group	II
Labels	Flammable Liquids, Corrosive
Packing instruction (cargo aircraft)	363
Packing instruction (passenger aircraft)	352

IMDG-Code

UN No.	UN2924
Proper shipping name	FLAMMABLE LIQUID, CORROSIVE, N.O.S.

	(Methanol, Sulphur dioxide, mixture)
Class	3
Subsidiary risk	8
Packing group	II
Labels	3 (8)
EmS Code	F-E, S-C
Marine pollutant	no

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

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. Regulatory information

16. Other information

Full text of other abbreviations

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
JP OEL ISHL	Japan. Administrative Control Levels
JP OEL JSOH	Japan. The Japan Society for Occupational Health. Recommendation of Occupational Exposure Limits
ACGIH/TWA	8-hour, time-weighted average
ACGIH/STEL	Short-term exposure limit
JP OEL ISHL / ACL	Administrative Control level
JP OEL JSOH / OEL-M	Occupational Exposure Limit-Mean

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC -

International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.