SAFETY DATA SHEET

PRODUCT NAME **KEM AQUA Catholyte CGE**

Data of issue 6/11/2018

Date of revision/ Last confirmation 10/9/2024

1. Identification of the substance or mixture and the supplier

Product name	KEM AQUA Catholyte CGE
SDS No.	GHS-0073E
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
Health hazards	
Acute toxicity / Oral	Category 4
Serious eye damage / Eye irritation	Category 2B
Reproductive toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 1(Kidney, Central nervous system, Visual organs, Systematic toxicity) Category 3(Respiratory tract irritation, Narcotic effects)
Specific target organ toxicity (repeated exposure	Category 1(Central nervous system, Visual organs)

GHS label elements

Hazard pictograms

Signal words Danger

Hazard statements	H225 High flammable liquid and vapor. H302 Harmful if swallowed. H320 Causes eye irritation. H335 May cause respiratory irritation. H336 May cause drowsiness or dizziness. H360 May damage fertility or the unborn child. H370 Causes damage to organs (Kidney, Central nervous system, Visual organs, Systemic toxicity). H372 Causes damage to organs (Central nervous system, Visual organs) through prolonged or repeated exposure.
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. 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. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response	P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with 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. P337 + P313 If eye irritation persists: Get medical advice/ attention. P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage	P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P403 + P235 Store in a well-ventilated place. Keep cool. 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	Ethanediol	107-21-1	38	2-230
2	Choline chloride	67-48-1	30-40	2-341/1-215 2-(2)-114
3	Methanol	67-56-1	20-30	2-201

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	No information available.
In case of eye contact	Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention.

	Rinse cautiously with water for several minutes.
If swallowed	If swallowed, DO NOT induce vomiting. Rinse mouth. Take victim immediately to hospital.
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) Vermiculite Regular foam 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.
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.
Environmental precautions	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so.
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	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.
Advice on safe handling	Take precautionary measures against static discharges. Keep away from fire, sparks and heated surfaces. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only in area provided with appropriate exhaust ventilation.
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 in a well-ventilated place. Store at room temperature. To maintain product quality, do not store in heat or direct sunlight. Keep container tightly closed.
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
ethanediol	107-21-1	TWA(Vapor) STEL(Vapor) STEL(Inhalable fraction, Aerosol only)	25 ppm 50 ppm 10 mg/m^3	ACGIH ACGIH ACGIH
methanol	67-56-1	ACL OEL-M	200 ppm 200 ppm 260 mg/m^3	JP OEL ISHL JP OEL JSOH
	Further information: Group 2: Substances presumed to cause reproductive toxicity in			

	humans, Skin absorption			
		TWA	200 ppm	ACGIH
		STEL	250 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	colorless, transparent
Odor	characteristic
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	21.1 ℃ (Tag closed cup)
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	5.55 mm^2/s (27.3 ℃)
Solubility(ies)	
Water solubility	completely soluble
Partition coefficient: n-octanol/water	No data available
Vapor pressure	No data available
Density and / or relative density Relative density	1.016 (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	Harmful if inhaled.
Product	
Acute oral toxicity	Acute toxicity estimate 1,042 mg/kg (Calculation method)
ethanediol	
Acute oral toxicity	LDLo (Human) 1,330 mg/kg
	LD50 (Rat) 4,000 mg/kg
Acute inhalation toxicity	LCLo (Rat) >0.2 mg/L，Exposure time 4 h, Test atmosphere vapor
	LC50 (Rat) >2.5 mg/L，Exposure time 6 h, Test atmosphere dust / mist
Acute dermal toxicity	LD50 (Rabbit) 10,600 mg/kg
choline chloride	
Acute oral toxicity	LD50(Rat) 3,400 mg/kg
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
Skin corrosion / irritation	Not classified based on available information.
Product	May cause skin irritation in susceptible persons.
Serious eye damage / eye irritation	Causes eye irritation.
Product	Vapors may cause irritation to the eyes, respiratory system and the skin.
methanol	Causes eye irritation.
Respiratory or skin sensitization	
Skin sensitization	Not classified based on available information.
Respiratory sensitization	Not classified based on available information.
Germ cell mutagenicity	Not classified based on available information.
Carcinogenicity	Not classified based on available information.
Reproductive toxicity	May damage fertility or the unborn child.

methanol	Presumed human reproductive toxicant
STOT-single exposure	May cause respiratory irritation. May cause drowsiness or dizziness. Causes damage to organs (Kidney, Central nervous system, Visual organs, Systemic toxicity).
methanol	Target Organs Kidney, Central nervous system 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 respiratory tract irritation.
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.
STOT-repeated exposure	Causes damage to organs (Central nervous system, Visual organs) 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.
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	
ethanediol	
Toxicity to fish	LC50 (Oryzias latipes (Orange-red killifish)) >100 mg/L, Exposure time 96 h (OECD Test Guideline 203), GLP yes
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)) > 1,120 mg/L, Exposure time 48 h (OECD Test Guideline 202), GLP yes
Toxicity to algae/aquatic plants	EC50 (Selenastrum capricornutum (green algae)) > 1,000 mg/L, End point Growth inhibition, Exposure time 72 h (OECD Test Guideline 201), GLP yes NOEC (Selenastrum capricornutum (green algae)) 1,000 mg/L, End point Growth inhibition, Exposure time 72 h (OECD Test Guideline 201), GLP yes

Toxicity to fish (Chronic toxicity)	NOEC (Daphnia magna (Water flea)) 100 mg/L, End point Reproductive inhibition, Exposure time 21 Days
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 plants	EC50 (Chaetoceros calcitrans) > 10,000 - < 20,000 mg/L, Exposure time 96 h 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
Persistence and degradability	
ethanediol	Biochemical oxygen demand rapidly biodegradable, Biodegradation 90 %, Exposure time 2 Weeks
methanol	Biochemical oxygen demand rapidly biodegradable, Biodegradation 92 %, Exposure time 14 d
propylene carbonate	rapidly biodegradable, Biodegradation 92 %
Bioaccumulative potential	
ethanediol	Bioconcentration factor (BCF) 10 h Partition coefficient: n-octanol/water log Pow = - 1.36
choline chloride	Partition coefficient: n-octanol/water log Pow = - 3.77
methanol	Species Cyprinus carpio (Carp), Bioconcentration factor (BCF) < 10, Exposure time: 72 h Partition coefficient: n-octanol/water log Pow = - 0.77
Mobility in soil	No data available
Hazardous to the ozone layer	Not applicable
Other adverse effects	No data available

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. Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of contents/ container to an approved waste disposal plant.

14. Transport information

International Regulations

IATA-DGR

UN / ID No.	UN1230
Proper shipping name	Methanol (solution)
Class	3
Subsidiary risk	6.1
Packing group	Ⅱ
Labels	Flammable Liquids, Toxic
Packing instruction (cargo aircraft)	364
Packing instruction (passenger aircraft)	352

IMDG-Code

UN No.	UN1230
Proper shipping name	METHANOL (solution)
Class	3
Subsidiary risk	6.1
Packing group	Ⅱ
Labels	3（6.1）
EmS Code	F-E，S-D
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

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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