

SAFETY DATA SHEET

According to OSHA Hazcom Standard 29 CFR 1910.1200

BiCLEAN-A1.0

Date of issue: 2018-08-17

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Version: 4.0

1. IDENTIFICATION

A. Product name

- BiCLEAN-A1.0

B. Recommended use and restriction on use

- General use : Cleaning detergent (Acid-based detergent)
- Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : BiOCS CO.,LTD.
- Address : HA : S-3102~3103,32 Songdogwahak-ro, Yeonsu-gu, 21984, Korea
MA : 66, Sandan-7ro, Seongmun-myeon, Dangjin-si, Chungcheongnam-do, Korea
- Emergency telephone number : +82-32-271-3611/ +82-41-970-3101

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2. HAZARD IDENTIFICATION

A. GHS Classification

- Acute toxicity (inhalation: vapor) : Category4
- Skin corrosion/irritation : Category1A
- Serious eye damage/irritation : Category1
- Specific target organ toxicity(Single exposure) : Category1

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H314 Causes severe skin burns and eye damage
- H318 Causes serious eye damage
- H332 Harmful if inhaled
- H370 Causes damage to organs(lungs, respiratory system, digestive system)

o Precautionary statements

1) Prevention

- P260 Do not breathe gas/mist/vapours/spray.
- P261 Avoid breathing gas/mist/vapours/spray.
- P264 Wash hands 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.

2) Response

- P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P307+P311 Take off contaminated clothing and wash before reuse.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P363 Wash contaminated clothing before reuse.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification

- Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Phosphoric acid	Ortho-phosphoramidate , O-Phosphoric acid	7664-38-2	40~50
Citric acid	Anhydrous citric acid , 2-Hydroxypropanetricarboxylic acid	77-92-9	3~7

* Ingredients not listed are non-hazardous ingredients according to the GHS classification.

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Remove contact lenses if worn.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- In the case of hot substances, soak or rinse affected area with large amounts of cold water to dissipate heat.
- In case of slight skin contact, prevent the spread of the contaminated area.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Wash thoroughly after handling.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- If exposed to excessive dust or fumes, remove with clean air and seek medical attention if cough or other symptoms develop.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Do not induce vomiting.
- If the substance is ingested or inhaled, do not perform artificial respiration by mouth-to-mouth method and use appropriate respiratory medical equipment.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Alcohol foam, carbon dioxide or water spray
- For suffocation extinguishing, use dry sand or soil.
- Avoid use of water jet for extinguishing
- When extinguishing a fire, wear fire protection clothing, rescue helmet for firefighting, safety boots for firefighting, safety gloves for firefighting, and respirator.

B. Specific hazards arising from the chemical

- During burning, pyrolysis or combustion may generate irritating and very toxic gases.
- Container may explode when heated.
- Some can burn but do not ignite easily

C. Special protective actions for firefighters

- Wear suitable protective equipment.
- Extinguish fire from the safe distance.
- Keep unauthorized personnel out.
- In case of a large-scale fire, use an unmanned waterproofing device. If this is not possible, step back and let it burn.
- Avoid inhalation of materials or combustion by-products.
- Notify the fire department, the location of the fire and its hazardous characteristics.
- Do not approach the tank surrounded by fire until it is extinguished.
- Move containers from fire area if you can do it without risk.
- In case of tank fire, extinguish at the maximum distance or use unmanned fire extinguishing equipment.
- Do not allow water to enter the container.
- Cool containers with water until well after fire is out.
- In case of tank fire, if there is a high-pitched sound from the pressure relief device or if the tank is discolored, leave immediately.
- Do not approach the tank surrounded by fire until it is extinguished.
- Notify the fire department, the location of the fire and its hazardous characteristics.
- In case of a large-scale fire, use an unmanned waterproofing device. If this is not possible, step back and let it burn.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Do not touch spilled material. Stop leak if you can do it without risk.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Move container to safe area from the leak area.
- Must work against the wind, let the upwind people to evacuate.
- Remove all sources of ignition.

B. Environmental precautions

- If large amounts have been spilled, inform the relevant authorities.
- Prevent runoff and contact with waterways, drains or sewers.

C. Methods and materials for containment and cleaning up

- Absorb the spillage with inert material (dry sand or earth).
- Notify the central and local government if the emission reach the standard threshold.
- Collect spilled material in a suitable container (chemical waste container) for disposal.
- Absorb liquid and wash contaminated area with detergent and water.
- Wipe off the solvent.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Avoid breathing gas/mist/vapor/spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Handle only outdoors or in a well-ventilated area.
- Do not take contaminated clothing out of the work area.
- Follow all MSDS and label precautions as product residues (vapors, liquids, solids) may remain after the container is empty.
- Use with caution in handling/storage.
- Carefully open the cap before opening.
- Avoid prolonged or repeated skin contact.
- Work with reference to engineering controls and personal protective equipment.
- Do not handle until all safety precautions have been read and understood.

- Get the instruction manual before use.

B. Conditions for safe storage, including any incompatibilities

- Store in a locked storage area.
- Empty drums should be completely drained and properly closed, immediately returned to drum control unit or properly placed.
- Keep away from food and drink.
- Store in a cool, dry and well-ventilated place.
- Do not use damaged containers.
- Do not apply any physical shock to container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o **ACGIH TLV**
 - [Phosphoric acid] : TWA 1 mg/m³ STEL 3 mg/m³
- o **OSHA PEL**
 - [Phosphoric acid] : 1

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

- o **Respiratory protection**
 - Any air-purifying respirator with a full facepiece and an organic vapor canister.
 - Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
 - Any chemical cartridge respirator with organic vapor cartridge(s).
 - Consider warning properties before use.
 - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
 - Respiratory protection is ranked in order from minimum to maximum.
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- o **Eye protection**
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- o **Hand protection**
 - Wear appropriate chemical resistant glove.
- o **Skin protection**
 - Wear appropriate chemical resistant protective clothing.
- o **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid
- Color	Clear to Slightly hazy
B. Odor	Slight chemical odor
C. Odor threshold	Not available
D. pH	About 1.8~2.2 (1% Soln.)
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	>198°F(92.2°C)
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Water Completely soluble
M. Vapour density	Not available
N. Specific gravity(Relative density)	1.33 g/mL
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available

Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	Not available

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions. (Stable at room temperature)

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid extreme high and low temperatures.

D. Incompatible materials

- Strong oxidizing agent, strong base, aluminum

E. Hazardous decomposition products

- Corrosive vapors are generated during decomposition: phosphate oxide, carbon dioxide gas

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- **Respiratory tracts**
 - Not available
- **Oral**
 - Not available
- **Eye/Skin**
 - Causes serious eye damage
 - Causes severe skin burns and eye damage

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
 - * **Oral**
 - BiCLEAN-A1.0(ATEmix) : >2000mg/kg (Manufacturer's test data)
 - [Phosphoric acid] : LD50 2600 mg/kg : Rat (1.7 ml/100g female, OECD Guideline 423)
 - [Citric acid] : LD50 = 3000 mg/kg Rat (OECD SIDS, IUCLID)
 - * **Dermal**
 - BiCLEAN-A1.0(ATEmix) : >5000mg/kg
 - [Citric acid] : LD50 >2000 mg/kg Rat (ECHA)
 - * **Inhalation**
 - BiCLEAN-A1.0(ATEmix) : 10.0mg/L < ATEmix ≤ 20.0mg/L
 - [Phosphoric acid] : LC50 0.9615 mg/l 4 hr Rat (3,846 mg/m³/1H) (SIDS(2011))
- **Skin corrosion/irritation**
 - Causes severe skin burns and eye damage
 - [Phosphoric acid] : Corrosive as a result of skin irritation/corrosion test on rabbits. (ECHA)
- **Serious eye damage/irritation**
 - Causes serious eye damage
 - [Phosphoric acid] : Causes serious eye damage (ICSC)
 - [Citric acid] : Eye irritation test results on rabbits : Severe irritation (RTECS), Severe irritation (SIDS)
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - Not available
 - * **OSHA**
 - Not available
 - * **ACGIH**

- Not available
- * **NTP**
 - Not available
- * **EU CLP**
 - Not available
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Causes damage to organs(Refer Section SDS 11)
 - [Phosphoric acid] : In case of inhalation, severe exposure causes hoarseness, shortness of breath, and pulmonary edema in severe cases. Vomiting, abdominal pain, hemorrhagic diarrhea, irritation or burns of the esophagus and stomach have been reported from oral ingestion. (HSDB)
 - [Citric acid] : Low irritant to cause sensitization, but has been reported to cause eye and respiratory tract irritation (SIDS), nose and throat irritation (HSDB)
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Citric acid] : LC50 = 48 mg/l 96 hr *Leuciscus idus* (ECOTOX)
- **Crustaceans**
 - [Phosphoric acid] : EC50 >100 mg/l 48 hr *Daphnia magna* (ECHA)
 - [Citric acid] : LC50 = 160 mg/l 48 hr (ECOTOX)
- **Algae**
 - [Phosphoric acid] : EC50 >100 mg/l 72 hr (*Desmodesmus subspicatus*) (ECHA)

B. Persistence and degradability

- **Persistence**
 - [Citric acid] : log Kow = -1.7 (ICSC)
- **Degradability**
 - [Citric acid] : BOD5/COD = 0.72 (OECD SIDS)

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Citric acid] : BCF = 3.2 (NLM)
- **Biodegradation**
 - [Citric acid] : Biodegradability = 98 (%) 7 day (OECD SIDS)

D. Mobility in soil

- Not available

E. Other adverse effects

- [Phosphoric acid] : Algae: *Pseudokirchnerella subcapitata*, EC50 72hr >100mg/L, OECD Guideline 201, Alga, Growth Inhibition Test, GLP (ECHA)

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- It shall be treated by incineration
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- Minimize the discharge of waste by minimizing the generation of waste and recycling the generated waste by itself.
- After treatment using the reaction of neutralization, oxidation, and reduction, treat by coagulation, precipitation, filtration, and dehydration.
- Treat by evaporation/concentration.
- Purify by separation, distillation, extraction and filtration.

B. Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- 1805

B. Proper shipping name

- PHOSPHORIC ACID, SOLUTION

C. Hazard Class

- 8

D. IMDG CODE/IATA DGR Packing group

- III

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-B (Corrosive substances)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- **POPs Management Law**
 - [Phosphoric acid] : Not applicable
 - [Citric acid] : Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [Phosphoric acid] : H314(Skin Corr. 1B)
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Phosphoric acid] : 2267.995 kg 5000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - Not applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: Manufacturer's data, KOSHA, NITE, ECHA, NLM, SIDS, IPCS

B. Issue date

- 2018-08-17

C. Revision number and Last date revised

- Revision Number : 4.0

'- Last date revised : 2024-02-13

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).