



Material Safety Data Sheet

BESFLOC (Cation series)

1. IDENTIFICATION

a. **Product name:** BESFLOC (Cation Series)

b. **Recommended use of the chemical and restrictions on use**

- Recommended use : Municipal sewage & Industrial Wastewater treatment aid,
Potable (Drinking) water treatment aid, Sludge dewatering aid
- Restrictions on use : Use for recommended use.

c. **Supplier identifier**

- **Supplier name** : KOLON LIFE SCIENCE plant (Gimcheon)
 - **Address** : 238, Gongdan-ro, Gimcheon-si, Gyeongbuk
 - **Emergency phone number** : Tel. +82-54-429-7632
 - **Respondent** : Production team
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2. HAZARDS IDENTIFICATION

a. **GHS classification of the substance/mixture** : Not applicable

b. **GHS label elements, including precautionary statements**

- **Pictogram and symbol** : Not applicable
- **Signal word** : Not applicable
- **Hazard statements** : Not applicable
- **Precautionary statements** : Not applicable

c. **NFPA** : health:1, fire:1, reactive:0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name Synonyms	CAS number	Content (%)
Ethanaminium, N,N,N-trimethyl- 2-[(1-oxo- 2-propenyl)oxy]-, chloride, polymer with 2- propenamide	Acrylamide, dimethyl aminoethyl acrylate methyl- chloride, copolymer	69418-26-4	>92
Water	Dihydrogen oxide	7732-18-5	<8

4. FIRST-AID MEASURES

a. Eye contact

- In case of contact with substance, immediately flush eyes with running water for more than 20 minutes.
- Remove contact lenses if present and easy to do.
- If irritation, edema, pain, tear and dazzling develop and persist, get medical attention.

b. SKIN CONTACT

- Removing contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin with running water for more than 20 minutes.

c. Inhalation

- Get medical attention immediately if irritation and symptoms persist.

d. INGESTION

- Do NOT induce vomiting.
- If swallowed, immediately call a POISON CENTER or doctor/physician.

e. Acute and delayed symptoms/ effects

- May cause eye and skin irritation.

f. Indication of immediate medical attention and notes for physician

- Call 911 or emergency medical service.

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
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5. FIRE-FIGHTING MEASURES

a. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Dry chemical, CO₂, water spray or regular foam.
- unsuitable extinguishing media : Not available
- In case of major fire and large quantities :
 - Water spray, fog or alcohol-resistant foam. Do not use straight streams.
 - Move containers from fire area if you can do it without risk.
 - Dike fire-control water for later disposal; do not scatter the material.

b. Tank/trailer/train truck fire

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

c. Specific hazards arising from the chemical

- Thermal decomposition products : Halogen compounds, carbon compounds, hydrogen chloride
- Fires and an explosion : May a slight risk of fire.

d. Specail Protective Equipment and Precuation for fire-fighters

- Wear positive pressure self-contained breathing apparatus (SCBA)
 - If without risk, remove material from fire area.
 - Ventilate closed spaces before entering.
 - Keep out of low areas.
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6. ACCIDENTAL RELEASE MEASURES

a. Personal precautions, protective equipment and emergency procedures

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Keep unauthorized personnel away.

- Avoid creating dust conditions.

b. Environmental precautions and protective procedures

- Atmosphere: Provide local exhaust ventilation system.
- Land: Make an embankment for further processing.
- Underwater: Prevent entry into waterways, sewers, basements or confined areas.

c. The methods of purification and removal

- Small spill :
 - ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
 - All equipment used when handling the product must be grounded.
 - Do not touch or walk through spilled material.
 - Stop leak if you can do it without risk.
 - Prevent entry into waterways, sewers, basements or confined areas.
 - Use water spray to reduce vapors or divert vapor cloud drift.
 - Use clean non-sparking tools to collect absorbed material.
 - Large spill :
 - Water spray may reduce vapor; but may not prevent ignition in closed spaces.
 - Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
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7. HANDLING AND STORAGE

a. Precautions for safe handling

- Wash thoroughly after handling.
- Do not breathe gas/fumes/ vapor/spray.
- Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures.

b. Conditions for safe storage

- Avoid heat, sparks, flames and other sources of ignition.
 - Keep away from waterways, sewers.
 - Store locked up.
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

a. Occupational Exposure limits

- Korean Occupation of Safety and Health Regulation : Not available
- ACGIH : Not available

- OSHA : Not available
- NIOSH : Not available
- Biological exposure index : Not available
- EU Regulation : Not available

b. Appropriate engineering control

- Provide local exhaust ventilation system or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value.
- Check legal suitability of exposure level.

c. Personal protective equipment

- Respiratory protection : Wear NIOSH/MESA approved full or half face piece (with goggles) respiratory protective equipment.
- Eye/Face protection : Wear facepiece with goggles to protect from scattering toxic substance.
- Hand protection : Anti-chemical glove that is appropriate.
- Body protection : Wear appropriate protective chemical-resistant clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance	: Absorption solid (powder, white)
b. Odour	: Not available
c. Odour threshold	: Not available
d. pH	: 2.5~5.0 (0.5% solution)
e. Melting point/freezing point	: Not available(> 150℃)
f. Initial boiling point and boiling range	: Not available
g. flash point	: Not available(> 150℃)
h. Evaporation rate	: Not available
i. Flammability (solid, gas)	: Not available
j. Upper/lower flammability or explosive limits	: Not applicable
k. Vapor pressure	: Not available
l. Vapor density	: Not available
m. Relative density	: Not available
n. Solubility (ies)	: Soluble
o. Specific gravity	: 0.6~0.8
p. Partition coefficient : n-octanol/water	: Not available
q. Auto ignition temperature	: Not available
r. Decomposition temperature	: Not available(> 150℃)
s. viscosity	: See a product certificate
t. Molecular weight	: See a product certificate

10. STABILITY AND REACTIVITY

a. Chemical stability : Stable under normal temperatures and pressures.

b. Possibility of hazardous reaction : No dangerous reaction known under conditions of normal use.

c. Conditions to avoid :

- Avoid heat, sparks, flames and other sources of ignition.
- Avoid release to the environment.
- Avoid contact with incompatible materials.

d. Incompatible materials : Oxidizing agents

e. Hazardous decomposition products :

Acid and halogen compounds, halogenations compounds, carbon compounds

11. TOXICOLOGICAL INFORMATION

a. Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact) ;

: Not available

b. Health hazards information ;

- Acute toxicity :
 - oral : LD50 > 5,000mg/kg (Rat)
 - dermal : LD50 > 5,000mg/kg (Rat)
 - Inhalation : Not toxic
 - Skin Corrosion/ Irritation : Not applicable
 - Serious Eye Damage/ Irritation : Not applicable
 - Respiratory sensitizer : Not applicable
 - Skin Sensitization : Not applicable
 - Carcinogenicity : Not applicable
 - Mutagenicity : Not applicable
 - Reproductive toxicity : Not applicable
 - Specific target organ toxicity (single exposure) : Not available
 - Specific target organ toxicity (repeat exposure) : Not available
 - Aspiration Hazard : Not applicable
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12. ECOLOGICAL INFORMATION

a. Aquatic Ecotoxicity :

Acute and chronic toxicity

- Fish : LC50 96hr = 10 ~ 100 mg/L (data from similar products)
- Crustacea : EC50 48hr = 10 ~ 100 mg/L (data from similar products)
- Alga e: Not available

b. Persistence and degradability :

Polymers have High biodegradability.

c. Bioaccumulative potential :

As polymers have high biodegradation property, it may not expect bioaccumulation.

d. Mobility in soil : Not available

13. DISPOSAL CONSIDERATIONS

a. Disposal method and precaution:

- The product is not a hazardous waste according to US RCRA and Canadian CEPA Regulations.
 - Dispose of waste material at a suitable landfill site, or at an approved waste incineration facility in accordance with applicable local, provincial, state, and federal regulations.
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14. TRANSPORT INFORMATION

a. ICAO/IATA : Not regulated

b. UN Number : Not applicable

c. UN Proper shipping name : Not applicable

d. Transport Hazard class : Not applicable

e. Packing group : Not applicable

f. Marine pollutant : Not applicable

g. Special precautions

- Emergency schedule for fire : Not applicable
 - Emergency schedule for spillage : Not applicable
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15. REGULATORY INFORMATION

a. Korea :

- Occupational Safety and Health Regulation : Not listed
- Toxic Chemical Control Act : Not listed
- Dangerous Material Safety Management Regulation : Not listed
- Wastes Control Act : Public Controlled Waste (Other synthetic resins, 01-01-07)

b. OSHA : Not applicable

c. CERCLA : Not applicable

d. EPCRA 302 : Not applicable

e. EPCRA 304 : Not applicable

f. EPCRA 313 : Not applicable

g. Substance of Roterdame Protocol : Not applicable

h. Substance of Stockholme Protocol : Not applicable

i. Substance of Montreal Protocol : Not applicable

j. EU classification : Not applicable

- EU classification - hazard : Not applicable
- EU classification - safety : Not applicable

16. OTHER INFORMATION

a. Information source and references :

- ECB : ESIS (European chemical Substances Information System) : <http://ecb.jrc.it/esis>
- IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva : World Health Organization, International Agency for Research on Cancer, 1972-PRESENT (Multivolume work)., p. S7 216, 1987
- REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16, December 2008
- Korea Occupational Health & Safety Agency : <http://www.kosha.net>
- U.S. National library of Medicine (NLM) Hazardous Substances Data Bank (HSDB) : <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB.htm>
- National Toxicology Program : http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm
- ACGIH, TLVs and BELs, Publication # 0108, 2008
- Society for Occupational Health Recommendation of Occupational Exposure, 1993
- National chemicals information systems : <http://ncis.nier.go.kr/>
- Korea dangerous material inventory management system : <http://hazmat.nema.go.kr/>

b. Issuing date : 01 January 2006

c. Revision number and date

- revision number: 6th
- date of the latest revision: 4 March 2019

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