

SECTION 1 - IDENTIFICATION

Product: AQUATROL® 12115

Recommended use of the chemical and restrictions on use:

Uses: Corrosion and scale inhibitor.

List of advices against: Not available.

Details of the supplier of the Safety Data Sheet:

Momar, Inc.
1830 Ellsworth Industrial Dr.
Atlanta, Ga. 30318
404-355-4580
800-556-3967
www.momar.com

Emergency Telephone Number (INFOTRAC): North America: 1-800-535-5053
International: 1-352-323-3500

SECTION 2 – HAZARD IDENTIFICATION

Classification:	Eye Damage/Irritation	2A
	Skin Corrosion/Irritation	2

Signal Word: Warning.

Hazard Statements: Causes serious eye irritation.
Causes skin irritation.

Pictograms:



Precautionary Statements:

Prevention: Wash hands and all exposed skin thoroughly after handling.
Wear protective gloves/eye protection/face protection.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If on skin (or hair): Wash with plenty of water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Immediately call a poison center/doctor/hospital.

Storage: None.

Disposal: None.

Other Hazards: None known.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Trisodium phosphate	7601-54-9	5 – 15
Tetrapotassium pyrophosphate	7320-34-5	<5
2-Phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	<10
Sodium tolyltriazole	64665-57-2	<10
Potassium hydroxide	1310-58-3	<15

SECTION 4 – FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water, remove contact lenses (if easy to do so), and continue to flush for at least 15-20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention immediately. Continue rinsing eyes while in transport.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Wash clothing and shoes before reuse. Get medical attention.

Inhalation: Remove from exposure. If not breathing, give artificial respiration. Get medical attention.

Ingestion: Get medical attention immediately. Do not induce vomiting. If victim is conscious and alert, give large amounts of water. Discontinue water if victim feels like they may vomit. Never give anything by mouth to an unconscious person.

Most Important Symptoms and Effects:

Acute: Severe eye irritation or damage. Possible skin burns. Severe respiratory tract irritation or damage.

Delayed: Prolonged or excessive contact with skin could cause damage or dermatitis.

Indication of Any Immediate Medical Attention and Special Treatment Needed: None known.

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Specific Hazards Arising From the Substance or Product: Avoid contact with spilled material.

Hazardous Combustion Products: Oxides of carbon, oxides of nitrogen, smoke, and fumes.

Protective Equipment and Precautions for Firefighters: Wear a self-contained breathing apparatus, and full protective gear. Chemical protective clothing may be needed.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid contact with skin and eyes. Wear protective clothing, see Section 8.

Environmental Precautions: Keep out of sewers, drains, and bodies of water. Spills should be diked and absorbed.

Methods and Materials for Containment and Cleaning Up: Absorb in vermiculite, dry sand, or earth, and place in containers. Collect and reclaim or dispose of in sealed containers in a licensed waste facility. Containers with spillage must be properly labeled with correct contents and hazard symbol.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spilling, skin, and eye contact. Wash thoroughly after handling. Use only with adequate ventilation. For industrial or professional use only. Do not cut or weld empty container. KEEP OUT OF REACH OF CHILDREN.

Conditions for Safe Storage: Store in a cool dry place.

Incompatibilities: Strong acids, oxidizing agents.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Trisodium phosphate	Not established	Not established	5 mg/m3 (WEEL STEL)
Potassium hydroxide	2 mg/m3	2 mg/m3	

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: Normally not needed. If needed, use NIOSH approved full face mask and filter for organic vapor.

Skin and Body: Chemical resistant gloves recommended. Chemical resistant apron, as needed.

Eye Protection: Safety glasses/goggles recommended.

Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Amber clear liquid with mild odor.

Odor Threshold: Not determined.

pH: 12.5 – 13.5

Freezing Point: Not determined.

Boiling Point: 212°F

Flash Point: No flash at boiling.

Evaporation Rate (BUAC=1): Slower.

Flammability: Not flammable.

Flammability or Explosion Limits: **Upper:** Not applicable. **Lower:** Not applicable.

Vapor Pressure: Not determined.

Specific Gravity: 1.255

Solubility in Water: Complete.

Solubility in Other Solvents: Not determined.

Partition Coefficient (n-octanol/water): Not determined.

Auto-ignition Temperature: Not determined.
Decomposition Temperature: Not determined.
Viscosity: Not determined.
Other Information: Not determined.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use. Avoid contact with incompatible materials. See list below.

Chemical Stability: Stable under normal temperature conditions and recommended use.

Possible Hazardous Reactions: Not available.

Conditions to Avoid: Contact with incompatible materials.

Incompatible Materials: Strong oxidizing agents, and acids.

Hazardous Decomposition Products: Oxides of carbon, smoke, fumes.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: Irritation and possible damage to skin and eyes. Irritation or damage to respiratory tract.

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure:

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: No components of this product are listed by NTP, IARC, or OSHA.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity: Eyes and skin

Numerical Measures of Toxicity:

Product: Not determined.

Component:

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sodium tolyltriazole	640 mg/kg (rat)	>2,000 mg/kg (rabbit)	Not determined
Potassium hydroxide	365 mg/kg (rat)	Not determined	Not determined

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity:

Trisodium phosphate

Fish: *Gambusia affinis*: LC50 = 28.5 mg/L; 96hr

2-phosphono-1,2,4-butanetricarboxylic acid

Fish: LC50= >1,000 mg/l; 96hrs

Invertebrates: *Daphnia magna*: EC50= >300 mg/l; 48hr

Algae: IC50= >1,000 mg/l; 72hr

Sodium Tolyltriazole

Fish: *Lepomis macrochirus*: LC50> 173mg/L; 96hrInvertebrates: *Daphnia magna*: LC50 = 280 mg/L; 48hrAlgae: *Selenastrum capricornutum*: EC50 = 26.2 mg/L; 72hr

Potassium hydroxide

Fish: *Gambusia affinis*: LC50 = 80 mg/L; 96hrInvertebrates: *Daphnia magna*: EC50 = 60 mg/L; 48hr**Persistence and Degradability:**

Not expected to persist in the environment. Biodegradable.

Bioaccumulation:

Not expect to be a bioaccumulator.

Mobility:

Not expected to have mobility.

Other Adverse Effects:

None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:**Disposal of Wastes:**

Dispose of product in accordance with local, state, and federal regulations.

Contaminated Packaging:

Empty containers should be taken to an approved waste handling site for recycling or disposal.

Other Information:

None.

SECTION 14 – TRANSPORTATION INFORMATION

DOT:**UN Number:**

UN 1814

Proper Shipping Name:

Potassium Hydroxide Solution

Hazard Class:

8, Corrosive

Packing Group:

III

SECTION 15 – REGULATORY INFORMATION

US Federal Regulations:**TSCA:**

All ingredients of this product are listed in the TSCA inventory.

SARA 313:

This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and Title 40 CFR 372.

Chemical Name	CAS Number	Percent Weight
None		

US State Regulations:

California: This product contains the following chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm: None.

SECTION 16 – OTHER INFORMATION

Issue Date: April 4, 2013

Revision Date: June 30, 2021

Health	Flammability	Reactivity	Personal Protection
2	0	0	C

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate at the time of publication, Momar, Incorporated makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Momar, Incorporated's control; and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes; and they assume all risks of their use, handling, and disposal of the product or from the publications or use of, or reliance upon, information contained herein. This information relates only to the product designed herein and does not relate to its use in combination with any other material or in any other process.

AquaTrol 12115

Liquid Cooling Water Treatment

Principal Application:

AquaTrol **12115** is high performance blended product with a copper corrosion inhibitor for alkaline cooling water treatment programs. The cathodic and anodic corrosion inhibitors in **12115** provides superior corrosion inhibition, scale control, effective dispersion of suspended solids along with a yellow metal corrosion inhibitor.

Use Considerations

12115 provides complete scale and corrosion inhibition for most natural waters used as cooling system make-up. Conditions do exist which would warrant the use of Adjunct Products to supplement specific components of this product and provide maximum protection in the cooling system. **12115** requires continuous or proportional application by chemical metering pump in order to achieve desired results. System bleed off must be consistently controlled so that a minimum of 50 ppm to a maximum of 250 ppm total alkalinity is maintained in the recirculating water. Limits may vary depending upon make-up water quality. Your AquaTrol Water Specialist will provide specific product selection and usage information.

Dosage & Control

Feed a sufficient quantity to maintain a residual of 100 ppb inert tracer in the recirculating cooling water. Product usage over any period will vary with the operating load of the cooling tower and control of system bleed-off. Your AquaTrol Water Specialist will recommend complete program controls and product dosages.

Feeding

For best results, **12115** must be fed into the recirculating water line using a chemical metering pump constructed of suitably resistant materials. Proportional feed is desired and is usually accomplished by electrically connecting the chemical pump in parallel with the make-up water meter. Intermittent feed is accomplished with an appropriate timing device. **12115** can be metered directly from the shipping container or may be diluted to any convenient strength with soft water or cooled condensate. Do not mix directly with other concentrated water treatment products.

Typical Properties

pH	12.5 – 13.5
Density	10.0 Pounds Per Gallon
Appearance	Amber Liquid
Odor	Mild Organic

Handling Storage & Safety

Use normal precautions for chemical handling. Wear appropriate apron, gloves, or other protective clothing. Always wear goggles or face shield for eye protection. Keep out of the reach of children. Avoid contact with eyes, skin, or clothing. Do not swallow. Read container labeling and Material Safety Data Sheet for more complete information on handling precautions. AquaTrol **12115** is available in 55-, 35-, 20-, and 5-gallon non-returnable containers. Store at room temperature; protect from freezing and extreme heat. Keep container closed when not in use. Use promptly upon opening. Product stored or held for more than one year should be sampled by your AquaTrol Water Specialist. The sample will be completely analyzed for chemical stability and use/disposition instructions returned to the user.

SECTION 1 - IDENTIFICATION**Product:** AQUATROL® 12215**Recommended use of the chemical and restrictions on use:****Uses:** Corrosion and scale inhibitor.**List of advices against:** Not available.**Details of the supplier of the Safety Data Sheet:**

Momar, Inc.
1830 Ellsworth Industrial Dr.
Atlanta, Ga. 30318
404-355-4580
800-556-3967
www.momar.com

Emergency Telephone Number (INFOTRAC): North America: 1-800-535-5053
International: 1-352-323-3500

SECTION 2 – HAZARD IDENTIFICATION

Classification: Eye Damage/Irritation 2A
Skin Corrosion/Irritation 2

Signal Word: Warning.

Hazard Statements: Causes serious eye irritation.

Causes skin irritation.

Pictograms:

**Precautionary Statements:**

Prevention: Wash hands and all exposed skin thoroughly after handling.
Wear protective gloves/eye protection/face protection.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If on skin (or hair): Wash with plenty of water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Immediately call a poison center/doctor/hospital.

Storage: None.

Disposal: None.

Other Hazards: None known.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Trisodium phosphate	7601-54-9	<10
Tetrapotassium pyrophosphate	7320-34-5	<5
2-Phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	<10
Sodium tolyltriazole	64665-57-2	<10
Potassium hydroxide	1310-58-3	<20

SECTION 4 – FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water, remove contact lenses (if easy to do so), and continue to flush for at least 15-20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention immediately. Continue rinsing eyes while in transport.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Wash clothing and shoes before reuse. Get medical attention.

Inhalation: Remove from exposure. If not breathing, give artificial respiration. Get medical attention.

Ingestion: Get medical attention immediately. Do not induce vomiting. If victim is conscious and alert, give large amounts of water. Discontinue water if victim feels like they may vomit. Never give anything by mouth to an unconscious person.

Most Important Symptoms and Effects:

Acute: Severe eye irritation or damage. Possible skin burns. Severe respiratory tract irritation or damage.

Delayed: Prolonged or excessive contact with skin could cause damage or dermatitis.

Indication of Any Immediate Medical Attention and Special Treatment Needed: None known.

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Specific Hazards Arising From the Substance or Product: Avoid contact with spilled material.

Hazardous Combustion Products: Oxides of carbon, oxides of nitrogen, smoke, and fumes.

Protective Equipment and Precautions for Firefighters: Wear a self-contained breathing apparatus, and full protective gear. Chemical protective clothing may be needed.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid contact with skin and eyes. Wear protective clothing, see Section 8.

Environmental Precautions: Keep out of sewers, drains, and bodies of water. Spills should be diked and absorbed.

Methods and Materials for Containment and Cleaning Up: Absorb in vermiculite, dry sand, or earth, and place in containers. Collect and reclaim or dispose of in sealed containers in a licensed waste facility. Containers with spillage must be properly labeled with correct contents and hazard symbol.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spilling, skin, and eye contact. Wash thoroughly after handling. Use only with adequate ventilation. For industrial or professional use only. Do not cut or weld empty container. KEEP OUT OF REACH OF CHILDREN.

Conditions for Safe Storage: Store in a cool dry place.

Incompatibilities: Strong acids, oxidizing agents.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Trisodium phosphate	Not established	Not established	5 mg/m3 (WEEL STEL)
Potassium hydroxide	2 mg/m3	2 mg/m3	

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: Normally not needed. If needed, use NIOSH approved full face mask and filter for organic vapor.

Skin and Body: Chemical resistant gloves recommended. Chemical resistant apron, as needed.

Eye Protection: Safety glasses/goggles recommended.

Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Amber clear liquid with mild odor.

Odor Threshold: Not determined.

pH: 12.5 – 13.5

Freezing Point: Not determined.

Boiling Point: 212°F

Flash Point: No flash at boiling.

Evaporation Rate (BUAC=1): Slower.

Flammability: Not flammable.

Flammability or Explosion Limits: **Upper:** Not applicable. **Lower:** Not applicable.

Vapor Pressure: Not determined.

Specific Gravity: 1.250

Solubility in Water: Complete.

Solubility in Other Solvents: Not determined.

Partition Coefficient (n-octanol/water): Not determined.

Auto-ignition Temperature: Not determined.

Decomposition Temperature: Not determined.

Viscosity: Not determined.
Other Information: Not determined.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use. Avoid contact with incompatible materials. See list below.

Chemical Stability: Stable under normal temperature conditions and recommended use.

Possible Hazardous Reactions: Not available.

Conditions to Avoid: Contact with incompatible materials.

Incompatible Materials: Strong oxidizing agents, and acids.

Hazardous Decomposition Products: Oxides of carbon, smoke, fumes.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: Irritation and possible damage to skin and eyes. Irritation or damage to respiratory tract.

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure:

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: No components of this product are listed by NTP, IARC, or OSHA.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity: Eyes and skin

Numerical Measures of Toxicity:

Product: Not determined.

Component:

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sodium tolyltriazole	640 mg/kg (rat)	>2,000 mg/kg (rabbit)	Not determined
Potassium hydroxide	365 mg/kg (rat)	Not determined	Not determined

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Trisodium phosphate
Fish: *Gambusia affinis*: LC50 = 28.5 mg/L; 96hr
2-phosphono-1,2,4-butanetricarboxylic acid
Fish: LC50= >1,000 mg/l; 96hrs
Invertebrates: *Daphnia magna*: EC50= >300 mg/l; 48hr

Algae: IC50= >1,000 mg/l; 72hr
Sodium Tolyltriazole
Fish: *Lepomis macrochirus*: LC50> 173mg/L; 96hr
Invertebrates: *Daphnia magna*: LC50 = 280 mg/L; 48hr
Algae: *Selenastrum capricornutum*: EC50 = 26.2 mg/L; 72hr
Potassium hydroxide
Fish: *Gambusia affinis*: LC50 = 80 mg/L; 96hr
Invertebrates: *Daphnia magna*: EC50 = 60 mg/L; 48hr
Persistence and Degradability: Not expected to persist in the environment. Biodegradable.
Bioaccumulation: Not expect to be a bioaccumulator.
Mobility: Not expected to have mobility.
Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with local, state, and federal regulations.

Contaminated Packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

Other Information: None.

SECTION 14 – TRANSPORTATION INFORMATION

DOT:

UN Number: UN 1814
Proper Shipping Name: Potassium Hydroxide Solution
Hazard Class: 8, Corrosive
Packing Group: III

SECTION 15 – REGULATORY INFORMATION

US Federal Regulations:

TSCA: All ingredients of this product are listed in the TSCA inventory.
SARA 313: This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and Title 40 CFR 372.

Chemical Name	CAS Number	Percent Weight
None		

US State Regulations:

California: This product contains the following chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm: None.

SECTION 16 – OTHER INFORMATION**Issue Date:** January 25, 2013**Revision Date:** June 30, 2021

Health	Flammability	Reactivity	Personal Protection
2	0	0	C

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate at the time of publication, Momar, Incorporated makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Momar, Incorporated's control; and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes; and they assume all risks of their use, handling, and disposal of the product or from the publications or use of, or reliance upon, information contained herein. This information relates only to the product designed herein and does not relate to its use in combination with any other material or in any other process.

AquaTrol 12215

Liquid Cooling Water Treatment

Principal Application:

AquaTrol 12215 is high performance blended product with a copper corrosion inhibitor for alkaline cooling water treatment programs. 12215 is specially formulated with a combination of ingredients to provide corrosion inhibition, scale control, effective dispersion of suspended solids along with a yellow metal corrosion inhibitor in moderate to high scaling cooling water treatment conditions.

Use Considerations

12215 provides complete scale and corrosion inhibition for most natural waters used as cooling system make-up. Conditions do exist which would warrant the use of Adjunct Products to supplement specific components of this product and provide maximum protection in the cooling system. 12215 requires continuous or proportional application by chemical metering pump to achieve desired results. System bleed-off must be consistently controlled so that a minimum of 50 ppm to a maximum of 250 ppm total alkalinity is maintained in the recirculating water. Limits may vary depending upon make-up water quality. Your AquaTrol Water Specialist will provide specific product selection and usage information.

Dosage & Control

Feed a sufficient quantity to maintain a residual of 100 ppb inert tracer in the recirculating cooling water. Product usage over any period will vary with the operating load of the cooling tower and control of system bleed-off. Your AquaTrol Water Specialist will recommend complete program controls and product dosages.

Feeding

For best results, 12215 must be fed into the recirculating water line using a chemical metering pump constructed of suitably resistant materials. Proportional feed is desired and is usually accomplished by electrically connecting the chemical pump in parallel with the make-up water meter. Intermittent feed is accomplished with an appropriate timing device. 12215 can be metered directly from the shipping container or may be diluted to any convenient strength with soft water or cooled condensate. Do not mix directly with other concentrated water treatment products.

Typical Properties

pH (use dilution)	12.5 – 13.5
Density	10.4 Pounds Per Gallon
Appearance	Clear, Amber Liquid
Odor	Mild Organic

Handling Storage & Safety

Use normal precautions for chemical handling. Wear appropriate apron, gloves, or other protective clothing. Always wear goggles or face shield for eye protection. Keep out of the reach of children. Avoid contact with eyes, skin, or clothing. Do not swallow. Read container labeling and Safety Data Sheet for more complete information on handling precautions. AquaTrol 12215 is available in 55, 35, 20, and 5-gallon non-returnable containers. Store at room temperature; protect from freezing and extreme heat. Keep container closed when not in use. Use promptly upon opening.

SECTION 1 - IDENTIFICATION

Product: AQUATROL® 12425

Recommended use of the chemical and restrictions on use:

Uses: Corrosion And Scale Inhibitor.

List of advices against: Not available.

Details of the supplier of the Safety Data Sheet:

Momar, Inc.
1830 Ellsworth Industrial Dr.
Atlanta, Ga. 30318
404-355-4580
800-556-3967
www.momar.com

Emergency Telephone Number (INFOTRAC): North America: 1-800-535-5053
International: 1-352-323-3500

SECTION 2 – HAZARD IDENTIFICATION

Classification: Eye Damage/Irritation 2A
Skin Corrosion/Irritation 2

Signal Word: Warning.

Hazard Statements: Causes serious eye irritation.
Causes skin irritation.

Pictograms:



Precautionary Statements:

Prevention: Wash hands and all exposed skin thoroughly after handling.
Wear eye protection/face protection. Wear protective gloves.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If on skin: Wash with water / soap.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
Immediately call a poison center/doctor/hospital.

Storage: None.

Disposal: None.

Other Hazards: None known.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Trisodium phosphate	7601-54-9	<10
Potassium Hydroxide	1310-58-3	<19.0%
Sodium Tolytriazole	64665-57-2	<9.0%

SECTION 4 – FIRST AID MEASURES

- Eye Contact:** Immediately flush eyes with plenty of water, remove contact lenses, and continue to flush for at least 15-20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention immediately.
- Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Wash clothing and shoes before reuse. Get medical attention if irritation persists.
- Inhalation:** Remove from exposure. If not breathing, give artificial respiration. If breathing is difficult, get medical attention.
- Ingestion:** Get medical attention immediately. Do not induce vomiting. If victim is conscious and alert, give large amounts of water. Discontinue water if victim feels like they may vomit. Never give anything by mouth to an unconscious person.
- Most Important Symptoms and Effects:**
- Acute:** Severe eye irritation.
 - Delayed:** Prolonged or excessive contact with skin could cause damage or dermatitis.

Indication of Any Immediate Medical Attention and Special Treatment Needed: None known.

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Use media appropriate to the surrounding fire.

Specific Hazards Arising From the Substance or Product: None

Hazardous Combustion Products: Oxides of carbon, nitrogen, and sulfur.

Protective Equipment and Precautions for Firefighters: Wear a self-contained breathing apparatus in pressure- demand mode, and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid contact with skin and eyes. Wear protective clothing, see Section 8.

Environmental Precautions: Keep out of sewers, drains, and bodies of water. Spills should be diked and absorbed.

Methods and Materials for Containment and Cleaning Up: Absorb in vermiculite, dry sand, or earth, and place in containers. Collect and reclaim or dispose of in sealed containers in a licensed waste facility. Liquid material may be removed with vacuum collection. Containers with spillage must be properly labeled with correct contents and hazard symbol.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spilling, skin, and eye contact. Wash thoroughly after handling. Use only with adequate ventilation. For industrial or professional use only. Do not cut or weld empty container. KEEP OUT OF REACH OF CHILDREN.

Conditions for Safe Storage: Store in a cool dry place. Keep from freezing. Do not store in 304 stainless, carbon steel or aluminum.

Incompatibilities: Strong oxidizing agents, basic amines, and acids.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Trisodium phosphate	Not established	Not established	5 mg/m3 (WEEL STEL)
Potassium Hydroxide	2 mg/m ³	2 mg/m ³	

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: Normally not needed. If needed, use NIOSH approved mask and filter for organic vapor.

Skin and Body: Chemical resistant gloves recommended. Chemical resistant apron, as needed.

Eye Protection: Safety glasses/goggles recommended.

Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear amber liquid with no odor.

Odor Threshold: Not determined.

pH: 12.5 – 13.0

Freezing Point: Not determined.

Boiling Point: >212°F

Flash Point: No flash at boiling.

Evaporation Rate (BUAC=1): Slower.

Flammability: Not flammable.

Flammability or Explosion Limits: **Upper:** Not applicable. **Lower:** Not applicable.

Vapor Pressure: Not determined.

Specific Gravity: 1.200

Solubility in Water: Complete.

Solubility in Other Solvents: Not determined.

Partition Coefficient (n-octanol/water): Not determined.

Auto-ignition Temperature: Not determined.

Decomposition Temperature: Not determined.

Viscosity: Not determined.

Other Information: Not determined.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal temperature conditions and recommended use.
Possible Hazardous Reactions:	Not available.
Conditions to Avoid:	Contact with incompatible materials.
Incompatible Materials:	Strong oxidizing agents, basic amines, and acids.
Hazardous Decomposition Products:	Oxides of carbon, nitrogen, and sulfur.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: Irritation to skin and eyes.

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure:

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: No components of this product are listed by NTP, IARC, or OSHA.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity: Eyes

Numerical Measures of Toxicity:

Product: Not determined.

Component:

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Potassium Hydroxide	333 mg/kg (rat)	Not determined	Not determined
Sodium Tolytriazole	1980 mg/kg (rat)	2000 mg/kg (rabbit)	Not determined

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity:

Trisodium phosphate

Fish: *Gambusia affinis*: LC50 = 28.5 mg/L; 96hr

Potassium hydroxide

Fish: *Gambusia affinis*: LC50 = 80 mg/L; 96hr

Invertebrates: *Daphnia magna*: EC50 = 60 mg/L; 48hr

Sodium Tolytriazole

Fish: *Lepomis macrochirus*: LC50 > 173mg/L; 96hr

Invertebrates: *Daphnia magna*: LC50 = 280 mg/L; 48hr

Algae: *Selenastrum capricornutum*: EC50 = 26.2 mg/L; 72hr

Persistence and Degradability: Not expected to persist in the environment.
Bioaccumulation: Not expect to be a bioaccumulator.
Mobility: Not expected to have mobility.
Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with local, state, and federal regulations.

Contaminated Packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

Other Information: None.

SECTION 14 – TRANSPORTATION INFORMATION

DOT:

UN Number: UN 1814
Proper Shipping Name: Potassium Hydroxide Solution
Hazard Class: 8, Corrosive
Packing Group: III

SECTION 15 – REGULATORY INFORMATION

US Federal Regulations:

TSCA: All ingredients of this product are listed in the TSCA inventory.
SARA 313: This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and Title 40 CFR 372.

Chemical Name	CAS Number	Percent Weight

US State Regulations:

California: This product contains the following chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm: None.

SECTION 16 – OTHER INFORMATION

Issue Date: February 12, 2020
Revision Date: July 7, 2021

Health	Flammability	Reactivity	Personal Protection
2	0	0	C

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate at the time of publication, Momar,

Incorporated makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Momar, Incorporated's control; and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes; and they assume all risks of their use, handling, and disposal of the product or from the publications or use of, or reliance upon, information contained herein. This information relates only to the product designed herein and does not relate to its use in combination with any other material or in any other process.

AquaTrol 12425

Liquid Open System Treatment

Principal Application:

AquaTrol 12425 is a revolutionary new blend of phosphonates and polymers with a copper corrosion inhibitor for alkaline cooling water treatment programs. Specially formulated with four different polymer systems for high hardness and high silica waters to prevent precipitation of scale forming minerals and disperse suspended solids. Properly controlled cooling water treatment programs using 12425 provide effective corrosion protection while maintaining clean heat transfer surfaces without relying on environmentally unacceptable materials.

Use Considerations

AquaTrol 12425 provides complete scale and corrosion inhibition for most natural waters used as cooling system make-up. Conditions do exist which would warrant the use of Adjunct Products to supplement specific components of this product and provide maximum protection in the cooling system. AquaTrol 12425 requires continuous or proportional application by chemical metering pump in order to achieve desired results. System bleed-off must be consistently controlled so that a minimum of 100 ppm to a maximum of 900 ppm total alkalinity is maintained in the recirculating water and a silica limit of 200 ppm in the recirculating water. Limits may vary depending upon make-up water quality. Your AquaTrol Water Specialist will provide specific product selection and usage information.

Dosage & Control

Feed a sufficient quantity of AquaTrol 12425 to maintain a residual of 80-100 ppb of tracer (as PTSA) in the recirculating cooling water. Actual product usage over any time period will vary with operating load of the cooling tower and control of system bleed-off. Your AquaTrol Water Specialist will recommend complete program controls and product dosages.

Feeding

For best results, AquaTrol 12425 should be fed into the recirculating water line using a chemical metering pump constructed of suitably resistant materials. Proportional feed is desired and is usually accomplished by electrically connecting the chemical pump to a conductivity controller. Intermittent feed is accomplished with an appropriate timing device. AquaTrol 12425 can be metered directly from the shipping container or may be diluted to any convenient strength with soft water or cooled condensate. When using any Adjunct Product with AquaTrol 12425, both products must be pre-diluted before mixing. Continuous agitation should be avoided.

Typical Properties

pH	12.5 – 13.5
Density	9.7 Pounds Per Gallon
Appearance	Clear, Amber Liquid
Odor	Sweet

Handling Storage & Safety

Use normal precautions for chemical handling. Wear appropriate apron, gloves, or other protective clothing. Always wear goggles or face shield for eye protection. Keep out of the reach of children. Avoid contact with eyes, skin, or clothing. Do not swallow. Read container labeling and Safety Data Sheet for more complete information on handling precautions. AquaTrol 12425 is available in 55, 35, 20, and 5 gallon non-returnable containers. Store at room temperature; protect from freezing and extreme heat. Keep container closed when not in use. Use promptly upon opening.

SECTION 1 - IDENTIFICATION

Product: AQUATROL® 12420

Recommended use of the chemical and restrictions on use:

Uses: Corrosion and scale inhibitor.

List of advices against: Not available.

Details of the supplier of the Safety Data Sheet:

Momar, Inc.
1830 Ellsworth Industrial Dr.
Atlanta, Ga. 30318
404-355-4580
800-556-3967
www.momar.com

Emergency Telephone Number (INFOTRAC): North America: 1-800-535-5053
International: 1-352-323-3500

SECTION 2 – HAZARD IDENTIFICATION

Classification:	Eye Damage/Irritation	1
	Skin Corrosion/Irritation	1B
Signal Word:	Danger	
Hazard Statements:	Causes serious eye damage	
	Causes severe skin burns and eye damage.	
Pictograms:		



Precautionary Statements:

Prevention:	Wear eye protection or face protection, protective gloves, and protective clothing. Do not breathe dusts or mists. Wash hands and exposed skin thoroughly after handling.
Response:	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Immediately call a poison center, doctor, or hospital. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing.
Storage:	Store locked up.

Disposal: Dispose of contents/container to approved waste disposal plant in accordance with federal, state, and local regulations.

Other Hazards: None known.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Diethylenetriamine Penta (methylenephosphonic acid)	15827-60-8	<10.0
2-Phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	<5.0
Potassium hydroxide	1310-58-3	<15.0

SECTION 4 – FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water, remove contact lenses, and continue to flush for at least 15-20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention if irritation persists.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Wash clothing and shoes before reuse. Get medical attention if irritation persists.

Inhalation: Remove from exposure. If not breathing, give artificial respiration. If breathing is difficult, get medical attention.

Ingestion: Get medical attention immediately. Do not induce vomiting. If victim is conscious and alert, give large amounts of water. Discontinue water if victim feels like they may vomit. Never give anything by mouth to an unconscious person.

Most Important Symptoms and Effects:

Acute: Possible eye and skin irritation.

Delayed: Prolonged or excessive contact with skin could cause dermatitis.

Indication of Any Immediate Medical Attention and Special Treatment Needed: None known.

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Use media appropriate to the surrounding fire.

Specific Hazards Arising From the Substance or Product: None

Hazardous Combustion Products: Oxides of carbon, smoke, and fumes.

Protective Equipment and Precautions for Firefighters: Wear a self-contained breathing apparatus in pressure- demand mode, and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid contact with skin and eyes. Wear protective clothing, see Section 8.

Environmental Precautions: Keep out of sewers, drains, and bodies of water. Spills should be diked and absorbed.

Methods and Materials for Containment and Cleaning Up: Absorb in vermiculite, dry sand, or earth, and place in containers. Collect and reclaim or dispose of in sealed containers in a licensed waste facility. Liquid material may be removed with a vacuum truck. Containers with spillage must be properly labeled with correct contents and hazard symbol.

SECTION 7 – HANDLING AND STORAGE

- Precautions for Safe Handling:** Avoid spilling, skin, and eye contact. Wash thoroughly after handling. Use only with adequate ventilation. For industrial or professional use only. Do not cut or weld empty container. KEEP OUT OF REACH OF CHILDREN.
- Conditions for Safe Storage:** Store in a cool dry place. Keep out of sunlight and away from ignition sources.
- Incompatibilities:** Avoid ammonia, 304 stainless steel, carbon steel or aluminum containers.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Potassium hydroxide	2mg/m3	2mg/m3	

- Engineering Controls:** Normal ventilation.
- Personal Protection Measures:**
- Respiratory Protection:** Normally not needed. If needed, use NIOSH approved mask and filter for organic vapor.
- Skin and Body:** Chemical resistant gloves recommended. Chemical resistant apron, as needed.
- Eye Protection:** Safety glasses/goggles recommended.
- Other Recommendations:** None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

- Appearance and Odor:** Clear amber liquid with low odor.
- Odor Threshold:** Not determined.
- pH:** 12.5 – 13.5
- Freezing Point:** Not determined.
- Boiling Point:** >212°F
- Flash Point:** No flash at boiling.
- Evaporation Rate (BUAC=1):** Slower.
- Flammability:** Not flammable.
- Flammability or Explosion Limits:** **Upper:** Not applicable. **Lower:** Not applicable.
- Vapor Pressure:** Not determined.
- Specific Gravity:** 1.220
- Solubility in Water:** Complete.
- Solubility in Other Solvents:** Not determined.
- Partition Coefficient (n-octanol/water):** Not determined.
- Auto-ignition Temperature:** Not determined.
- Decomposition Temperature:** Not determined.
- Viscosity:** Not determined.
- Other Information:** Not determined.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal temperature conditions and recommended use.
Possible Hazardous Reactions:	Not available.
Conditions to Avoid:	Contact with incompatible materials.
Incompatible Materials:	Ammonia, 304 stainless steel, carbon steel or aluminum containers.
Hazardous Decomposition Products:	Oxides of carbon, smoke, fumes.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: Irritation to skin and eyes.

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure:

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: No components of this product are listed by NTP, IARC, or OSHA.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity: Eyes

Numerical Measures of Toxicity:

Product: Not determined.

Component:

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Diethylenetriamine Penta (methylenephosphonic acid)	>4,164 mg/kg (rat)	>4,605 mg/kg (rabbit)	Not established
2-Phosphonobutane-1,2,4-tricarboxylic acid	>6,500 mg/kg (rat)	>4,000 mg/kg (rat)	>1.979 mg/L;4h (rat)
Potassium hydroxide	214 mg/kg (rat)	Not established	Not established

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity:

Diethylenetriamine Penta (methylenephosphonic acid)

Fish: *Oncorhynchus mykiss*: LC50 = 180-252 mg/L; 96h

Invertebrates: *Daphnia magna*: EC50 = 242 mg/L; 48h

Aquatic Plants: Green algae: ErC50 > 10mg/L; 95h

2-Phosphonobutane-1,2,4-tricarboxylic acid

Fish: Golden orfe: LC50 >500 mg/L; 48h

Invertebrates: Water flea: EC50 = 1,071 mg/L; 48h

Aquatic Plants: Algae: EC50 = 1,081 mg/L; 72h

Potassium hydroxide

Fish: Mosquito fish: LC50= 80 mg/l; 96h

Invertebrates: *Daphnia magna*: EC50= 60 mg/l; 48h

Algae: *Selenastrum capricornutum*: ErC50= 61 mg/l;96h

Persistence and Degradability:

Not expected to persist in the environment.

Bioaccumulation:

Not expect to be a bioaccumulator. Readily biodegradable.

Mobility:

Not expected to have mobility.

Other Adverse Effects:

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 – DISPOSAL CONSIDERATIONS**Waste Treatment Methods:****Disposal of Wastes:**

Dispose of product in accordance with local, state, and federal regulations.

Contaminated Packaging:

Empty containers should be taken to an approved waste handling site for recycling or disposal.

Other Information:

None.

SECTION 14 – TRANSPORTATION INFORMATION**DOT:**

UN Number:	UN1814
Proper Shipping Name:	Potassium Hydroxide Solution
Hazard Class:	8, Corrosive
Packing Group:	III

SECTION 15 – REGULATORY INFORMATION**US Federal Regulations:**

TSCA: All ingredients of this product are listed in the TSCA inventory.

SARA 313: This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and Title 40 CFR 372.

Chemical Name	CAS Number	Percent Weight
None		

US State Regulations:

California: This product contains the following chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm: None.

SECTION 16 – OTHER INFORMATION**Issue Date:** December 2, 2022**Revision Date:**

Health	Flammability	Reactivity	Personal Protection
3	0	0	B

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate at the time of publication, Momar, Incorporated makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Momar, Incorporated's control; and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes; and they assume all risks of their use, handling, and disposal of the product or from the publications or use of, or reliance upon, information contained herein. This information relates only to the product designed herein and does not relate to its use in combination with any other material or in any other process.

AquaTrol 12420

Liquid Cooling Water Treatment

Principal Application:

AquaTrol 12420 is high performance blended product with a copper corrosion inhibitor for alkaline cooling water treatment programs. 12420 is specially formulated with a combination of ingredients to provide corrosion inhibition, scale control, effective dispersion of suspended solids along with a yellow metal corrosion inhibitor in moderate to high scaling cooling water treatment conditions.

Use Considerations

12420 provides complete scale and corrosion inhibition for high silica waters used as cooling system make-up. Conditions do exist which would warrant the use of Adjunct Products to supplement specific components of this product and provide maximum protection in the cooling system. 12420 requires continuous or proportional application by chemical metering pump to achieve desired results. Your AquaTrol Water Specialist will provide specific product selection and usage information.

Dosage & Control

Feed a sufficient quantity to maintain a residual of 100 ppb inert tracer in the recirculating cooling water. Product usage over any period will vary with the operating load of the cooling tower and control of system bleed-off. Your AquaTrol Water Specialist will recommend complete program controls and product dosages.

Feeding

For best results, 12420 must be fed into the recirculating water line using a chemical metering pump constructed of suitably resistant materials. Proportional feed is desired and is usually accomplished by electrically connecting the chemical pump in parallel with the make-up water meter. Intermittent feed is accomplished with an appropriate timing device. 12420 can be metered directly from the shipping container or may be diluted to any convenient strength with soft water or cooled condensate. Do not mix directly with other concentrated water treatment products.

Typical Properties

pH	12.5 – 13.5
Density	10.2 Pounds Per Gallon
Appearance	Clear, Amber Liquid
Odor	Mild Organic

Handling Storage & Safety

Use normal precautions for chemical handling. Wear appropriate apron, gloves, or other protective clothing. Always wear goggles or face shield for eye protection. Keep out of the reach of children. Avoid contact with eyes, skin, or clothing. Do not swallow. Read container labeling and Safety Data Sheet for more complete information on handling precautions. AquaTrol 12420 is available in 55, 35, 20, and 5-gallon non-returnable containers. Store at room temperature; protect from freezing and extreme heat. Keep container closed when not in use. Use promptly upon opening.

SECTION 1 - IDENTIFICATION

Product: AQUATROL® 12601

Recommended use of the chemical and restrictions on use:

Uses: Biocide, water treatment chemical.

List of advices against: Not available.

Details of the supplier of the Safety Data Sheet:

Momar, Inc.
1830 Ellsworth Industrial Dr.
Atlanta, Ga. 30318
404-355-4580
800-556-3967
www.momar.com

Emergency Telephone Number (INFOTRAC): North America: 1-800-535-5053
International: 1-352-323-3500

SECTION 2 – HAZARD IDENTIFICATION

Classification:	Oral Toxicity:	4
	Skin Corrosion/Irritation:	2
	Eye Damage/Irritation:	2A
	Specific Target Organ Toxicity (Single Exposure):	3

Signal Word: Warning.

Hazard Statements: Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.

Pictograms:



Precautionary Statements:

Prevention: Wash hands and all exposed skin thoroughly after handling.
Wear eye protection/face protection.
Avoid breathing fumes/gas/mist/vapors/sprays.
Use only outdoors or in a well-ventilated area.
Do not eat, drink, or smoke when using this product.
Wear protective gloves.

Response: If on skin: Wash with plenty of water and soap.
If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
If in eyes: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor/hospital if you feel unwell.
Rinse mouth.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal: Dispose of contents/container to approved waste disposal plant.

Other Hazards: None known.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Sodium Hypochlorite	7681-52-9	11-14
Sodium Hydroxide	1310-73-2	1-5

SECTION 4 – FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water for at least 15-20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. If irritation persists, get medical attention.

Inhalation: Get medical attention immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give large amounts of water. Get medical attention immediately.

Most Important Symptoms and Effects:

Acute: Corrosive to skin and eyes, can cause burns.

Delayed: Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis.

Indication of Any Immediate Medical Attention and Special Treatment Needed: None known.

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Product is nonflammable. Use dry chemical, carbon dioxide, water spray, or alcohol resistant foam. Do not use Mon Ammonium Phosphate (MAP) type extinguishers directly on this product.

Specific Hazards Arising from the Substance or Product: May release toxic gases.

Hazardous Combustion Products: None known.

Protective Equipment and Precautions for Firefighters: Wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Additional protective clothing must be worn with to prevent personal contact with this material. Those items include but are not limited to boots, gloves, hard hat, splash proof

goggles, full face shield and impervious clothing. Use water with caution and in flooding amounts.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid contact with skin and eyes. Wear protective clothing.

Environmental Precautions: Keep out of sewers and drains without proper permits. Spills should be diked and absorbed. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

Methods and Materials for Containment and Cleaning Up: Absorb in vermiculite, dry sand, or earth, and place in containers. Collect and reclaim or dispose of in sealed containers in a licensed waste facility. Liquid material may be removed with a vacuum truck. Containers with spillage must be properly labeled with correct contents and hazard symbol.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spilling, skin, and eye contact. Wash thoroughly after handling. Use only with adequate ventilation. For industrial or professional use only. KEEP OUT OF REACH OF CHILDREN.

Conditions for Safe Storage: Store in a cool dry place. Keep locked up. Store container tightly closed. Protect from freezing.

Incompatibilities: Avoid contact with strong acids, aluminum, or tin.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Sodium hydroxide	2 mg/m3	2 mg/m3	10 mg/m3 IDLH

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: As needed for vapors and mists.

Skin and Body: Chemical apron and gloves.

Eye Protection: Recommended.

Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Amber tinted liquid.

Odor Threshold: Not determined.

pH: 11.0-12.0

Freezing Point: 32°F

Boiling Point: 212°F

Flash Point: None.

Evaporation Rate (BUAC=1):	Not determined.	
Flammability:	Product is not flammable.	
Flammability or Explosion Limits:	Upper: Not applicable.	Lower: Not applicable.
Vapor Pressure:	Not determined.	
Specific Gravity:	1.23	
Solubility in Water:	Complete.	
Solubility in Other Solvents:	Not applicable.	
Partition Coefficient (n-octanol/water):	Not determined.	
Auto-ignition Temperature:	Not determined.	
Decomposition Temperature:	Not determined.	
Viscosity:	10 cps	
Other Information:	Not determined.	

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal temperature conditions and recommended use.
Possible Hazardous Reactions:	Can react with strong acids and aluminum.
Conditions to Avoid:	Avoid excessive heat.
Incompatible Materials:	Strong acids, aluminum, and tin.
Hazardous Decomposition Products:	Oxides of potassium and carbon.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
X		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: Redness, irritation, and burning of skin, burning of eyes.

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure:

Sensitization:	Not a skin sensitizer.
Germ Cell Mutagenicity:	Not classified.
Carcinogenicity:	No components of this product are listed by NTP, IARC, or OSHA.
Reproductive Toxicity:	Not classified.
Specific Target Organ Toxicity:	Not classified.

Numerical Measures of Toxicity:

Product:	Not determined.
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Component:

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sodium Hypochlorite	8200 mg/kg (rat)	10000 mg/kg (rabbit)	No data available

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Sodium Hypochlorite LC50, 96 hr, Fish 0.044-0.144 mg/l
EC50, 24 hr, Daphnia 0.07-0.7 mg/l
ErC50, 24 hr, Algae 0.6 mg/l

Persistence and Degradability: This material is believed not to persist in the environment. This material is inorganic and not subject to biodegradation.

Bioaccumulation: This material is not expected to bioconcentrate in organisms.

Mobility: Not available.

Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with local, state, and federal regulations. May be subject to disposal regulations: U.S. EPA 40 CFR 261 Hazardous Waste Number: D002.

Contaminated Packaging: Empty containers should be triple rinsed and taken to an approved waste handling site for recycling or disposal.

Other Information: None.

SECTION 14 – TRANSPORTATION INFORMATION

DOT:

UN Number: UN1791
Proper Shipping Name: Hypochlorite solutions
Hazard Class: 8
Packing Group: III

SECTION 15 – REGULATORY INFORMATION

US Federal Regulations:

TSCA: All ingredients of this product are listed in the TSCA inventory.

SARA 313: This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and Title 40 CFR 372.

Chemical Name	CAS Number	Percent Weight
None		

CERCLA 103: If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Chemical Name	CAS Number	RQ
Sodium Hydroxide	1310-73-2	1000 lbs
Sodium Hypochlorite	7681-52-9	100 lbs

US State Regulations:

California: This product contains the following chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm: None.

SECTION 16 – OTHER INFORMATION

Issue Date: January 9, 2014

Revision Date: January 25, 2022

Health	Flammability	Reactivity	Personal Protection
3	0	0	C

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate at the time of publication, Momar, Incorporated makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Momar, Incorporated's control; and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes; and they assume all risks of their use, handling, and disposal of the product or from the publications or use of, or reliance upon, information contained herein. This information relates only to the product designed herein and does not relate to its use in combination with any other material or in any other process.

AquaTrol 12601

Liquid Oxidizing Microbiocide

- Contains 12.5% sodium hypochlorite
- Disinfectant and sanitizer
- EPA registered: 148-1288-1553

Principal Application:

AquaTrol 12601 is an oxidizing biocide use for microbiological control in many different applications.

Use Considerations

AquaTrol 12601 can be used to treat fouling of cooling tower and evaporative condenser water, in disinfection of individual drinking water systems, as a fruit, vegetable and egg wash, to sanitize nonporous food contact surfaces, and to disinfect nonporous non-food contact surfaces. **AquaTrol 12601** is also authorized by the USDA for use in federally inspected meat and poultry plants.

Dosage & Control

Feed 40-80 ppm of **AquaTrol 12601** to maintain 0.5-1.0 ppm free available chlorine. Your AquaTrol Water Specialist will recommend complete program controls and product dosages.

Feeding

AquaTrol 12601 should be fed into the recirculating water line using a chemical metering pump constructed of suitable resistant materials. This product should be metered directly from the shipping container. Do not mix directly with other concentrated water treatment products.

Typical Properties

Appearance:	Yellow Clear Liquid
Odor:	Chlorine
pH (neat):	13.0
Density:	10.2 Pounds per Gallon

Handling Storage & Safety

Use normal precautions for chemical handling. Wear appropriate apron, gloves, or other protective clothing. Always wear goggles or face shield for eye protection. Keep out of the reach of children. Avoid contact with eyes, skin, or clothing. Do not swallow. Read container labeling and Safety Data Sheet for more complete information on handling precautions. AquaTrol **12601** is available in 55-, 35-, 20-, and 5-gallon non-returnable containers. Store at room temperature; protect from freezing and extreme heat. Keep container closed when not in use. Use promptly upon opening.

ALBEMARLE®

SAFETY DATA SHEET

STABROM® 909 Biocide

Preparation Date : 24-Apr-2015

Revision Date: 07-Jan-2019

Revision Number 4.01

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier

Product Name STABROM® 909 Biocide

Other means of identification

Chemical Family Stabilized bromine biocide, aqueous solution
CAS-No Mixture

Recommended use of the chemical and restrictions on use

General function Water treatment chemical.
Uses advised against No information available

Details of the supplier of the safety data sheet

Company Albemarle Corporation
451 Florida Street
Baton Rouge, LA 70801

For Non-Emergency 800-535-3030

'Competent Body for SDS' HSE@Albemarle.com

Emergency telephone number

Emergency Telephone Numbers In case of emergency, call Albemarle emergency response at +1 225 344 7147

2. HAZARDS IDENTIFICATION

Classification

Skin Corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Acute aquatic toxicity	Category 2
Corrosive to metals	Category 1

Label elements

Emergency Overview

Danger

Hazard Statements

Causes severe skin burns and eye damage
Toxic to aquatic life
May be corrosive to metals



Physical state Liquid**Color** Yellow. Orange.**Odor** Mild.**Prevention**

Do not breathe dust/fume/gas/mist/vapors/spray
 Wash face, hands and any exposed skin thoroughly after handling
 Wear protective gloves/protective clothing/eye protection/face protection
 Avoid release to the environment
 Keep only in original container

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 Immediately call a POISON CENTER or doctor/physician
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
 Wash contaminated clothing before reuse
 IF INHALED: Remove person to fresh air and keep comfortable for breathing Immediately call a POISON CENTER or doctor/physician
 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
 Absorb spillage to prevent material damage

Storage

Store locked up
 Store in corrosive resistant container with a resistant inner liner

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

May be harmful if swallowed. May be harmful in contact with skin.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture

Mixture

Component	CAS-No	Weight %
Water	7732-18-5	60-70
Halogenated Complex	Proprietary.	18-20
Sodium hydroxide	1310-73-2	<10

Note: The exact concentrations of the above listed chemicals are being withheld as a trade secret.

4. FIRST AID MEASURES

First aid measures**Eye contact**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison control center or doctor for treatment advice.

Skin contact

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor/physician.

Inhalation

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

Ingestion

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed**Symptoms**

Causes severe skin burns and eye damage.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media No information available.

Specific Hazards Arising from the Chemical

Combustion/explosion hazards No information available.

Hazardous Combustion Products Bromine, Chlorine.

Explosion Data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Protective Equipment and Precautions for Firefighters

In the event of fire and/or explosion do not breathe fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Do not breathe dust/fume/gas/mist/vapours/spray. Wash thoroughly after handling Use personal protective equipment. Keep only in original container

Environmental Precautions

Environmental precautions Contain any spill with dikes or absorbents to prevent migration and entry into sewers or streams. Large spills should be collected mechanically (remove by pumping) for disposal. May require excavation of contaminated soil. Take up small spills by first diluting with water and then using a dehalogenating agent such as sodium thiosulfate solution.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, universal binder, sawdust)

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray Wash face, hands and any exposed skin thoroughly after handling Use personal protective equipment as required

Conditions for safe storage, including any incompatibilities

Storage Avoid freezing, excessive heat or exposure to light, especially direct sunlight. If heating is necessary to prevent freezing, care must be taken to prevent overheating. Precautions should be taken to ensure that the average product temperature is maintained below 43 °C. Temperature monitoring is recommended. At elevated temperatures, self-heating can lead to vigorous gas generation and over-pressurization of storage containers if appropriate controls are not in place. Avoid exposure of this product to incompatible materials/chemicals (see Stability and Reactivity section). Use of incompatible materials can promote the exothermic decomposition of the product. In extreme cases, this could result in vigorous gas formation and over-pressurization of the storage container. STORAGE CONTAINER: Vented and opaque containers: As the product ages, activity is gradually lost and pressure can build-up in the headspace

(nitrogen); therefore, the product should be stored in vented containers. Product should also be stored in opaque containers to prevent exposure to light. To maximize product shelf life, store the product in an opaque container, in a cool, dry, well-ventilated area. Store locked up. Store in corrosive resistant container with a resistant inner liner.

Incompatible Materials

This product is strongly basic and an oxidizing agent. Avoid contact with alcohols, aldehydes, strong reducing agents, strong oxidizers, acids, ammonia-containing products, and common metals such as steel, aluminum, iron and copper. Use of incompatible materials can promote the exothermic decomposition of the product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**Exposure Guidelines**

Component	CAS-No	ACGIH TLV (TWA)	OSHA PEL (TWA)	NIOSH IDLH
Water	7732-18-5	-	-	-
Halogenated Complex	-	-	-	-
Sodium hydroxide	1310-73-2	Ceiling: 2 mg/m ³	TWA: 2 mg/m ³ (vacated) Ceiling: 2 mg/m ³	IDLH: 10 mg/m ³ Ceiling: 2 mg/m ³

Component	CAS-No	Alberta	British Columbia	Ontario	Quebec
Water	7732-18-5	-	-	-	-
Halogenated Complex	-	-	-	-	-
Sodium hydroxide	1310-73-2	Ceiling: 2 mg/m ³	Ceiling: 2 mg/m ³	CEV: 2 mg/m ³	Ceiling: 2 mg/m ³

Other information

Wear suitable protective clothing.

Appropriate engineering controls**Engineering Controls**

Use only in well-ventilated areas.

Individual protection measures, such as personal protective equipment**Eye/face Protection**

Chemical goggles or face shield with safety glasses.

Skin Protection

Wear protective gloves/clothing.

Hand protection

Gloves resistant to chemical permeation.

Respiratory protection

None under normal conditions.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Color	Yellow. Orange.
Odor	Mild.
Odor Threshold	No data available
Molecular Weight	No data available
pH	12.4 - 14.0
Melting point/freezing point	ca 0 °C / 32 °F
Boiling Point/Range	ca 106 °C / 223 °F
Flash Point	No data available.
Evaporation Rate	No data available.
Flammability (solid, gas)	No data available
Flammability Limit in Air	
Upper flammability limit:	No data available
Lower flammability limit:	No data available

Vapor Pressure	19 mm Hg (25°C)
Vapor Density	No data available
Density	1.29 - 1.37 (25°C)
Solubility(ies)	
Water Solubility	Miscible.
Solubility in other solvents	No data available
Partition coefficient	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Viscosity, kinematic	2 cSt (25°C)
Dynamic viscosity	No data available
Explosive Properties	None
Oxidizing Properties	None

10. STABILITY AND REACTIVITY

Reactivity Hazard	No data available.
Stability	No information available
Hazardous Reactions	No hazardous reaction expected under normal handling.
Hazardous Polymerization	None under normal processing.
Conditions to Avoid	Extremes of temperature and direct sunlight. Keep away from heat. Freezing.
Materials to avoid	This product is strongly basic and an oxidizing agent. Avoid contact with alcohols, aldehydes, strong reducing agents, strong oxidizers, acids, ammonia-containing products, and common metals such as steel, aluminum, iron and copper. Use of incompatible materials can promote the exothermic decomposition of the product.
Hazardous decomposition products	Bromine, Chlorine.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Not expected to be acutely toxic.
Eye contact	Causes severe burns.
Skin contact	Causes severe burns.
Ingestion	May be harmful if swallowed.

Potential Health Effects

Acute Effects

Skin Corrosion/irritation	Data obtained from tests on used product. Skin irritation. (rabbit). (4 hr): Causes severe burns.
Serious eye damage/eye irritation	Causes severe eye damage.
Respiratory irritation	No data available
Sensitization:	Data obtained from tests on used product: Buehler Test. (guinea pig): Not sensitizing.
STOT - single exposure	No information available.

Chronic Effects

Mutagenic Effects	No information available.
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Carcinogenicity

There are no known carcinogenic chemicals in this product.

Component	CAS-No	ACGIH Carcinogens	IARC	NTP	OSHA Carcinogens
Water	7732-18-5	-	-	-	-
Halogenated Complex	-	-	-	-	-
Sodium hydroxide	1310-73-2	-	-	-	-

Reproductive Effects No information available.

STOT - repeated exposure No information available.

Chronic Effects No information available

Aspiration hazard No information available.

Numerical measures of toxicity**Product Information**

Data obtained from tests on used product:

LD50 Oral: Rat Oral LD50: 2491 mg/kg

LD50 Dermal: Rat Dermal LD50: > 2000 mg/kg

Inhalation LC50: Rat Inhalation LC50: > 20.37 mg/L (4h) (aerosol)

Component Information

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life.

LC50/96h/fish: 3.8 mg whole material/L (Bluegill sunfish)

EC50/48h/Daphnia : 4.8 mg whole material/L (Waterflea Daphnia magna)

IC50/96-hour: 2.6 mg whole material/L (Unicellular Green Alga, Selenastrum capricornutum)

Persistence/Degradability Inorganic substance.

Bioaccumulation/ Accumulation Not likely to bioaccumulate.

Mobility in Environmental Media No information available.

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Method Dispose in a safe manner in accordance with local/national regulations.

Contaminated Packaging Do not reuse container.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name Corrosive Liquids, Basic, Inorganic, N.O.S. (Halogenated Complex, Sodium Hydroxide)
Hazard Class 8
UN No. 3266
Packing Group III
Description UN 3266 Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide), 8, III

TDG

This material is considered as Dangerous Goods per regulations of Transport Canada. The use of the above US DOT information from US 49 CDR regulations is allowed for shipments that originate in the United States.

IMDG/IMO

IMO Class 8
Packing Group III
UN-No 3266
IMO Labelling and Marking 8
Proper Shipping Name Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide)
EmS F-A, S-B
Marpol - Annex II Not determined
Marpol - Annex III Unregulated
Transport Description UN 3266 Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide), 8, III

IATA/ICAO

IATA/ICAO Class 8
Packing Group III
UN-No 3266
IATA/ICAO Labelling/Marking 8
Passenger Aircraft Forbidden (Product is shipped in containers with vented caps)
Cargo aircraft only Forbidden (Product is shipped in containers with vented caps)
Proper shipping name Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide)
Transport Description UN 3266 Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide), 8, III

15. REGULATORY INFORMATION

International Inventories	TSCA	DSL	NDSL	AICS	EINECS	ENCS	KECL	PICCS	IECSC	NZIoC	TCSI
STABROM® 909 Biocide	-	-	-	X	-	-	X	X	X	X	-

(X) Complies (-) Does not Comply

THIS MATERIAL IS EXEMPT FROM THE TOXIC SUBSTANCES CONTROL ACT (15 USC 2601-2629)

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization

Acute Health Hazard Yes
Chronic Health Hazard No
Fire Hazard No
Sudden Release of Pressure Hazard No
Reactive Hazard No

Reportable and Threshold Planning Quantities

The following components have RQs and/or TPQs under SARA and/or CERCLA

Component	CERCLA RQ, lbs	SARA 302 RQ, lbs	SARA 302 TPQ, lbs
Sodium hydroxide (CAS #: 1310-73-2)	1000 lb	-	-

State Right-to-Know

This product contains the following chemicals regulated in the states listed below.

Component	California Prop. 65	New Jersey	Massachusetts	Pennsylvania
Sodium hydroxide (CAS #: 1310-73-2)	-	X	X	X

16. OTHER INFORMATION

NFPA	Health 3	Flammability 0	Instability 0	Physical Hazards -
HMIS	Health 3	Flammability 0	Physical Hazards 0	

Prepared By

Health & Environment Department Albemarle Corporation

FOR ADDITIONAL NONEMERGENCY PRODUCT INFORMATION, CONTACT:

HEALTH AND ENVIRONMENT DEPARTMENT
ALBEMARLE CORPORATION
451 FLORIDA ST.
BATON ROUGE, LA. 70801
(800) 535-3030

Preparation Date :

24-Apr-2015

Revision Date:

07-Jan-2019

Disclaimer:

The information contained herein is accurate to the best of our knowledge. The Company makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances.

End of Safety Data Sheet

STABROM® 909

Biocide

DESCRIPTION

STABROM® 909 biocide is a single-feed, stabilized bromine-based biocide for industrial water treatment applications. Product halogen activity is approximately 15% as Br₂, equivalent to approximately 7% Cl₂.

APPLICATIONS

STABROM® 909 biocide is EPA-registered for use as a fungicide, algicide, slimicide and microbiocide in recirculating cooling and process water systems, heat transfer systems (such as hydrostatic sterilizers and retorts, pasteurizers and warmers, and batch and continuous cookers), air washers and industrial scrubbing systems, containerized ponds and decorative fountains, industrial once-through cooling water systems, pulp and paper mills and wastewater systems.

It is also EPA-registered to control biofilm deposits from pumps, pipework, heat exchangers and filters associated with industrial water treatment systems.

Please contact Albemarle Corporation if you have any questions regarding STABROM® 909 biocide applications.

SPECIFICATIONS

Total halogen as Br ₂ , wt%	14.5 - 15.9
Appearance	clear yellow to clear orange liquid
pH	12.4 - 14.0
Specific gravity @ 20 °C/ 20 °C	1.295 - 1.370

TYPICAL PROPERTIES*

Density, lb/gal @ 77 °F (25 °C)	0.8 - 11.4
Density, g/mL @ 77 °F (25 °C)	1.29 - 1.37
Boiling point, °F (°C), approx.	223 (106)
Freezing point, °F (°C) approx.	32 (0)
Viscosity, cSt @ 77 °F (25 °C)	2
Vapor pressure, mm Hg @ 77 °F (25 °C)	19
Solubility in water	complete
Odor	mild, sweet

**These properties are typical but do not constitute a specification either in part or as a whole. Specification data is available on request from sales, customer service or customer technical service.*

STORAGE INFORMATION

STABROM® 909 biocide should be stored away from incompatible materials. To maximize product shelf life, the product should be stored in a cool, dry, well-ventilated area in opaque containers, to minimize exposure to light and especially sunlight. As the product ages, activity is gradually lost and nitrogen pressure can build up in the headspace; therefore, the product should be stored in vented containers.

Avoid freezing, excessive heat or exposure to light, especially direct sunlight. Heating of the product above what is needed for freeze protection should be avoided as it can accelerate decomposition. Temperature monitoring is recommended. Precautions should be taken to ensure that the average temperature of the product is maintained below 110 °F (~43 °C).

This product retains 95% of its initial activity for at least one year when stored properly at ambient temperatures (<80 °F / <~27 °C), and protected from light.

COMPATIBILITY

Compatible

STABROM® 909 biocide, at its end-use concentration, is compatible with commonly used materials of construction in cooling systems. In its neat form, at ambient temperatures, this product is compatible with titanium, Hastelloy® C-276, Monel 400, vinyl tubing, high density polyethylene, polypropylene, PVC, Viton®, Teflon®, Tygon® tubing, chlorobutyl rubber, Hypalon®, HALAR® ECTFE, Tefzel® ETFE, W.L. Gore GORE-TEX® GR, W.L. Gore UPG Style 800, and Garlock Gylon® Styles 3504, 3500, and 3510.

Incompatible

In its neat form, this product is not compatible with Buna-N rubber, neoprene, silicone rubber, Plasite® 4300 and 3070, nylon, aluminum, brass, carbon steel, copper, stainless steel and other common metals. This product is strongly basic and an oxidizing agent. Contact with organic materials such as alcohols and aldehydes, strong reducing agents, strong oxidizers, acids, and ammonia-containing products should be avoided. Use of incompatible materials can promote the exothermic decomposition of the product. In extreme cases, this could result in vigorous gas formation and over-pressurization of storage containers.

SAFETY AND HANDLING INFORMATION

For specific safety, handling and toxicity information, please refer to the current material safety data sheet.

REGULATORY INFORMATION

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. State registration is required prior to sale and distribution of this product.

U.S. EPA registration number: 3377-55



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SAFETY DATA SHEET
Bellacide® 337

1. Identification

Product identifier

Product name Bellacide® 337

Recommended use of the chemical and restrictions on use

Application Biocides for water treatment.

RECOMMENDED USE:

Details of the supplier of the safety data sheet

Supplier BWA Water Additives US LLC
1979 Lakeside Parkway
Suite 925, Tucker, GA30084.
T: (800) 600-4523 .
(Technical/commercial enquiries)
E: MSDS@wateradditives.com

Emergency telephone number

Emergency telephone CHEMTREC Phone: 1-800-424-9300

2. Hazard(s) identification

Classification of the substance or mixture

Physical hazards Not Classified

Health hazards Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318

Environmental hazards Aquatic Acute 1 - H400 Aquatic Chronic 3 - H412

Label elements

Hazard symbols



Signal word

Danger

Hazard statements

H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H400 Very toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Bellacide® 337

Precautionary statements

P264 Wash contaminated skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P301+P312 If swallowed: Call a poison center/ doctor if you feel unwell.
 P302+P352 If on skin: Wash with plenty of water.
 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P310 Immediately call a poison center/ doctor.
 P321 Specific treatment (see medical advice on this label).
 P330 Rinse mouth.
 P332+P313 If skin irritation occurs: Get medical advice/ attention.
 P362+P364 Take off contaminated clothing and wash it before reuse.
 P391 Collect spillage.
 P501 Dispose of contents/ container in accordance with national regulations.

Contains

DIDECYLDIMETHYLAMMONIUM CHLORIDE

3. Composition/information on ingredients

Mixtures

BRONOPOL (INN) CAS number: 52-51-7 M factor (Acute) = 10	5-10%
Classification Acute Tox. 4 - H302 Acute Tox. 4 - H312 Acute Tox. 3 - H331 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 STOT SE 3 - H335 Aquatic Acute 1 - H400 Aquatic Chronic 2 - H411	
DIDECYLDIMETHYLAMMONIUM CHLORIDE CAS number: 7173-51-5 M factor (Acute) = 10	1-5%
Classification Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Aquatic Acute 1 - H400 Aquatic Chronic 2 - H411	

The full text for all hazard statements is displayed in Section 16.

4. First-aid measures

Description of first aid measures

Inhalation

Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention.

Bellacide® 337

Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. Do not induce vomiting. Rinse mouth thoroughly with water. Get medical attention if symptoms are severe or persist. If in doubt, get medical attention promptly.
Skin Contact	Remove contaminated clothing. Rinse immediately with plenty of water. Get medical attention if symptoms are severe or persist after washing.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention.

Most important symptoms and effects, both acute and delayed

Inhalation	No specific symptoms known.
Ingestion	No specific symptoms known.
Skin contact	Causes skin irritation.
Eye contact	Risk of serious damage to eyes.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media Extinguish with the following media: Foam.

Advice for firefighters

Protective actions during firefighting Move containers from fire area if it can be done without risk. Control run-off water by containing and keeping it out of sewers and watercourses.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Follow precautions for safe handling described in this safety data sheet. For personal protection, see Section 8.

Environmental precautions

Environmental precautions Toxic to aquatic life with long lasting effects. To prevent release, place container with damaged side up. Do not discharge into drains or watercourses or onto the ground.

Methods and material for containment and cleaning up

Methods for cleaning up Contain spillage with sand, earth or other suitable non-combustible material. Avoid the spillage or runoff entering drains, sewers or watercourses. Collect spillage for reclamation or disposal in sealed containers via a licensed waste contractor. Containers with collected spillage must be properly labeled with correct contents and hazard symbol. Wash thoroughly after dealing with a spillage.

Reference to other sections For personal protection, see Section 8. For waste disposal, see section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Avoid spilling. Wear protective clothing as described in Section 8 of this safety data sheet. Do not get in eyes, on skin, or on clothing.

Conditions for safe storage, including any incompatibilities

Bellacide® 337

Storage precautions

Store in a tightly-closed, original container in a dry, cool, and well-ventilated place. Store at temperatures not exceeding 50°C /122°F. Protect from freezing and direct sunlight. If frozen: once thawed, agitate container vigorously to ensure the product is homogeneous. Store away from the following materials; alkalis, acids, cyanides, reducing agents, oxidizing materials and aluminum. Do not use containers made of Carbon steel. Keep separate from food, feeds, fertilizers, and other sensitive materials.

Specific end uses(s)

Specific end use(s)

The identified uses for this product are detailed in Section 1.

8. Exposure controls/Personal protection

Ingredient comments

No exposure limits known for ingredient(s).

Exposure controls

Protective equipment



Eye/face protection

Wear eye protection.

Hand protection

Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected.

Other skin and body protection

Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene measures

Use engineering controls to reduce air contamination to permissible exposure level. Provide eyewash station. No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products. Contaminated clothing should be placed in a closed container for disposal or decontamination.

Respiratory protection

Wear a suitable dust mask.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Clear liquid.
Color	Colorless.
Odor	Slight.
Odor threshold	Not available.
pH	5.0-6.0
Melting point	-1.2°C
Initial boiling point and range	Not available.
Boiling Point:	Not available
Freezing Point:	
Flash point	Not available.

Bellacide® 337

Evaporation rate	Not available.
Evaporation factor	Not available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	Not applicable.
Vapor pressure	No information available.
Vapor density	Not available.
Relative density	SG20/20: 1.0
Bulk density	No information available.
Auto-ignition temperature	Not available.
Decomposition Temperature	No information available.
Viscosity	Not available.
Explosive properties	Not considered to be explosive.
Oxidizing properties	Does not meet the criteria for classification as oxidizing.

10. Stability and reactivity

Reactivity	There are no known reactivity hazards associated with this product.
Stability	Stable at normal ambient temperatures.
Conditions to avoid	Avoid contact with the following materials: Oxidizing agents. Reducing agents. Alkalis.
Materials to avoid	Strong acids. Strong alkalis. Strong reducing agents.

11. Toxicological informationInformation on toxicological effectsAcute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 3,129.0

Species Rat

ATE oral (mg/kg) 500.0

Acute toxicity - dermal

ATE dermal (mg/kg) 21,568.63

Acute toxicity - inhalation

ATE inhalation (dusts/mists mg/l) 9.8

Skin corrosion/irritation

Skin corrosion/irritation Irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitization

Respiratory sensitization No information available.

Bellacide® 337**Skin sensitization****Skin sensitization**

Based on available data the classification criteria are not met.

Germ cell mutagenicity**Genotoxicity - in vitro**

Does not contain any substances known to be mutagenic.

Carcinogenicity**Carcinogenicity**

Does not contain any substances known to be carcinogenic.

Reproductive toxicity**Reproductive toxicity - fertility**

Does not contain any substances known to be toxic to reproduction.

Aspiration hazard**Aspiration hazard**

Not anticipated to present an aspiration hazard, based on chemical structure.

12. Ecological information**Ecotoxicity**

The product contains a substance which is very toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

13. Disposal considerations**Waste treatment methods****General information**

When handling waste, the safety precautions applying to handling of the product should be considered.

Disposal methods

Absorb in vermiculite, dry sand or earth and place into containers. Dispose of waste via a licensed waste disposal contractor. Dispose of waste product or used containers in accordance with local regulations

14. Transport information**General**

No other information known.

UN Number**UN No. (International)**

3082

UN No. (TDG)

3082

UN No. (IMDG)

3082

UN No. (ICAO)

3082

UN No. (DOT)

3082

UN proper shipping name**Proper shipping name
(International)**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 2-BROMO-2-NITROPROPANE-1,3-DIOL) 9, PG III

Proper shipping name (TDG)

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 2-BROMO-2-NITROPROPANE-1,3-DIOL) 9, PG III

Proper shipping name (IMDG)

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 2-BROMO-2-NITROPROPANE-1,3-DIOL) 9, PG III

Proper shipping name (ICAO)

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 2-BROMO-2-NITROPROPANE-1,3-DIOL) 9, PG III

Proper shipping name (DOT)

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 2-BROMO-2-NITROPROPANE-1,3-DIOL) 9, PG III

Bellacide® 337**Transport hazard class(es)**

Transport Labels 9
(International)

Transport labels**Packing group**

Packing group (International) III

DOT packing group III

Environmental hazards

Environmentally Hazardous Substance

**15. Regulatory information****Regulatory Status**

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label: DANGER Avoid contact with eyes, skin and clothing. Causes irreversible eye damage and skin burns. May be fatal if inhaled. Harmful if swallowed, inhaled or absorbed through skin. Do not breathe vapor or spray mist. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals. EPA Reg. No. 83451-29

Inventories**Canada - DSL/NDSL**

All the ingredients are listed on DSL.

Australia - AICS

All the ingredients are listed

JAPAN- IHSL

All the ingredients are listed

Japan MITI**Korea - KECI**

All ingredients are listed.

China - IECSC

All the ingredients are listed (Annex 1 only)

New Zealand - NZIOC

All the ingredients are listed

16. Other information**Issued by**

Italmatch Chemicals GB, +44(0)1618646699

Bellacide® 337**Revision date** 3/2/2020**Revision** 3**Supersedes date** 7/3/2019**SDS No.** 21747

Hazard statements in full

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

BELLACIDE® 337

Broad spectrum non-oxidizing biocide for Industrial Water Systems



Features:

- Compatible with halogens
- Provides a more cost-effective treatment option for open and closed cooling systems.
- Outperforms market standard biocides

Suggested Applications:

- Cooling towers and evaporative coolers.
- Brewery pasteurizers, can warmers, and hydrostatic sterilizers and retorts.
- Air washers and industrial air scrubbing systems

General Product Information:

Bellacide® 337 is a highly effective, broad spectrum biocide which offers superior activity against bacteria and algae compared to other non-oxidizing biocides

Bellacide® 337 is effective against biofilm and is compatible with scale and corrosion inhibitors and fluorescent tracers (PTSA).

Benefits:

- Broad spectrum activity means one product needed for any system.
- Reduced inventory and streamlined operations.
- Less operator training.
- Better cost effectiveness than other non-oxidizing biocides due to low use concentration.
- Flexible and broadly applicable treatment option.
- Effective at low temperatures.

Physical Properties

	Bellacide® 337
Appearance	Clear, colorless to pale yellow liquid
pH @ 20°C	2.0 – 6.0
Specific gravity @ 20/20°C	0.98 – 1.02
Freezing point	-12°C (10°F)
Viscosity @ 20° (cSt)	1.1 – 1.2

Product Properties

- Miscible in water
- Avoid storage at low temperatures (below 4°C/39°F) as precipitation can occur

Storage, Handling & Toxicity:

Standard precautions should be observed when handling this and all organic chemicals. Consult the SDS, safety placards, and/or product label before use. Use proper personal protective equipment as advised.

Packaging:

Bellacide® 337 is available in various pack sizes. Contact your sales representative for more details.

More information:

If you would like to obtain more detailed information about Italmatch products or are interested in obtaining a sample for evaluation in your system, please contact your nearest Italmatch representative or visit our website www.italmatch.com

Information contained in this publication is true and accurate to the best of our knowledge but cannot be considered as any guarantee of correctness unless when explicitly specified. Since the conditions of its use are not under our control, we refuse any liability with regard to the use of products, data or suggestions, including patent infringement.



SAFETY DATA SHEET

Nutrition & Biosciences USA 1, LLC

Product name: AQUCAR™ GA 45 Water Treatment Microbiocide

Issue Date: 10/15/2018

Print Date: 01/08/2021

Nutrition & Biosciences USA 1, LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: AQUCAR™ GA 45 Water Treatment Microbiocide

Recommended use of the chemical and restrictions on use

Identified uses: For biocidal applications. For industrial use only.

COMPANY IDENTIFICATION

Nutrition & Biosciences USA 1, LLC
3490 Winton Place
Rochester NY 14623
UNITED STATES

Customer Information Number:

1-800-526-3649
sds.enablers@dupont.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 1-800-424-9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity - Category 3 - Oral

Acute toxicity - Category 2 - Inhalation

Skin corrosion - Category 1B

Serious eye damage - Category 1

Respiratory sensitisation - Category 1

Skin sensitisation - Category 1

Specific target organ toxicity - single exposure - Category 3

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

Toxic if swallowed.

Causes severe skin burns and eye damage.

May cause an allergic skin reaction.

Fatal if inhaled.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause respiratory irritation.

Precautionary statements

Prevention

Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

Wash skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing should not be allowed out of the workplace.

Wear protective gloves/ protective clothing/ eye protection/ face protection.

Wear respiratory protection.

Response

IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

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

If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

Wash contaminated clothing before reuse.

Storage

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Water	7732-18-5	<= 55.0 %
Glutaraldehyde	111-30-8	45.0%

4. FIRST AID MEASURES

Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be immediately available.

Eye contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: If the person is fully alert and cooperative, have the person rinse mouth with plenty of water. In cases of ingestion have the person drink 4 to 10 ounces (120-300 mL) of water. Do not induce vomiting. Do not attempt mouth rinse if the person has respiratory distress, altered mental status, or nausea and vomiting. Call a physician and/or transport to emergency facility immediately. If swallowed, DO NOT induce vomiting.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Maintain adequate ventilation and oxygenation of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Glutaraldehyde may transiently worsen reversible airways obstruction including asthma or reactive airways disease. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after

decontamination. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Probable mucosal damage may contraindicate the use of gastric lavage. Exposure to vapors may result in skin sensitization. In sensitized individuals, re-exposure to very small amounts of vapor, mist, or liquid may cause a severe allergic skin reaction. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture

Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Avoid making contact with spilled material, glutaraldehyde will be absorbed by most shoes. Always wear the correct protective equipment, consisting of splashproof monogoggles, or both safety glasses with side shields and a wraparound full-face shield, appropriate gloves and protective clothing. A self-contained breathing apparatus or respirator and absorbents may be necessary, depending on the size of the spill and the adequacy of ventilation. Small spills: Wear the correct protective equipment and cover the liquid with absorbent material. Collect and seal the material and the dirt that has absorbed the spilled material in polyethylene bags and place in a drum for transit to an approved disposal site. Rinse away the remaining spilled material with water to reduce odor, and discharge the rinsate into a municipal or industrial sewer. Large spills: In case of nasal and respiratory irritation, vacate the room immediately. Personnel cleaning up should be trained and equipped with a self-contained breathing apparatus, or an officially approved or certified full-face respirator equipped with an organic vapor cartridge, gloves, and clothing impervious to glutaraldehyde, including rubber boots or shoe protection. Deactivate with sodium bisulfite (2-3 parts (by weight) per part of active substance glutaraldehyde), collect the neutralized liquid and place in a drum for transit to an approved disposal site.

7. HANDLING AND STORAGE

Precautions for safe handling: Do not spray or aerosolize the undiluted form of the product. Full personal protective equipment (including skin covering and full-face SCBA respirator) is required for dilutions or mixtures of the product used in a spray application.

Keep out of reach of children. Do not get in eyes, on skin, on clothing. Do not swallow. Avoid prolonged or repeated contact with skin. Avoid breathing vapor. Keep container closed. Use with adequate ventilation. Wear goggles, protective clothing and butyl or nitrile gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Do not store in: Aluminum. Carbon steel. Copper. Mild steel. Iron.

Storage stability

Shelf life: Use within 18 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
Glutaraldehyde	ACGIH	C	0.05 ppm
	ACGIH	C	DSEN, RSEN

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Examples of acceptable glove barrier materials include: Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Use chemical protective clothing resistant to this material, when there is any possibility of skin contact.

Respiratory protection: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For operations such as spraying/misting and other conditions such as emergencies where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

The following should be effective types of air-purifying respirators: Full-face Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Color	Colorless
Odor	Fruity
Odor Threshold	< 1 ppb <i>Literature</i>
pH	3.1 - 4.5 <i>ASTM E70</i>
Melting point/range	Not applicable to liquids
Freezing point	-17 °C (1 °F) <i>Calculated.</i>
Boiling point (760 mmHg)	100.7 °C (213.3 °F) <i>OECD Test Guideline 103</i>
Flash point	closed cup <i>Tag Closed Cup ASTM D56</i> None
Evaporation Rate (Butyl Acetate = 1)	1.0 <i>Calculated.</i>
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	0.3 mmHg at 20 °C (68 °F) <i>OECD Test Guideline 104</i> Active ingredient
Relative Vapor Density (air = 1)	1.0 <i>Calculated.</i>
Relative Density (water = 1)	1.118 at 20 °C (68 °F) <i>OECD 109</i>

Water solubility	100 % at 20 °C (68 °F) <i>Calculated.</i>
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	No test data available
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures.

Incompatible materials: Avoid contact with: Amines. Ammonia. Strong acids. Strong bases. Strong oxidizers. Avoid contact with metals such as: Aluminum. Carbon steel. Copper. Iron. Mild steel.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Moderate toxicity if swallowed. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. Swallowing may result in gastrointestinal irritation or ulceration. Excessive exposure may cause: Headache. Dizziness. Anesthetic effects. Drowsiness. Unconsciousness. Other central nervous system effects.

As product: Single dose oral LD50 has not been determined.

For the 50% aqueous solution:

LD50, Rat, male and female, 200 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For the 50% aqueous solution:
LD50, Rabbit, male and female, > 2,000 mg/kg

Acute inhalation toxicity

Vapor from heated material or mist may cause serious adverse effects, even death. Vapor may cause severe irritation of the upper respiratory tract (nose and throat). Case reports and medical surveys link asthma and respiratory irritation to glutaraldehyde exposure, primarily in medical personnel. Asthma-like symptoms may occur in people prone to respiratory disorders or other allergies. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

As product: The LC50 has not been determined.

For the 50% aqueous solution:
LC50, Rat, female, 4 Hour, dust/mist, 0.28 mg/l
For the 50% aqueous solution:
LC50, Rat, male, 4 Hour, dust/mist, 0.35 mg/l

Skin corrosion/irritation

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization

Skin contact may cause an allergic skin reaction in a small proportion of individuals.

Has caused allergic skin reactions when tested in guinea pigs.

Has demonstrated the potential for contact allergy in mice.

May cause allergic respiratory response in a small proportion of individuals.

Specific Target Organ Systemic Toxicity (Single Exposure)

Material is corrosive. Upper respiratory tract irritation or corrosivity may be expected.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Repeated skin contact may result in absorption of amounts which could cause death.

May cause nausea and vomiting.

Carcinogenicity

In a NTP chronic 2-year inhalation study on glutaraldehyde, no carcinogenicity was seen in rats or in mice. An increase in large granular lymphocytes in Fischer rats dosed with glutaraldehyde for two years was random or a secondary carcinogenic effect due to a modifying influence on the occurrence of this common neoplasm in this rat strain.

Teratogenicity

For glutaraldehyde: Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Did not cause birth defects in laboratory animals.

Reproductive toxicity

For glutaraldehyde: In animal studies, did not interfere with reproduction.

Mutagenicity

For glutaraldehyde: In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were predominantly negative.

Aspiration Hazard

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity**Glutaraldehyde****Acute toxicity to fish**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, Cyprinodon variegatus (sheepshead minnow), 96 Hour, 32 mg/l

Acute toxicity to aquatic invertebrates

LC50, copepod Acartia tonsa, semi-static test, 48 Hour, 3 mg/l

Acute toxicity to algae/aquatic plants

ErC50, Desmodesmus subspicatus (green algae), 72 Hour, 0.6 mg/l

NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 0.025 mg/l

ErC50, Skeletonema costatum (marine diatom), Static, 72 Hour, 0.61 mg/l

NOEC, Skeletonema costatum (marine diatom), Static, 72 Hour, 0.071 mg/l

Toxicity to bacteria

EC50, activated sludge, > 50 mg/l, OECD 209 Test

Chronic toxicity to fish

NOEC, Rainbow trout (Oncorhynchus mykiss), semi-static test, 62 d, 1 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, water flea Daphnia magna, flow-through test, 21 d, number of offspring, 0.12 mg/l

Toxicity to Above Ground Organisms

Material is moderately toxic to birds on an acute basis (LD50 between 51 and 500 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

oral LD50, Anas platyrhynchos (Mallard duck), 408 - 466 mg/kg

dietary LC50, Colinus virginianus (Bobwhite quail), > 5,000 ppm

dietary LC50, Anas platyrhynchos (Mallard duck), > 5,000 ppm

Persistence and degradability**Glutaraldehyde**

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

Biodegradation: 73 %
Exposure time: 9 d
Method: OECD Test Guideline 301A or Equivalent
10-day Window: Not applicable
Biodegradation: 73 %
Exposure time: 28 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.92 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	28 %
10 d	57 - 63 %
20 d	72 - 74 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 2.74 Hour
Method: Estimated.

Bioaccumulative potential

Glutaraldehyde

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.333 Measured

Mobility in soil

Glutaraldehyde

Potential for mobility in soil is high (Koc between 50 and 150).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient (Koc): 120 - 500 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Corrosive liquids, toxic, n.o.s.(Glutaraldehyde)
UN number	UN 2922
Class	8 (6.1)
Packing group	II

Classification for SEA transport (IMO-IMDG):

Proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S.(Glutaraldehyde)
UN number	UN 2922
Class	8 (6.1)
Packing group	II
Marine pollutant	Glutaraldehyde
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Corrosive liquid, toxic, n.o.s.(Glutaraldehyde)
UN number	UN 2922
Class	8 (6.1)
Packing group	II

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Skin corrosion or irritation
Respiratory or skin sensitisation
Acute toxicity (any route of exposure)
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

This material does not contain any components with a CERCLA RQ.

Pennsylvania Worker and Community Right-To-Know Act:

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components
Glutaraldehyde

CASRN
111-30-8

California Prop. 65

This product contains a chemical that is at or below California Propositions 65's "safe harbor level" as determined via a risk assessment. Therefore, the chemical is not required to be listed as a Prop 65 chemical on the SDS or label.

United States TSCA Inventory (TSCA)

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number: 464-692

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive

Causes irreversible eye damage

Causes skin burns.

Harmful if inhaled

May be fatal if swallowed.

Harmful if absorbed through skin

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Causes asthmatic signs and symptoms in hyper-reactive individuals.

This pesticide is toxic to fish.

16. OTHER INFORMATION

Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact.

Revision

Identification Number: 11014427 / A749 / Issue Date: 10/15/2018 / Version: 9.1

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
C	Ceiling limit
DSEN, RSEN	Skin and respiratory sensitizer

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

Nutrition & Biosciences USA 1, LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The

information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

US

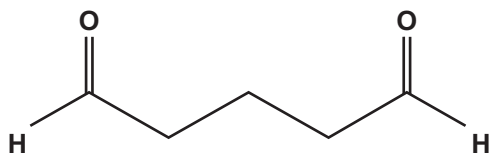


AQUCAR™ GA 45 Water Treatment Microbiocide

General

AQUCAR™ GA 45 Water Treatment Microbiocide is an aqueous solution of glutaraldehyde (CAS Reg. No. 111-30-8) containing varying levels of active ingredient. It is especially effective in controlling slime-forming bacteria, sulfate-reducing bacteria and algae in water cooling towers, air washers, pasteurizers, and other recirculating water systems.

Structure



Physical Properties

The following are typical properties of AQUCAR™ GA 45 Water Treatment Microbiocide; **they are not to be considered product specifications.**

Active, % Glutaraldehyde (w/w):.....	45
pH at 25°C:.....	3.1 to 4.5
Solubility in Water, 20°C:	Miscible
Boiling Point:.....	100.5°C/213°F
Freezing Point:	-17°C/1°F
Specific Gravity, at 20/20°C:	1.118
Vapor Pressure at 20°C:	0.2 mm Hg based on glutaraldehyde (0.27 hPa)

Applications/ Directions for Use

AQUCAR™ GA 45 Water Treatment Microbiocide is extremely effective in controlling biological fouling and microorganism populations in a variety of water systems. It can be used in both heating and cooling processes, and in open and closed recirculating systems. Some of the application areas in which it has been found to be effective are as follows:

Cooling Towers

AQUCAR™ GA 45 Water Treatment Microbiocide has been shown to reduce microorganism levels which lead to biofilm formation and loss of heat exchange efficiency. It will also remove slime and biofilm which can harbor disease-causing bacteria.

Auxiliary Water and Waste Water Systems

AQUCAR™ GA 45 Water Treatment Microbiocide controls odor-forming and slime-forming bacteria, fungi and algae in service and auxiliary water systems such as fire protection systems; pumps or screen bays; waste water and waste material disposal; holding or recovery systems such as storage tanks, storage piles, associated piping, settling ponds or lagoons; transport spillways or canals; and disposal wells.

Air Washers

AQUCAR™ GA 45 Water Treatment Microbiocide will break up slime and sludge found on mist eliminators and, because of its low vapor pressure, will not create odor problems.

Pasteurizers/Bottle Warmers

AQUCAR™ GA 45 Water Treatment Microbiocide has the ability to strip off corrosion-causing biofilm, as well as eliminate odor-causing bacteria. Since it is non-corrosive, overall system corrosion rates may be substantially reduced.

Treatment Recommendations

Slug doses at a point of uniform mixing are preferred, although continuous addition can be employed. Determine the size of the system in gallons or liters and add the appropriate amount of AQUICAR™ GA 45 Water Treatment Microbiocide. The frequency of addition will depend on the condition of the system and the precise treatment regimen should be adjusted according to the response of each individual system.

Food Additive Regulations

The product meets the requirements of the Food Additive Regulations listed below. Uses are subject to good manufacturing practices and any limitations which are part of the regulations. The information given here is for use as a general guideline. The regulations should be consulted for complete details. In some cases a product formulation may meet an FDA clearance and the use is not on the product label.

21 CFR 172.230(a)(3) Cleared for use as a cross-linking agent

21 CFR 173.320(b)(6) Chemicals for Controlling Microorganisms in Beet-Sugar Mills (max. 250 ppm active)

21 CFR 173.357(a)(2) Fixing agent in the immobilization of glucose isomerase enzyme preparations for use in manufacture of high fructose corn syrup.

21 CFR 175.105 (c)(5) Adhesives

21 CFR 176.170 (a)(5) Cleared for use as antimicrobial agent in pigment and filler slurries used in manufacture of paper and paperboard (max. 300 ppm active)

21 CFR 176.180 (b)(1) Components of Paper and Paperboard in Contact with Dry Food (max. 300 ppm active)

21 CFR 176.300 Slimicides

Special Features and Benefits

AQUICAR™ GA 45 Water Treatment Microbiocide, which controls microorganisms by reacting with the cell wall, has many important features:

- Ability to remove established biofilm and to inhibit regrowth
- Broad spectrum of activity - controls aerobic and anaerobic microorganisms and algae
- Chemically compatible with most common scale and corrosion inhibitors and dispersants
- Reduce populations of sessile microorganisms known to cause corrosion and reduce heat exchange efficiency
- Effective over a broad pH and temperature range
- Non-foaming
- Water-soluble; therefore, easy to mix into your water-based formulation
- Effective against organisms that produce H₂S, which causes corrosion and foul odors
- Active concentrations as low as 1 ppm can be measured using the Alden, Glutatest field test kit
- Can be transported and stored in bulk
- Compatible with chlorine
- Non-corrosive at end use concentrations
- Non-halogenated material

Product Performance

The evaluation of antimicrobial compounds has traditionally relied on measurements of efficacy against free-floating (planktonic) microorganisms. However, attention in recent years has begun to focus on the effects of microorganisms which adhere to surfaces, giving rise to types of deposits known as biofouling. These deposits contain not only colonies of microorganisms, but also a combination of cellular by-products, entrained debris, and inorganic materials. Biofilms can cause significant energy losses in water distribution systems as a result of increased fluid frictional resistance. In heat transfer equipment, biofilms can decrease heat transfer efficiency. Microbial fouling can occur under both aerobic and anaerobic conditions and can accelerate corrosion of metals and deterioration processes in wood.

AQUCAR™ GA 45 Water Treatment Microbiocide has shown substantial effectiveness in controlling microorganisms in water-handling systems where fouling and/or microbially influenced corrosion present problems. This utility has been demonstrated in both aerobic systems, such as recirculating cooling towers, and anaerobic systems, where sulfate-reducing bacteria cause corrosion. Combined field and laboratory data have substantiated the ability of AQUCAR GA 45 to both penetrate biofilms and destroy “protected” microbial cells. In addition to controlling microorganisms, AQUCAR GA 45 appears to accelerate the erosion rate of cells from the biofilm. When fouled systems are effectively treated with AQUCAR GA 45, biofilms are removed from the system. As a result, the systems operate more efficiently and corrosion rates are significantly reduced.

Table 1
Efficacy of
Glutaraldehyde
against
Legionella
pneumophila

Test Solution	ppm active	pH	<i>Legionella</i> Population, CFU/mL at Time =			
			1 hr.	3 hr.	7 hr.	2 hr.
Control	0	6.7	1×10^7	4.5×10^6	2.5×10^7	2×10^6
Glutaraldehyde	25	6.7	ND*	ND	ND	ND
	50	6.7	ND	ND	ND	ND
	100	6.7	ND	ND	ND	ND
Control	0	8.0	3.5×10^6	4.5×10^6	2.8×10^7	2×10^6
Glutaraldehyde	25	8.0	ND	ND	ND	ND
	50	8.0	ND	ND	ND	ND
	100	8.0	ND	ND	ND	ND

*ND = None Detected ($< 10^2$ CFU/mL)

In preliminary laboratory tests, glutaraldehyde has been shown to inactivate pure cultures of LDB (Legionnaires' Disease Bacteria). However, the ability of these formulations to control the growth or inactivate LDB in operating cooling towers exposed to ultraviolet light, organic material, other microbial contamination and aeration, has not been studied. These findings also do not address the problem of long-term preventative maintenance of water cooling towers. Even in the absence of complete knowledge about LDB levels and the disease outbreak, it is prudent to minimize slime growth and excessive bacterial contamination in cooling towers. This precaution is supported by limited ecological studies on LDB that have shown the presence of the organism is usually associated with heavy fouling of the cooling systems.

Compatibility with Water Treatment Chemicals

Glutaraldehyde has been used successfully to treat systems containing phosphonate, phosphate, chromate, nitrite, molybdate and many other scale and corrosion inhibitors. Because of glutaraldehyde's non-ionic nature, it is also compatible with dispersants, surfactants and most other water treatment chemicals. In addition, glutaraldehyde is fully compatible with halogens and may be used to treat chlorinated systems.

Compatibility with Ammonia

Concentrated solutions of glutaraldehyde are known to react very quickly with concentrated solutions of ammonia. In cooling water applications, AQUCAR™ GA 45 Water Treatment Microbiocide is typically added at relatively low concentrations, usually <100 ppm active ingredient. Cooling systems heavily contaminated with ammonia rarely contain more than 100 ppm ammonia and frequently contain 25-50 ppm. Because of the low concentration of these two potential reactants, the rate of reaction is slowed dramatically. In addition, because of their relatively quick biocidal action, AQUCAR GA 45 only requires chemical stability of approximately six hours to be effective. The data in Table 2 is representative of the effect of ammonia and pH on the stability of use-level concentrations of AQUCAR GA 45.

As expected, as the pH and/or ammonia concentrations of the solutions increased, the stability of the AQUCAR GA 45 decreased. However, if a 20 percent loss in eight hours is acceptable, the following can be concluded: at pH 7 or 8, 50 or 100 ppm active concentration of AQUCAR GA 45 could be used to treat a cooling water system that contains up to 100 ppm ammonia. At pH 9, 50-100 ppm AQUCAR GA 45 could be used in the presence of up to 50 ppm ammonia.

These data indicate that AQUCAR GA 45 is useful in treating cooling systems containing appreciable concentrations of ammonia. It should be noted that their stability may vary under actual field conditions and should be monitored to confirm chemical compatibility.

Table 2
Effect of Ammonia
Concentration and
pH on AQUCAR™
GA™ 45 Water
Treatment
Microbiocide
Stability

pH	Ammonia, ppm	Initial Concentration	% remaining after 8 hours
		AQUCAR™ GA 45 Water Treatment Microbiocide, ppm active ingredient	
7.0	25	50	100
7.0	50	50	100
7.0	100	50	99
7.0	25	100	98
7.0	50	100	94
7.0	100	100	92
8.0	25	50	100
8.0	50	50	100
8.0	100	50	96
8.0	25	100	98
8.0	50	100	90
9.0	25	50	88
9.0	50	50	80
9.0	100	50	65
9.0	25	100	80
9.0	50	100	75
9.0	100	100	50

All stability experiments were conducted at 30°C/86°F

Effectiveness on Materials of Construction

AQUCAR™ GA 45 Water Treatment Microbiocide is compatible with the following materials of construction:

Stainless steel, nickel, and polyethylene.

AQUCAR GA 45 is compatible with the following gasketing materials:

Silicone, Kalrez¹, Teflon², and Grafoil³.

Additional information on this topic can be found in *Glutaraldehyde Safe Handling and Storage Guide* (Form No. 253-01338).

Table 3
AQUCAR™ GA 45
Water Treatment
Microbiocide
Dosage Guide
for Dose
Concentrations
Between 20 and
100 ppm

	Slug Dose Method*	Continuous Feed Method*
Initial Dose: When the system is noticeably fouled	50-100 ppm	50-100 ppm
Subsequent Dose: Once microbial control becomes evident	20-50 ppm	10-50 ppm

*Concentration of active ingredient

When applying...	Glutaraldehyde Concentrations (wt%)	Sp. Gravity (g/cc)	To produce a concentration of...	Use		
				Fl oz of AQUCAR™ GA 45 WTM per 100 gal of water	Gal of AQUCAR™ GA 45 WTM per 10,000 gal of water	mL of AQUCAR™ GA 45 WTM per m ³ of water
AQUCAR™ GA 45 WTM	45.0%	1.118	20 ppm a.i.	0.5	0.4	40
	45.0%	1.118	50 ppm a.i.	1.3	1.0	99
	45.0%	1.118	100 ppm a.i.	2.5	2.0	199

Glutaraldehyde and the Environment

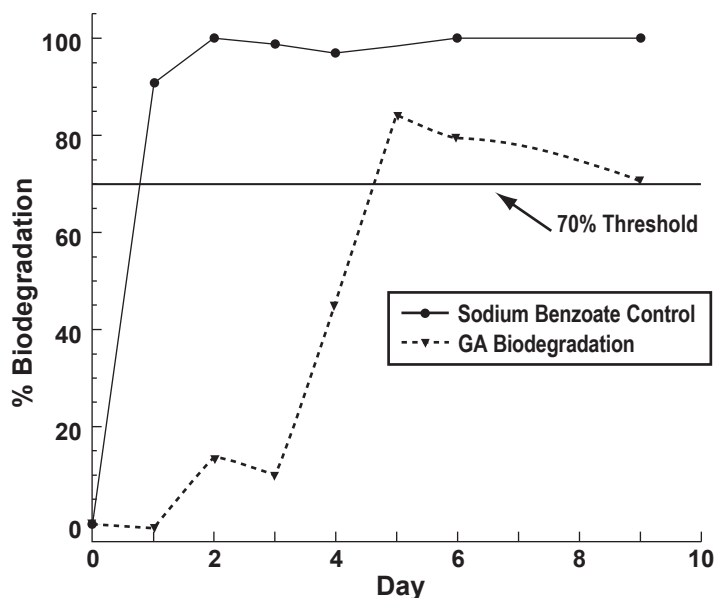
The OECD (Organization for Economic Cooperation and Development) 301 series of biodegradation protocols are designed to determine the biodegradation potential of substances under stringent conditions. In one such biodegradation test, glutaraldehyde met and exceeded the OECD ready biodegradability classification criteria and was found to be readily biodegradable.

¹Kalrez is a Registered Trademark of Du Pont Performance Elastomers L.L.C. (DPE)

²Teflon is a Registered Trademark of E. I. du Pont de Nemours and Company

³Grafoil is a Registered trademark of GrafTech International Holdings, Inc.

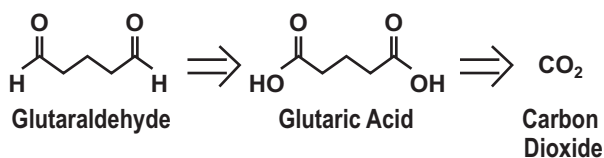
% Biodegradation of Glutaraldehyde in OECD 301A Test



A study of the aquatic metabolism of glutaraldehyde in river water sediment under aerobic and anaerobic conditions was performed. The result indicate that the metabolism of glutaraldehyde is rapid. Under aerobic conditions, the metabolism proceeds to complete mineralization with carbon dioxide as the principal metabolite. Under anaerobic conditions, only primary degradation is observed with the production of 1,5-pentanediol as the major metabolite. Both pathways of degradation are shown below.

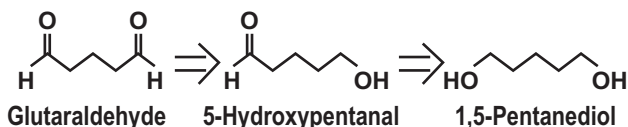
Aerobic Aquatic Metabolism

$T_{1/2}$ in river water – 10.6 hr. Carbon dioxide was the major metabolite, with glutaric acid as intermediate



Anaerobic Aquatic Metabolism

$T_{1/2}$ in river water – 7.7 hr. 1,5-Pentanediol was the major metabolite



The compiled ecotoxicology data indicates that glutaraldehyde is a readily biodegradable compound which has little environmental impact when handled and used properly. Due to its rapid metabolism and biodegradation under both aerobic and anaerobic conditions, it has a favorable ecotoxicology profile. Complete details on the biodegradation tests mentioned above, as well as many other environmental fate and ecotoxicology tests performed on glutaraldehyde, are summarized in a Dow publication entitled “*Ecotoxicology of Glutaraldehyde*” (Form No. 253-01418).

Toxicology

For product safety information, refer to Safety Data Sheet (SDS).

Storage, Handling and Disposal

When applying AQUCAR™ GA 45 Water Treatment Microbiocide, it is important to wear the appropriate protective equipment. This equipment includes proper gloves, splash-proof monogoggles or both safety glasses with side shields and a wrap-around full-face shield, coveralls, and when necessary, respiratory equipment. **In the U.S., please refer to the product label for specific precautions and use directions.** Further information and precautions regarding the handling, storage, and disposal of AQUCAR GA 45 can be obtained by consulting the latest Safety Data Sheet (SDS) and the *Glutaraldehyde Safe Handling and Storage Guide*, (Form No. 253-01338), available from your Dow representative.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products – from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

For further information visit our website:
www.dowmicrobialcontrol.com
or call:

Central and Eastern Europe:
Turkey +90-216-571-16-00
Russia +7-495-663-78-20
Poland +48-22-543-18-00
Western Europe:
+800-3-694-6367 (toll-free)
+31-115-67-26-26 (phone)
+31-115-67-28-28 (fax)
North America:
+1-800-447-4369 (toll-free)
+1-989-832-1560 (phone)
+1-989-832-1465 (fax)
Middle East and Africa:
UAE +971-4-332-88-66
South Africa +800-99-5078 (toll-free)
Greater China:
Shanghai +86-21-3851-1000
Beijing +86-10-8527-9199
Guangzhou +86-20-3813-0600
Taiwan +886-227-718-000
Southeast Asia:
Philippines +63-2-867-3293
Indonesia +62-21-2995-6273
Singapore +65-6830-4575
+65-6796-6217
Thailand +66-2365-7371
Vietnam +84-8-3822-5808
Malaysia +603-7965-5200
Australia and New Zealand:
+613-9226-3500 (phone)
+61-3-9226-3562 (fax)
Japan and Korea:
Japan +81-3-5460-2261
Korea +82-2-3490-4348
Indian Subcontinent:
+91-22-6793-4953 (phone)
+91-22-6793-4924 (fax)
Latin America:
+55-11-5188-9555 (phone)
+55-11-5188-9400 (fax)
Other Global Areas:
+1-989-832-1560 (phone)
+1-989-832-1465 (fax)

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including Safety Data Sheets (SDS), should be consulted prior to use of Dow products. Current Safety Data Sheets are available from Dow.

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USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE.



SECTION 1 - IDENTIFICATION

Product: AQUATROL™ 13110

Recommended use of the chemical and restrictions on use:

Uses: Corrosion inhibitor

List of advices against: Not available.

Details of the supplier of the Safety Data Sheet:

Momar, Inc.
1830 Ellsworth Industrial Dr.
Atlanta, Ga. 30318
404-355-4580
800-556-3967
www.momar.com

Emergency Telephone Number (INFOTRAC): North America: 1-800-535-5053
International: 1-352-323-3500

SECTION 2 – HAZARD IDENTIFICATION

Classification:	Eye Damage/Irritation	2A
	Oxidizing liquid	3
	Skin Irritation	2
	Acute Toxicity-Oral	4

Signal Word: Warning.

Hazard Statements: Causes serious eye irritation.
May intensify fire; oxidizer.
Causes skin irritation
Harmful if swallowed.

Pictograms:



Precautionary Statements:

Prevention: Keep away from heat.
Keep/Store away from clothing/ combustible materials.
Take any precaution to avoid mixing with combustibles.
Wash hands and all exposed skin thoroughly after handling.
Wear eye protection/face protection.
Do not eat, drink or smoke when using this product.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If on skin: Wash with plenty of soap and water. If skin irritation occurs, get medical attention.
If swallowed, Call a poison center/doctor/hospital if you feel unwell.
Rinse mouth.

Storage: None.

Disposal: Dispose of contents/ container to an approved waste disposal plant in accordance with federal, state, and local regulations.

Other Hazards: None known.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Sodium nitrite	7632-00-0	<30
Sodium metaborate	10555-76-7	<6

SECTION 4 – FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water, remove contact lenses, and continue to flush for at least 15-20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Wash clothing and shoes before reuse. Get medical attention if irritation persists.

Inhalation: Remove from exposure. If not breathing, give artificial respiration. If breathing is difficult, get medical attention.

Ingestion: Get medical attention immediately. Do not induce vomiting. If victim is conscious and alert, give large amounts of water. Discontinue water if victim feels like they may vomit. Never give anything by mouth to an unconscious person.

Most Important Symptoms and Effects:

Acute: Severe eye irritation, harmful if swallowed.

Delayed: None known,

Indication of Any Immediate Medical Attention and Special Treatment Needed: None known.

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Use media appropriate to the surrounding fire.

Specific Hazards Arising From the Substance or Product: None known.

Hazardous Combustion Products: Nitrogen oxides, boron oxides, and sodium oxides

Protective Equipment and Precautions for Firefighters: Wear a self-contained breathing apparatus in pressure- demand mode, and full protective gear. Use water spray to cool unopened containers. This product itself does not burn.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Avoid contact with skin and eyes. Wear protective clothing, see Section 8.

Environmental Precautions: Keep out of sewers, drains, and bodies of water. Spills should be diked and absorbed. Discharge to the environment must be avoided.

Methods and Materials for Containment and Cleaning Up: Absorb in vermiculite, dry sand, or earth, and place in containers. Collect and reclaim or dispose of in sealed containers in a licensed waste facility. Liquid material may be removed with a vacuum truck. Containers with spillage must be properly labeled with correct contents and hazard symbol.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spilling, skin, and eye contact. Wash thoroughly after handling. Avoid inhalation of vapor or mists. Keep away from sources of ignition. Use only with adequate ventilation. For industrial or professional use only. Do not cut or weld empty container. KEEP OUT OF REACH OF CHILDREN.

Conditions for Safe Storage: Store in a cool dry place.

Incompatibilities: Acids, powdered metals, ammonia, cyanides, amines, and activated carbon.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Sodium nitrite	Not established	Not established	
Sodium metaborate	Not established	Not established	

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: Normally not needed. If needed, use NIOSH approved mask and multi-purpose filter.

Skin and Body: Chemical resistant gloves recommended. Chemical resistant apron, as needed.

Eye Protection: Safety glasses/goggles recommended.
Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor:	Clear, tinted liquid with no odor.
Odor Threshold:	Not determined.
pH:	12.5-13.5
Freezing Point:	Not determined.
Boiling Point:	212°F
Flash Point:	No flash at boiling.
Evaporation Rate (BUAC=1):	Slower.
Flammability:	Not flammable.
Flammability or Explosion Limits:	Upper: Not applicable. Lower: Not applicable.
Vapor Pressure:	Not determined.
Specific Gravity:	1.25-1.27
Solubility in Water:	Complete.
Solubility in Other Solvents:	Not determined.
Partition Coefficient (n-octanol/water):	Not determined.
Auto-ignition Temperature:	Not determined.
Decomposition Temperature:	Not determined.
Viscosity:	Not determined.
Other Information:	Not determined.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal temperature conditions and recommended use.
Possible Hazardous Reactions:	Not available.
Conditions to Avoid:	Contact with incompatible materials.
Incompatible Materials:	Acids, powdered metals, ammonia, cyanides, amines, and activated carbon.
Hazardous Decomposition Products:	Nitrogen oxides, boron oxides, and sodium oxides

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: Severe irritation to eyes.

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure:

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: Not classified.
Carcinogenicity: IRC: Group 2A Probably carcinogenic to humans. No component of this product are listed by NTP, IACGH, or OSHA.
Reproductive Toxicity: Not classified.
Specific Target Organ Toxicity: Eyes, Skin
Numerical Measures of Toxicity:
Product: Not determined.
Component:

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sodium nitrite	157.9 mg/kg (rat)	No skin irritation 49 hrs (rabbit)	Not determined

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Fish- LC50 = 0..94-1.92 mg/l; 96hrs (rainbow trout)
Invertebrates – EC50 = 12.5 mg/l; 48 hrs. (water flea)
Persistence and Degradability: Expected to persist in the environment, though may be chemically transformed.
Bioaccumulation: No data available.
Mobility: Expected to have slight mobility.
Other Adverse Effects: This product is toxic to aquatic life.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:
Disposal of Wastes: Burn in a chemical incinerator equipped with an afterburner and scrubber but exert care in igniting as this material is flammable. Dispose of product in accordance with local, state, and federal regulations.
Contaminated Packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.
Other Information: None.

SECTION 14 – TRANSPORTATION INFORMATION

DOT:

UN Number: UN 3219
Proper Shipping Name: Nitrites, inorganic, aqueous solution, n.o.s. (sodium nitrite)
Hazard Class: 5.1
Packing Group: III
Reportable Quantity 100 lbs (sodium nitrite) (for use when shipping 35 gallons and over)

SECTION 15 – REGULATORY INFORMATION

US Federal Regulations:

TSCA: All ingredients of this product are listed in the TSCA inventory.

SARA 313: This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and Title 40 CFR 372.

Chemical Name	CAS Number	Percent Weight
Sodium nitrite	7632-0-00	<30

US State Regulations:

California: This product contains the following chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm: None.

SECTION 16 – OTHER INFORMATION

Issue Date: January 11, 2010

Revision Date: August 19, 2014

Health	Flammability	Reactivity	Personal Protection
2	0	1	C

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate at the time of publication, Momar, Incorporated makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Momar, Incorporated's control; and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes; and they assume all risks of their use, handling, and disposal of the product or from the publications or use of, or reliance upon, information contained herein. This information relates only to the product designed herein and does not relate to its use in combination with any other material or in any other process.

AquaTrol 13110

Liquid Closed System Treatment

- Convenient multifunctional liquid product
- Provides excellent corrosion inhibition
- Maintains protection in cold or hot systems

Principal Application:

13110 is a multi-component corrosion inhibitor for treating closed systems. **13110** combines proven corrosion inhibitor technologies to give long lasting corrosion protection with minimum maintenance attention. The basic inhibitor system incorporates a nitrite-borate blend that buffers pH to protect steel and forms a protective film over metal surfaces. This combination has long been the industry standard for treating closed systems. Nitrite acts as a film-forming corrosion inhibitor that effectively protects metal surfaces against oxygen attack. Tolyltriazole is added to **13110** to assure corrosion protection on non-ferrous metals.

Use Considerations

13110 is primarily intended for use in closed recirculating water systems and can be used in either hot or cold closed loop systems. Complete corrosion inhibition is attained by establishing the recommended initial treatment of **13110** in the system. Under normal operating conditions, it is not necessary to add further treatment to the system except to maintain the minimum recommended treatment residual. Additional quantities of **13110** should be added only to compensate for known water loss or if the system has an open expansion tank that would permit air contact with the water. Add **13110** at the rate indicated below in proportion to make-up to the system. Your AquaTrol Water Specialist will provide specific product selection and usage information.

Dosage & Control

For chilled loops the initial dose of **13110** is two gallons for each 1000 gallons of system water volume. Thereafter, the correct treatment level is assured by adding enough **13110** to maintain a residual of 500-700 ppm of nitrite (as NO₂). For hot loops the initial dose of **13110** is four gallons for each 1000 gallons of system water volume. Thereafter, the correct treatment level is assured by adding enough **13110** to maintain a residual of 1000-1400 ppm of nitrite (as NO₂). Your AquaTrol Water Specialist will recommend complete program controls and product dosages.

Feeding

13110 should be fed into the recirculating water line using a chemical metering pump constructed of suitable resistant materials or through a bypass feeder if one is available. This product should be metered directly from the shipping container. Do not mix directly with other concentrated water treatment products.

Typical Properties

Appearance:	Light Yellow Clear Liquid
Odor:	Faint Acrid
pH (neat):	12.9
Density:	10.5 Pounds per Gallon

Handling Storage & Safety

Use normal precautions for chemical handling. Wear appropriate apron, gloves, or other protective clothing. Always wear goggles or face shield for eye protection. Keep out of the reach of children. Avoid contact with eyes, skin, or clothing. Do not swallow. Read container labeling and Safety Data Sheet for more complete information on handling precautions. AquaTrol **13110** is available in 55-, 35-, 20-, and 5-gallon non-returnable containers. Store at room temperature; protect from freezing and extreme heat. Keep container closed when not in use. Use promptly upon opening.