SECTION 1 - IDENTIFICATION

Product: AQUATROL 12521

Recommended use of the chemical and restrictions on use:

Uses: Liquid defoaming concentrate.
List of advices against: None.

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: This product contains no reportable hazardous components according to US Federal Regulations.
Signal Word: None required.
Hazard Statements: None required.
Pictograms: None required.
Precautionary Statements: None required.
Other Hazards: No information available.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
None		

This product does not contain any hazardous components under OSHA 29CFR 1910.1200.

SECTION 4 – FIRST AID MEASURES

Eye Contact: Flush eyes with a large quantity of water for 15 minutes. If irritation continues, seek medical attention.
Skin Contact: No adverse effects expected. If irritation occurs, wash with water to remove product. Remove contaminated clothing and wash before reuse. If difficulties arise, contact a physician.
Inhalation: No adverse effects expected. Not an inhalation hazard.

Ingestion: No adverse effects expected under normal use. If large quantities are swallowed, contact a physician.

Most Important Symptoms and Effects:

Acute: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.**

Delayed: Repeated or prolonged exposure to skin may cause dermatitis.

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

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Product is nonflammable. Use extinguishing media appropriate for surrounding fire.

Specific Hazards Arising From the Substance or Product:

Hazardous Combustion Products: High temperature steam, potentially oxides of carbon.

Protective Equipment and Precautions for Firefighters: Will not burn or support combustion. Use water spray to cool fire exposed containers and to flush spills. Spilled material may cause the floor to be slippery. Fire fighters wear self-contained breathing apparatus with full face piece in pressure demand or other positive pressure mode for surrounding fire.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Product is slippery. Wear appropriate personal protection equipment.

Environmental Precautions: Avoid getting concentrate into sewers or water ways.

Methods and Materials for Containment and Cleaning Up: Contain spill if possible. Absorb on mineral clay absorbent material. Shovel into DOT approved container for disposal.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spills and clean them up immediately when they occur. Product is slippery. For industrial or professional use only. KEEP OUT OF REACH OF CHILDREN!

Conditions for Safe Storage: Keep container closed when not in use. Protect from freezing. Store at temperatures below 120°F. Water contamination should be avoided.

Incompatibilities: None.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Not Applicable			

Engineering Controls: Normal ventilation.
Personal Protection Measures:
Respiratory Protection: Not normally required.
Skin and Body: Use of chemical resistant gloves recommended.
Eye Protection: Safety glasses recommended.
Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Opaque milky white liquid with no odor.
Odor Threshold: Not determined.
pH: 6.0
Freezing Point: 32°F
Boiling Point: 212°F
Flash Point: None.
Evaporation Rate (BUAC=1): Slower.
Flammability: Product is not flammable.
Flammability or Explosion Limits: **Upper:** Not applicable. **Lower:** Not applicable.
Vapor Pressure: Not determined.
Specific Gravity: 1.000
Solubility in Water: Dispersible.
Solubility in Other Solvents: Not determined.
Partition Coefficient (n-octanol/water): Not determined.
Auto-ignition Temperature: Not applicable.
Decomposition Temperature: Not determined.
Viscosity: 1000 -1600 cP.
Other Information: None.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.
Chemical Stability: Stable.
Possible Hazardous Reactions: None known.
Conditions to Avoid: None known.
Incompatible Materials: None known.
Hazardous Decomposition Products: None known.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
	X		X

Physical, Chemical and Toxicological Effects:

Symptoms: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.** Prolonged or repeated skin contact may cause irritation or dermatitis.

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

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: This product has not been identified as a carcinogen or probable carcinogen by NTP, IARC, or OSHA, nor have any of its components.

Reproductive Toxicity: This product does not contain any known or suspected reproductive hazards.

Specific Target Organ Toxicity: Eye (Single Exposure).

Numerical Measures of Toxicity:

Product: Not determined.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: 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.

Persistence and Degradability: Readily biodegradable per 40CFR 796.3200.

Bioaccumulation: Not determined.

Mobility: Not determined.

Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with national and local 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: Not listed.

Proper Shipping Name: Compounds Cleaning Liquid.

Hazard Class: Not applicable.

Packing Group: Not applicable.

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: September 8, 2005
Revision Date: December 11, 2013

Health	Flammability	Reactivity	Personal Protection
1	**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®
A DIVISION OF MOMAR, INC.

AquaTrol 12521

Defoamer

Principal Application

AquaTrol 12521 is a silicone defoamer designed specifically for use in open recirculating water systems including cooling towers, evaporative condensers, open wash water, open process cooling water, wastewater lagoons and decorative fountains or ponds. It may also be used during chemical cleaning of any of the above systems to prevent foaming.

Use Considerations

12521 is designed for use in cooling towers and wastewater applications where foam control is necessary. Your AquaTrol Water Specialist will provide specific product selection and usage information.

Dosage and Control

Feed a sufficient quantity of 12521 to control foaming in the system. Normally extremely small dosages are adequate to establish control over foam in open recirculating systems. For most applications, a dosage that will maintain 20-100 ppm (2.4-12.5 fl oz in 1000 gallons of water) of 12521 in the system will provide adequate control of foaming. Actual product usage over any time period will vary with contaminant loading of the system and physical factors such as agitation.

Feeding Instructions

For best results, 2 to 12 ounces of 12521 should be prediluted in 1 gallon of water and the resulting mixture sprayed or broadcast directly onto the foam. If foaming persists, the dosage should be repeated. If suitable means for spray application are not available, add the prediluted 12521 to the system at a point of good water circulation where rapid mixing and dispersion throughout the system will occur. Once the initial foam has been destroyed, the residual silicone is usually sufficient to prevent additional foam for several hours. It is recommended that 12521, which is a concentrated product, always be prediluted before use.

Typical Properties

pH (use dilution)	6.0 -7.0
Density	8.34 Pounds Per Gallon
Appearance	Opaque White Viscous Liquid
Odor	None

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 12521 is available in 55, 35, 20, 5 and 1-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.

Safety Data Sheet
acc. to OSHA HCS

Printing date 06/05/2015 Reviewed on 06/05/2015

*
1 Identification

· **Product identifier**

· **Trade name: Boiler Lizard®**
· **Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Application of the substance / the mixture** Corrosion inhibitors

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Cortec Corporation
4119 White Bear Parkway
St. Paul, MN 55110 USA
Phone (651) 429-1100
Fax (651) 429-1122

· **Information department:** regulatory@cortecvci.com
· **Emergency telephone number:**
Spill, Leak, Fire, Exposure, or Accident
24 hour CHEMTREC contact:
USA and Canada 1-800-424-9300
International +1 703-527-3887 (collect calls accepted)

*
2 Hazard(s) identification

· **Classification of the substance or mixture**


GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.
· **Additional information:**
Substance packaged in water soluble bag for ease of handling. Cautions apply to powder inside bag.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**


GHS07

· **Signal word** Warning

· **Hazard-determining components of labeling:**
proprietary ammonia derivate
· **Hazard statements**
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.
· **Precautionary statements**
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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Trade name: Boiler Lizard®

(Contd. of page 1)

Specific treatment (see on this label).
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Other hazards**
· **Results of PBT and vPvB assessment** Not applicable.
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**	
proprietary ammonia derivate Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	50-100%

*
4 First-aid measures

· **Description of first aid measures**
· **After inhalation** In case of unconsciousness place patient stably on side position for transportation.
· **After skin contact**
Rinse with warm water.
Immediately wash with water and soap and rinse thoroughly.
· **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing** If symptoms persist consult doctor.
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

*
5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture**
Nitrogen oxides (NOx)
Carbon monoxide (CO)
· **Kst (projected rate)** ~206 bar.m/s, Class St 2

*
6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

· **Environmental precautions:** No special measures required.

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Trade name: Boiler Lizard®

(Contd. of page 2)

· **Methods and material for containment and cleaning up:** Ensure adequate ventilation.
· **Reference to other sections**
No dangerous substances are released.
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

*
7 Handling and storage

· **Handling**
· **Precautions for safe handling** Store in cool, dry place in tightly closed receptacles.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Store away from foodstuffs.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

*
8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
· **Breathing equipment:**

Use suitable respiratory protective device in case of insufficient ventilation.

· **Protection of hands:**
Protective gloves
I.E., Nitrile, Viton, Neoprene
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Tightly sealed goggles.
· **Body protection:** Protective work clothing.

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Trade name: Boiler Lizard®

(Contd. of page 3)

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9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
General Information	(packaged in water soluble bags)
· **Appearance:**	
Form:	Powder
Color:	White
· **Odor:**	Characteristic
· **Odour threshold:**	Not determined.
· **pH-value at 20 °C (68 °F):**	6-7 (1% aqueous)
· **Change in condition**	
Melting point/Melting range:	198 °C (388 °F)
Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Not determined.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	If container is comprimised, organic dusts may be released. As with all dusts, fine particles suspended in air in critical proprtions and in the presence of an ignition source may ignite and/or explode. Dust may be sensitive to ignition by electrostatic discharge, electrical arcs, sparks, welding torches, cigarettes, open flame, or other significant heat sources. As a precaution, implement standard safety measures for handling finely divided organic powders.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density:**	Not determined
· **Relative density**	Not determined.
· **Vapour density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water at 20 °C (68 °F):	200 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	Not applicable.
kinematic:	Not applicable.
· **Solvent content:**	
Organic solvents:	0.0 %
Solids content:	100.0 %
· **Other information**	The above data are typical values and do not constitute a specification.

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Trade name: Boiler Lizard®

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*
10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.

*
11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
IARC Category 3 : Not classifiable as to its carcinogenicity to humans

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:** Generally not hazardous for water.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 6)

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Trade name: Boiler Lizard®

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13 Disposal considerations

· **Waste treatment methods**
· **Recommendation**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

*
14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)** · **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Environmental hazards:** · **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	-

*
15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **SARA Section 355 (extremely hazardous substances)**
None of the ingredients is listed.

· **SARA Section 313 (specific toxic chemical listings)**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act) (-)**
All ingredients are listed.

· **Prop 65 - Chemicals known to cause cancer**
None of the ingredients is listed.

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Trade name: Boiler Lizard®

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· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Canadian Domestic Substances List (DSL) (-)**
All ingredients are listed.

· **Philippines Inventory of Chemicals and Chemical Substances (-)**
All ingredients are listed.

· **Chinese Chemical Inventory of Existing Chemical Substances (-)**
All ingredients are listed.

· **Australian Inventory of Chemical Substances (-)**
All ingredients are listed.

· **New Zealand Inventory of Chemicals (-)**
All ingredients are listed.

· **Existing Chemical Substances (-)**
All ingredients are listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

· **Signal word** Warning

· **Hazard-determining components of labeling:**
proprietary ammonia derivate
· **Hazard statements**
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.
· **Precautionary statements**
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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16 Other information

Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

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Trade name: Boiler Lizard®

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This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
Cortec Corporation does not warranty any translation of this SDS not created by Cortec Corporation.

· **Date of preparation / last revision** 06/05/2015 / -

· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organisation
ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

· *** Data compared to the previous version altered.**

CORTEC CORPORATION

Environmentally Safe VpCI®/MCI® Technologies

Boiler Lizard®, Patented

Boiler Lizard

DESCRIPTION

Cortec's Boiler Lizard® contains Vapor phase Corrosion Inhibitor powder in a polyvinyl alcohol (PVA) water-soluble bag. The powder formulation is free of phosphates, heavy metals, nitrites, and free amines. Designed for dry lay-up of boilers, the Boiler Lizard® protects metals in enclosed spaces. The VpCIs vaporize and adsorb on the metal surfaces, reaching all recessed areas and interior cavities.

PACKAGING & STORAGE

Boiler Lizards are supplied in carton tubes (1 bag per tube).

Tube - 3" D x 37" H (8 cm x 94 cm)
Bag - 4" W x 34" H (10 cm x 86 cm).

To ensure best product performance, store in original packaging, indoors, and out of direct sunlight at 40-100 °F (4-38 °C).

Shelf life: 2 years

VpCI® ADDITIVES FOR WATER TREATMENT

FEATURES

- Multi-phase protection (vapor phase, liquid phase, and at the air-water interface)
- Easy and safe to handle
- Water-soluble, non-irritating PVA bags
- Formulation is free of phosphate, heavy metals, nitrites, and free amines

BENEFITS

- Provides continuous corrosion protection during dry lay-up period of up to 12 months
- Protects ferrous metals and aluminum
- Vapor phase corrosion inhibiting action protects inaccessible and recessed surfaces
- Requires little or no surface preparation for routine shutdown maintenance
- Protective layer does not need to be removed prior to equipment start-up
- Eliminates need for other forms of protection including nitrogen blankets, moisture-absorbing material (e.g., quicklime or silica gel desiccant), and dry air circulation
- Reduces chemical consumption and costs
- Increases worker productivity and safety
- Protects up to 1,000 gallon system capacity per bag (5 yd^3 or 3.8 m^3)

TYPICAL PROPERTIES

Appearance	White to off-white powder (inside water-soluble PVA bag)
pH	6-7 (1% aqueous)
Melting Point	371-398 °F (188-203 °C)

Boiler Lizard®, Patented

APPLICATION

Completely drain and cool boiler down. Remove from and discard outer protective bag. Place Boiler Lizard® flat in boiler and slit open the inner water-soluble bag to begin total corrosion protection. Slit this inner bag 2" (5 cm) from one end to 2" (5 cm) from the other end. Seal all openings to the boiler internals. No product or inner bag removal is required prior to boiler start-up. When the boiler is put back in service, fill with water and employ normal start-up procedure. The inner PVA bag will dissolve.

Precautions:

- Do not use on copper, copper-based alloys, and other soft yellow metals. Compatibility with non-metallics should be evaluated.
- Caking of powder may occur when it is exposed to moisture and then dried. The likelihood of this is increased when powder is exposed to high heat and multiple wet/dry cycles. When powder gets caked, baked, and hardened it requires removal by mechanical means or by aggressive acid clean.

4119 White Bear Parkway, St. Paul, MN 55110 USA
Phone (651) 429-1100, Fax (651) 429-1122
Toll Free (800) 4-CORTEC
info@cortecvci.com
https://www.cortecvci.com
https://www.cortecwatertreatment.com

CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

LIMITED WARRANTY

All statements, technical information and recommendations contained herein are based on tests Cortec® Corporation believes to be reliable, but the accuracy or completeness thereof is not guaranteed.

Cortec® Corporation warrants Cortec® products will be free from defects when shipped to customer. Cortec® Corporation's obligation under this warranty shall be limited to replacement of product that proves to be defective. To obtain replacement product under this warranty, the customer must notify Cortec® Corporation of the claimed defect within six months after shipment of product to customer. All freight charges for replacement products shall be paid by customer.

Cortec® Corporation shall have no liability for any injury, loss or damage arising out of the use of or the inability to use the products.
BEFORE USING, USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND USER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH. No representation or recommendation not contained herein shall have any force or effect unless in a written document signed by an officer of Cortec® Corporation.

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Safety Data Sheet
acc. to OSHA HCS

Printing date 01/30/2020 Reviewed on 01/29/2020

*
1 Identification

· **Product identifier**

· **Trade name: VpCI®-309 SF**
· **Application of the substance / the mixture** Corrosion inhibitors

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Cortec Corporation
4119 White Bear Parkway
St. Paul, MN 55110 USA
Phone (651) 429-1100
Fax (651) 429-1122

· **Information department:** compliance@cortecvci.com
· **Emergency telephone number:**
Spill, Leak, Fire, Exposure, or Accident
24 hour CHEMTREC contact:
USA and Canada 1-800-424-9300
International +1-703-527-3887 (collect calls accepted)

*
2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS02 Flame

Flam. Sol. 2	H228	Flammable solid.

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H335	May cause respiratory irritation.

Combustible Dust	May form combustible dust concentrations in air.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS02

GHS07

· **Signal word** Warning

· **Hazard-determining components of labeling:**
proprietary compound of alicyclic amine and aromatic acid
NJTSRN INH-3003
· **Hazard statements**
H228 Flammable solid.
H302 Harmful if swallowed.
H315 Causes skin irritation.

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H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
May form combustible dust concentrations in air.

· **Precautionary statements**

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	If swallowed: Call a poison center/doctor if you feel unwell.
P330	Rinse mouth.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see first aid statements on this label).
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.
P370+P378	In case of fire: Use for extinction: CO2, powder or water spray.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Other hazards**
WARNING! AS WITH ALL POWDERS, MAY FORM COMBUSTIBLE DUST CONCENTRATION IN AIR
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

proprietary compound of alicyclic amine and aromatic acid NJTSRN INH-3003	50-100%

· **Additional information**
NJTSRN=New Jersey Trade Secret Registry Number
WARNING! AS WITH ALL ORGANIC POWDERS, MAY FORM COMBUSTIBLE DUST CONCENTRATION IN AIR
In accordance with paragraph (i) of the OSHA Hazard Communication Standard (29 CFR 1910.1200), the specific chemical identity and/or exact percentage composition has been withheld as a trade secret.
For the wording of the listed hazard phrases refer to section 16.

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4 First-aid measures

· **Description of first aid measures**
· **General information**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation** Supply fresh air; consult doctor in case of complaints.
· **After skin contact**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.
· **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing** Immediately call a doctor.
· **Information for doctor** Show this safety data sheet to the doctor in attendance.
· **Most important symptoms and effects, both acute and delayed**
The symptoms and effects are as expected from the hazards shown in section 2. No specific product related symptoms are known.
No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture**
Carbon monoxide (CO)
Nitrogen oxides (NOx)
As with all dusts, fine particles suspended in air in critical proportions and in the presence of an ignition source may ignite and/or explode. Dust may be sensitive to ignition by electrostatic discharge, electrical arcs, sparks, welding torches, cigarettes, open flame, or other significant heat sources. As a precaution, implement standard safety measures for handling finely divided organic powders.
· **Kst (ASTM E1226)** 217 bar m/s, Class St 2
· **Advice for firefighters** Self-contained breathing apparatus
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
· **Additional information**
Explosion: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Use respiratory protective device against the effects of fumes/dust/aerosol.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

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Avoid formation of dust.
Keep away from ignition sources
Use extreme caution when dispersing dust in the air. Non-sparking tools/equipment should be used.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Dispose contaminated material as waste according to item 13.
Pick up mechanically.
Ensure adequate ventilation.
· **Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

*
7 Handling and storage

· **Handling**
· **Precautions for safe handling**
Keep receptacles tightly sealed.
Store in cool, dry place in tightly closed receptacles.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of dust.
· **Information about protection against explosions and fires:**
As a precaution to control dust explosion potential, implement safety measures to control ignition sources and dispersion of dusts. See NFPA standard 654, OSHA 29 CFR 1910.39 and others for more details.


Keep ignition sources away - Do not smoke.

Protect from heat.
Protect against electrostatic charges.
Use explosion-proof apparatus / fittings and spark-proof tools.
Dust can combine with air to form an explosive mixture.
Wear shoes with conductive soles.
Minimize dust generation and accumulation.
Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.
Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.
Provide adequate precautions, such as electrical grounding and bonding.
Provide adequate precautions, such as electrical grounding and bonding.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizing agents.
· **Further information about storage conditions:**
Store receptacle in a well ventilated area.
Keep receptacle tightly sealed.
· **Storage class** 4.1 B
· **Specific end use(s)** No further relevant information available.

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8 Exposure controls/personal protection

· **Additional information about design of technical systems:**
No further data; see item 7.
It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment.
Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).
Use only appropriately classified electrical equipment and powered industrial trucks.

· **Control parameters**
WEL Long Term (8hr TWA) Inhalable dusts: 10mg/m³
WEL Long Term (8hr TWA) Respirable dusts: 5mg/m³
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls** Use local exhaust ventilation to control airborne concentrations below exposure limits.
· **Personal protective equipment**
· **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
· **Breathing equipment:**

Use suitable respiratory protective device in case of insufficient ventilation.

Filter A/P2.
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). To determine the appropriate type of respiratory protection that should be used, a hazard assessment should be performed prior to using the product. Environmental conditions such as ventilation and other contaminants may affect the type of respiratory protection that is chosen.
· **Protection of hands:**
Protective gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Protective Gloves** I.E., Nitrile, Viton, Neoprene
· **Eye protection:** Tightly sealed goggles.
· **Body protection:** Protective work clothing.

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9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Powder
Color:	White
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value at 20 °C (68 °F):**	6.5-8 (1% aqueous)
· **Change in condition**	
Melting point/Melting range:	undetermined
Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	As with all dusts, fine particles suspended in air in critical proprtions and in the presence of an ignition source may ignite and/or explode. Dust may be sensitive to ignition by electrostatic discharge, electrical arcs, sparks, welding torches, cigarettes, open flame, or other significant heat sources. As a precaution, implement standard safety measures for handling finely divided organic powders. Risk of explosion by shock, friction, fire or other sources of ignition.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density:**	Not determined
· **Relative density**	Not determined.
· **Vapor density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Soluble
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	Not applicable.
kinematic:	Not applicable.
· **Solvent content:**	
VOC Content:	0.0 g/l / 0.00 lb/gal
· **Other information**	The above data are typical values and do not constitute a specification. *Properties have been calculated.

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10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** Stable under recommended storage conditions
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid**
Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

*
11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:**
Repeated or prolonged skin contact with this product may produce skin irritation.
Irritant to skin and mucous membranes.
· **on the eye:**
May be irritating.
Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
Harmful
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
IARC Category 3 : Not classifiable as to its carcinogenicity to humans

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Dispose of in accordance with local, state, and federal regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

*

14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN1325
· **UN proper shipping name**	
· **DOT**	Flammable solids, organic, n.o.s. (amine-alcohol salt)
· **ADR**	1325 FLAMMABLE SOLID, ORGANIC, N.O.S. (amine-alcohol salt)
· **IMDG, IATA**	FLAMMABLE SOLID, ORGANIC, N.O.S. (amine-alcohol salt)
· **Transport hazard class(es)**	
· **DOT**	

· **Class**	4.1 Flammable solids, self-reactive substances and solid desensitised explosives
· **Label**	4.1
· **ADR, IMDG, IATA**	

· **Class**	4.1 Flammable solids, self-reactive substances and solid desensitised explosives
· **Label**	4.1
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Flammable solids, self-reactive substances and solid desensitised explosives
· **Danger code (Kemler):**	40
· **EMS Number:**	F-A,S-G
· **Stowage Category**	B

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· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Remarks:**	According to 49CFR173.151 labeling requirements are excepted if the total package is under 30 kg gross weight and the inner packages do not excees 5kg.
· **ADR**	
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
· **IMDG**	
· **Limited quantities (LQ)**	5 kg
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
· **UN "Model Regulation":**	UN 1325 FLAMMABLE SOLID, ORGANIC, N.O.S. (AMINE-ALCOHOL SALT), 4.1, III

*
15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **SARA Section 355 (extremely hazardous substances)**
None of the ingredients is listed.

· **SARA Section 313 (specific toxic chemical listings)**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act)**
All ingredients are listed.

· **Hazardous Air Pollutants**
None of the ingredients is listed.

· **Proposition 65**

· **Prop 65 - Chemicals known to cause cancer**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity**
None of the ingredients is listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

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· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Canadian Domestic Substances List (DSL): (Substances not listed)**
proprietary compound of alicyclic amine and aromatic acid
NJTSRN INH-3003

· **Philippines Inventory of Chemicals and Chemical Substances: (Substances not listed)**
None of the ingredients is listed.

· **Chinese Chemical Inventory of Existing Chemical Substances: (Substances not listed)**
proprietary compound of alicyclic amine and aromatic acid
NJTSRN INH-3003

· **Australian Inventory of Chemical Substances: (Substances not listed)**
All ingredients are listed.

· **New Zealand Inventory of Chemicals: (Substances not listed)**
All ingredients are listed.

· **Existing Chemical Substances**
All components have the value *.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS02 GHS07

· **Signal word** Warning

· **Hazard-determining components of labeling:**
proprietary compound of alicyclic amine and aromatic acid
NJTSRN INH-3003
· **Hazard statements**
H228 Flammable solid.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
May form combustible dust concentrations in air.
· **Precautionary statements**

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	If swallowed: Call a poison center/doctor if you feel unwell.
P330	Rinse mouth.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see first aid statements on this label).
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P337+P313 If eye irritation persists: Get medical advice/attention.
P370+P378 In case of fire: Use for extinction: CO2, powder or water spray.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
Cortec Corporation does not warranty any translation of this SDS not created by Cortec Corporation.

· **Date of preparation / last revision** 01/30/2020 / -
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Sol. 2: Flammable solids – Category 2
Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
· *** Data compared to the previous version altered.**

VpCI®-309 / VpCI®-309 SF
Corrosion Inhibiting VpCI® Powder for Ferrous Metals

PRODUCT DESCRIPTION

VpCI®-309 is a Vapor phase Corrosion Inhibitor powder for corrosion protection of ferrous metals in recessed areas, interior cavities, and voids.

VpCI®-309 provides an extremely efficient dry method to protect metals within an enclosed space. The VpCI® vaporizes and adsorbs on all metal surfaces reaching all exposed areas including recessed sections and interior cavities.

VpCI®-309 SF, a silica-free version, is available upon request.

FEATURES

- Does not contain silicates, phosphates, nitrites, or heavy metals
- Provides up to 24 months of continuous protection
- Provides monomolecular inhibiting layer
- Vapor phase inhibiting action protects inaccessible and recessed surfaces
- Protected products can be shipped to customers without removing powder
- If the VpCI® layer is disturbed by moisture or opening the enclosed space, the layer is replenished by continuous vapor redeposition
- Little or no surface preparation is required
- Prevents further corrosion of pre-coated and painted surfaces
- Easy to apply
- When required powder can be removed by air gun or water rinse
- Provides protection of aluminum, carbon steel, and steel alloys
- Commercial equivalent to MIL I-22110C
- LD50 ORAL: 2100mg/kg of body weight

APPLICATIONS

- Tubular structures, pipes, vessels, and turbines
- Internal surfaces of compressors, turbines, engines, tanks, boilers, and heat exchangers
- Dry lay-up of closed circuit cooling systems
- Equipment protection after hydrostatic testing
- Parts, components, and completed assemblies during shipping and storage
- Segmental concrete bridge tendons/cables

METHOD OF APPLICATION

Apply powder by dusting, fogging, or sprinkling. After application simply cover, close, or seal the interior cavity or void.

Fogging is easily achieved with a low pressure air hose and sandblast cup or by inverting a wet/dry vaccuum. Large conventional sandblasting systems can also be used.

Please contact Cortec® Technical Service for specific dosing, equipment recommendations, and for application guidance.

DOSAGE

0.3-0.5 oz/ft^3 (300-500 g/m^3)

METHOD OF REMOVAL

When required, VpCI®-309/309 SF in powder form can be removed by using a low pressure air gun or by a water rinse. Typically, if applied in aqueous form the product does not require removal.

CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

PACKAGING AND STORAGE

VpCI®-309 is available in 5 pound (2.3 kg), 50 pound (23 kg), and 100 pound (45 kg) lined drums. Store in a sealed container in a dry warehouse avoiding direct exposure to sunlight, with temperature not exceeding 150°F (65°C). Shelf life is up to 24 months.

METALS PROTECTED

- Carbon steel
- Stainless steel
- Aluminum

TYPICAL PROPERTIES

VpCI®-309

Appearance	White to off-white powder
pH	6.5-8 (1% aqueous)
Density	38-39 lb/ft^3 (0.61-0.63 kg/L)

VpCI®-309 SF

Appearance	White to off-white powder
pH	6.5-8.0 (1% aqueous)

PRECAUTIONS

- Caking of powder may occur when it is exposed to moisture and then dried. The likelihood of this is increased when powder is exposed to high heat and multiple wet/dry cycles. When powder gets caked, baked, and hardened it requires removal by mechanical means or by aggressive acid clean. To avoid caking of powder do not over apply or unevenly disperse the dry powder.
- Powder is not soluble in hydrocarbon fluids. Rinse powder from vessels before adding hydrocarbon fluids.
- Powder should be removed from area; each side of weld, before welding, or other high temperature processing.
- VpCI®-309 contains silica. It is not recommended for steam application such as boilers, turbines, steam piping, etc. Please use VpCI®-309 SF in these and other silica sensitive applications.

FOR INDUSTRIAL USE ONLY
KEEP OUT OF REACH OF CHILDREN
KEEP CONTAINER TIGHTLY CLOSED
NOT FOR INTERNAL CONSUMPTION
CONSULT SAFETY DATA SHEET FOR MORE INFORMATION

Distributed by:

CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies
4119 White Bear Parkway, St. Paul, MN 55110 USA
Phone (651) 429-1100, Fax (651) 429-1122
Toll Free (800) 4-CORTEC, E-mail info@cortecvci.com
www.cortecvci.com

Printed on recycled paper 100% post consumer

SECTION 1 - IDENTIFICATION

Product: AQUATROL® 16760

Recommended use of the chemical and restrictions on use:

Uses: Liquid polymer flocculant.
List of advices against: None.

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: This product contains no reportable hazardous components according to US Federal Regulations.
Signal Word: None required.
Hazard Statements: None required.
Pictograms: None required.
Precautionary Statements: None required.
Other Hazards: No information available.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Petroleum Distillates, hydrotreated light	64742-47-8	20-30%
Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched	69011-36-5	<5%

SECTION 4 – FIRST AID MEASURES

Eye Contact: Flush eyes with a large quantity of water for 15 minutes. If irritation continues, seek medical attention.
Skin Contact: No adverse effects expected. If irritation occurs, wash with water to remove product. Remove contaminated clothing and wash before reuse. If difficulties arise, contact a physician.
Inhalation: No adverse effects expected. Not an inhalation hazard.
Ingestion: No adverse effects expected under normal use. If large quantities are swallowed, contact a physician.
Most Important Symptoms and Effects:

Acute: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.**

Delayed: Repeated or prolonged exposure to skin may cause dermatitis.

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

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Product is nonflammable. Use extinguishing media appropriate for surrounding fire.

Specific Hazards Arising From the Substance or Product:

Hazardous Combustion Products: High temperature steam, potentially oxides of carbon.

Protective Equipment and Precautions for Firefighters: Dried polymer may burn or support combustion. Use water spray to cool fire exposed containers and to flush spills. Spilled material may cause the floor to be extremely slippery. Fire fighters wear self-contained breathing apparatus with full face piece in pressure demand or other positive pressure mode for surrounding fire.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Product is extremely slippery. Wear appropriate personal protection equipment.

Environmental Precautions: Avoid getting concentrate into sewers or water ways.

Methods and Materials for Containment and Cleaning Up: Contain spill if possible. Do not flush with water. Absorb on mineral clay absorbent material. Shovel into DOT approved container for disposal.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spills and clean them up immediately when they occur. Product is extremely slippery. For industrial or professional use only. KEEP OUT OF REACH OF CHILDREN!

Conditions for Safe Storage: Keep container closed when not in use. Store at temperatures below 120°F. Water contamination should be avoided.

Incompatibilities: None known.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Not Applicable			

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: Not normally required.
Skin and Body: Use of gloves is recommended.
Eye Protection: Safety glasses recommended.
Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor:	Opaque, milky liquid with aliphatic odor.
Odor Threshold:	Not determined.
pH:	4.0-6.0
Freezing Point:	<41°F
Boiling Point:	>212°F
Flash Point:	Does not flash
Evaporation Rate (BUAC=1):	Slower.
Flammability:	Product is not flammable.
Flammability or Explosion Limits:	**Upper:** Not applicable. **Lower:** Not applicable.
Vapor Pressure:	2.3 kPa @ 68°F.
Specific Gravity:	1.0 – 1.1
Solubility in Water:	Complete.
Solubility in Other Solvents:	Not determined.
Partition Coefficient (n-octanol/water):	Not determined.
Auto-ignition Temperature:	Not applicable.
Decomposition Temperature:	>302°F
Viscosity:	>20.5cps.
Other Information:	None.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable.
Possible Hazardous Reactions:	Oxidizing reagents may cause exothermic reactions.
Conditions to Avoid:	None known.
Incompatible Materials:	Oxidizing reagents.
Hazardous Decomposition Products:	Oxides of carbon and nitrogen, hydrogen chloride gas.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.** Prolonged or repeated skin contact may cause irritation or dermatitis.

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

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: This product has not been identified as a carcinogen or probable carcinogen by NTP, IARC, or OSHA, nor have any of its components.

Reproductive Toxicity: This product does not contain any known or suspected reproductive hazards.

Specific Target Organ Toxicity: Eye (Single Exposure).

Numerical Measures of Toxicity:

Product: Oral LD50: >5,000 mg/kg (rat).
Dermal: >5,000 mg/kg (rat).

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Fish: LC50 >10-100 mg/L; 96hr.
Invertebrate: *Daphnia magna*: LC50 10-100 mg/L;48hr.

Persistence and Degradability: Not readily biodegradable.

Bioaccumulation: Does not bioaccumulate.

Mobility: Not determined.

Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with national and local 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: Not listed.

Proper Shipping Name: Non-hazardous.

Hazard Class: Not applicable.

Packing Group: Not applicable.

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: September 20, 2017

Revision Date: May 28, 2021

Health	Flammability	Reactivity	Personal Protection
0	1	0	B

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AquaTrol 16760

DESCRIPTION

AquaTrol 16760 is a high charge, high molecular weight cationic polyacrylamide flocculant supplied as a viscous emulsion. It is effective over the pH range of 5-9.

TYPICAL PROPERTIES

Appearance -	Opaque Liquid
Specific Gravity at 25° C -	1.04 ± 0.02
Viscosity as Supplied @25° C -	500-1500 cps
Viscosity* (1% Solution) -	1000-3000 cps
pH of 1.0% Solution @ 25° C -	4.5 ± 1.0
Freeze Point -	5°F (-15°C)
Flash Point -	>200° F (93°C)
Shelf Life	6 Months

* Brookfield LVT, 30 rpm at 25°C in deionized water.

APPLICATIONS

AquaTrol 16760 is used in a broad range of solid-liquid separation processes in both municipal and industrial water and waste treatment applications for settling, thickening and dewatering. It is particularly recommended for dewatering of sludges on belt presses and in centrifuges.

Depending on the application, the following dosage levels are recommended:

Water and Waste Treatment:

Settling/Clarification	0.5 to 20 ppm
Thickening/Dewatering	1.0 to 2 lbs/ton

PREPARATION & FEEDING

Solutions of AquaTrol 16760 are prepared by adding the neat polymer to water below 120° F (50° C) either through an automatic polymer feed unit or into the vortex of a stirred tank of water to prepare a solution of 1% concentration (as is). Aging for 30 - 60 minutes is recommended, followed by in line dilution to 0.1% or less. Avoid excessive mixing as this can lead to polymer degradation. Use of gear or positive displacement pumps is recommended.

STORAGE & HANDLING

AquaTrol 16760 should be stored in a heated building, 5° - 35°C (40° - 95°F). If frozen, the product should be allowed to thaw completely and agitated prior to use. Storage in stainless steel, plastic or epoxy lined steel is recommended. Mild steel, iron, aluminum, or copper are to be avoided in both storage and feed equipment. Bulk material should be mixed every 1 - 2 days using a low shear recirculating pump, bottom to top. Mixers can be used in drums or liqui-bins if necessary. Spills should be wiped up with an absorbent material and then washed down with a bleach solution.

Toxicity is low, but normal precautionary clothing should be worn when handling this material. For additional information, see relevant Safety Data Sheets.

SECTION 1 - IDENTIFICATION

Product: AQUATROL® 16660

Recommended use of the chemical and restrictions on use:

Uses: Powdered Flocculent for Water Treatment
List of advices against: None.

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: This product contains no reportable hazardous components according to US Federal Regulations.
Signal Word: None required.
Hazard Statements: None required.
Pictograms: None required.
Precautionary Statements: None required.
Other Hazards: No information available.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Adipic Acid	124-04-9	≤2.5%
Sulfamic Acid	5329-14-6	≤2.5%

SECTION 4 – FIRST AID MEASURES

Eye Contact: Flush eyes with a large quantity of water for 15 minutes, including under eyelids. If irritation continues, seek medical attention.
Skin Contact: No adverse effects expected. If irritation occurs, wash with water to remove product. Remove contaminated clothing and wash before reuse. If difficulties arise, contact a physician.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion: No adverse effects expected under normal use. If large quantities are swallowed, Induce vomiting if victim is fully conscious. Contact a physician.

Most Important Symptoms and Effects:

Acute: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.**

Delayed: Repeated or prolonged exposure to skin may cause dermatitis.

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

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Water, water spray, foam, dry powder, or CO_2.
Specific Hazards Arising From the Substance or Product: Aqueous solutions or powders that become wet render extremely slippery surfaces.

Protective Equipment and Precautions for Firefighters: Will not burn or support combustion. Use water spray to cool fire exposed containers and to flush spills. Spilled material may cause the floor to be slippery. Fire fighters wear self-contained breathing apparatus with full face piece in pressure demand or other positive pressure mode for surrounding fire.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Aqueous solutions or powders that become wet render extremely slippery surfaces. Wear appropriate personal protection equipment.

Environmental Precautions: Do not flush to sewer or allow to enter waterways.

Methods and Materials for Containment and Cleaning Up: Carefully shovel or sweep up spilled material and place in suitable container. Do not flush with water.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid contact with skin and eyes. Avoid dust formation. Avoid breathing dust. Wash hands before breaks and at the end of workday. KEEP OUT OF REACH OF CHILDREN!

Conditions for Safe Storage: Keep container in a dry place. Water contamination should be avoided.

Incompatibilities: Oxidizing agents

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Not Applicable			

Engineering Controls: Use local exhaust ventilation or other engineering controls to control airborne levels.

Personal Protection Measures:

Respiratory Protection:	Wear NIOSH N95 half face piece particulate respirator if process controls are not adequate, or where working powder concentration is more than 10 mg/m^3.
Skin and Body:	Use of gloves is recommended and apron if splashing or repeated contact with solution is likely.
Eye Protection:	Safety glasses with side shields, do not wear contact lenses where this product is used.
Other Recommendations:	Wash hands before break and at the end of workday.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor:	Granular solid, white		
Odor Threshold:	Not determined.		
pH:	2.5 – 4.5 @ 5g/L		
Freezing Point:	32°F		
Melting Point:	>212°F		
Flash Point:	Not applicable		
Evaporation Rate (BUAC=1):	Not applicable		
Flammability:	Product is not combustible		
Flammability or Explosion Limits:	**Upper:** Not applicable.	**Lower:**	Not applicable.
Vapor Pressure:	Not applicable		
Relative Density:	0.6 – 0.9		
Solubility in Water:	Soluble in water		
Solubility in Other Solvents:	Not determined.		
Partition Coefficient (n-octanol/water):	< 0		
Auto-ignition Temperature:	Not applicable.		
Decomposition Temperature:	>392°F		
Viscosity:	Solid		
Other Information:	None.		

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable.
Possible Hazardous Reactions:	None known.
Conditions to Avoid:	None known.
Incompatible Materials:	Oxidizing agents may cause exothermic reactions
Hazardous Decomposition Products:	Thermal decomposition may produce hydrogen chloride gas, nitrogen oxides, carbon oxides. Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
X	X	X	X

Physical, Chemical and Toxicological Effects:

Symptoms: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.** Prolonged or repeated skin contact may cause irritation or dermatitis.

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

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: This product has not been identified as a carcinogen or probable carcinogen by NTP, IARC, or OSHA, nor have any of its components.

Reproductive Toxicity: This product does not contain any known or suspected reproductive hazards.

Specific Target Organ Toxicity: Eye (Single Exposure).

Numerical Measures of Toxicity:

Product:	Oral LD50	Dermal LD50
	> 5,000 mg/kg (rat)	> 5,000 mg/kg (rat)

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Fish: *Danio rerio*: LC50 = 5-10 mg/L; 96hr
Invertebrates: *Daphnia magna*: EC50 = 20-50 mg/L; 48hr

Persistence and Degradability: Readily biodegradable.

Bioaccumulation: The product is not expected to bioaccumulate.

Mobility: Not determined.

Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with national and local 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: Not listed.
Proper Shipping Name: Not Regulated.
Hazard Class: Not applicable.
Packing Group: Not applicable.

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: March 22, 2021
Revision Date:

Health	Flammability	Reactivity	Personal Protection
0	0	0	B

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SECTION 1 - IDENTIFICATION

Product: AQUATROL® 15202

Recommended use of the chemical and restrictions on use:

Uses: Dechlorination.
List of advices against: None.

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: This product contains no reportable hazardous components according to US Federal Regulations.
Signal Word: None required.
Hazard Statements: None required.
Pictograms: None required.
Precautionary Statements: None required.
Other Hazards: No information available.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percent Weight
Sodium Thiosulfate Pentahydrate	7772-98-7	<32

This product does not contain any hazardous components under OSHA 29CFR 1910.1200.

SECTION 4 – FIRST AID MEASURES

Eye Contact: Flush eyes with a large quantity of water for 15 minutes. If irritation continues, seek medical attention.
Skin Contact: No adverse effects expected. If irritation occurs, wash with water to remove product. Remove contaminated clothing and wash before reuse. If difficulties arise, contact a physician.
Inhalation: No adverse effects expected. Not an inhalation hazard.

Ingestion: No adverse effects expected under normal use. If large quantities are swallowed, contact a physician.

Most Important Symptoms and Effects:

Acute: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.**

Delayed: Repeated or prolonged exposure to skin may cause dermatitis.

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

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing Media: Product is nonflammable. Use extinguishing media appropriate for surrounding fire.

Specific Hazards Arising From the Substance or Product:

Hazardous Combustion Products: High temperature steam, potentially oxides of carbon.

Protective Equipment and Precautions for Firefighters: Will not burn or support combustion. Use water spray to cool fire exposed containers and to flush spills. Spilled material may cause the floor to be slippery. Fire fighters wear self-contained breathing apparatus with full face piece in pressure demand or other positive pressure mode for surrounding fire.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Product is slippery. Wear appropriate personal protection equipment.

Environmental Precautions: Avoid getting concentrate into sewers or water ways.

Methods and Materials for Containment and Cleaning Up: Contain spill if possible. Absorb on mineral clay absorbent material. Shovel into DOT approved container for disposal.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Avoid spills and clean them up immediately when they occur. For industrial or professional use only. KEEP OUT OF REACH OF CHILDREN!

Conditions for Safe Storage: Keep container closed when not in use. Protect from freezing. Store at temperatures below 120°F. Water contamination should be avoided.

Incompatibilities: None known.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits and Recommendations:

Chemical Name	OSHA PEL	ACGIH TLV	Other Exposure Limits
Not Applicable			

Engineering Controls: Normal ventilation.

Personal Protection Measures:

Respiratory Protection: Not normally required.

Skin and Body: Use of gloves is recommended.

Eye Protection: Safety glasses recommended.

Other Recommendations: None.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear colorless liquid with no odor.

Odor Threshold: Not determined.

pH: 7.5-8.5

Freezing Point: 32°F

Boiling Point: 212°F

Flash Point: None.

Evaporation Rate (BUAC=1): Slower.

Flammability: Product is not flammable.

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

Vapor Pressure: Not determined.

Specific Gravity: 1.170

Solubility in Water: Complete.

Solubility in Other Solvents: Not determined.

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

Auto-ignition Temperature: Not applicable.

Decomposition Temperature: Not determined.

Viscosity: Not determined.

Other Information: None.

SECTION 10 – STABILITY AND REACTIVITY

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

Chemical Stability: Stable.

Possible Hazardous Reactions: None known.

Conditions to Avoid: None known.

Incompatible Materials: Strong oxidizing agents, strong acids.

Hazardous Decomposition Products: Oxides of carbon and sulfur.

SECTION 11 – TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation	Ingestion	Skin	Eye
		X	X

Physical, Chemical and Toxicological Effects:

Symptoms: May cause eye irritation with contact with product or mists. This is characterized by redness and swelling of the eye**.** Prolonged or repeated skin contact may cause irritation or dermatitis.

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

Sensitization: Not a skin sensitizer.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: This product has not been identified as a carcinogen or probable carcinogen by NTP, IARC, or OSHA, nor have any of its components.

Reproductive Toxicity: This product does not contain any known or suspected reproductive hazards.

Specific Target Organ Toxicity: Eye (Single Exposure).

Numerical Measures of Toxicity:

Product: Not determined.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: 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.

Persistence and Degradability: Not determined.

Bioaccumulation: Not determined.

Mobility: Not determined.

Other Adverse Effects: None known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Disposal of Wastes: Dispose of product in accordance with national and local 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: Not listed.

Proper Shipping Name: Non-hazardous.

Hazard Class: Not applicable.

Packing Group: Not applicable.

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: September 14, 2012
Revision Date: June 10, 2014

Health	Flammability	Reactivity	Personal Protection
1	**0**	**0**	**B**

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Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 02.12.2021 Revision: 01.08.2017

SECTION 1: Identification of the substance/mixture and of the company/undertaking

· **1.1 Product identifier**

· **Trade name:** AQUATROL 12922

· **Article number:** 5023
· **Registration number** Mixture
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Product category** PC37 Water treatment chemicals
· **Application of the substance / the mixture** Water treatment
· **Uses advised against**
Processes involving extreme heat use advised against.
Any use carrying a risk of direct contact with eyes/skin where workers are exposed without adequate personal protective equipment (PPE).
The product is intended exclusively for industrial and professional use.

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**

Momar, Incorporated
1830 Ellsworth Industrial Dr.
Atlanta, GA 30318
404-355-4580
1-800-556-3967
www.momar.com

· **Further information obtainable from:** Product safety department.
· **1.4 Emergency telephone number:** 1-800-535-5053

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**


corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
· **Hazard pictograms** GHS05
· **Signal word** Danger
· **Hazard statements**
H314 Causes severe skin burns and eye damage.
H412 Harmful to aquatic life with long lasting effects.
· **Precautionary statements**
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
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 on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.

(Contd. on page 2)

Safety data sheet
according to 1907/2006/EC, Article 31

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(Contd. of page 1)

· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:** Mixture of substances listed below with nonhazardous additions.

· **Dangerous components:**		
CAS: 7601-54-9 EINECS: 231-509-8	Trisodium orthophosphate Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	>2.5-≤10%
CAS: 64665-57-2 EINECS: 265-004-9	Sodium 4(or 5)-methyl-1H-benzotriazolide Repr. 2, H361d; Skin Corr. 1B, H314; Aquatic Chronic 2, H411; Acute Tox. 4, H302	>2.5-≤10%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:**
Immediately rinse with water.
If skin irritation continues, consult a doctor.
· **After eye contact:**
DO NOT DELAY!
Check for and remove any contact lenses.
Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:**
DO NOT DELAY!
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.
If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
· **Information for doctor:** Treat symptomatically and supportively.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents:**
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **5.2 Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
Formation of toxic gases is possible during heating or in case of fire.
· **5.3 Advice for firefighters**
· **Protective equipment:**
Do not inhale explosion gases or combustion gases.
Wear self-contained respiratory protective device.
Wear fully protective suit.
· **Additional information** Cool endangered receptacles with water spray.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation

(Contd. on page 3)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 02.12.2021 Revision: 01.08.2017

(Contd. of page 2)

Avoid formation of dust.
Wear protective equipment. Keep unprotected persons away.

· **6.2 Environmental precautions:**
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course in the undiluted form.

· **6.3 Methods and material for containment and cleaning up:**
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Ensure adequate ventilation.

· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Avoid direct contact (skin/eye contact, ingestion and/or inhalation of fume/mist/dust) with the product in the undiluted form.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of dust.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Prevent any seepage into the ground.
Do not store in aluminium, copper, zinc containers.
· **Information about storage in one common storage facility:**
Store away from oxidising agents.
Store away from foodstuffs.
· **Further information about storage conditions:**
Keep container tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Additional information about design of technical facilities:** No further data; see item 7.
· **Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Do not eat, drink, smoke or sniff while working.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Do not inhale dust / smoke / mist.
Take note of assigned Workplace Exposure Limits.
· **Respiratory protection:**
Use suitable respiratory protective device in case of insufficient ventilation.
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

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· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

Tightly sealed goggles

· **Body protection:**
Impervious protective clothing
Body protection must be chosen depending on product properties, activity and possible exposure.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid
Colour:	Whitish
· **Odour:**	Mild
· **Odour threshold:**	Not determined.
· **pH-value (10 g/l) at 20 °C:**	8-9
· **Change in condition**	
Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	Undetermined.
· **Flash point:**	>93 °C
· **Flammability (solid, gas):**	Not determined.
· **Ignition temperature:**	>250 °C
· **Decomposition temperature:**	Not determined.
· **Auto-ignition temperature:**	Product is not self-igniting.
· **Explosive properties:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapour pressure:**	Not applicable.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapour density**	Not applicable.
· **Evaporation rate**	Not applicable.

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· **Solubility in / Miscibility with water:**	Soluble.
· **Partition coefficient: n-octanol/water:**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **9.2 Other information**	NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
To avoid thermal decomposition do not overheat.
· **10.3 Possibility of hazardous reactions** No dangerous reactions known.
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** Strong acids and oxidising agents
· **10.6 Hazardous decomposition products:**
Nitrogen oxides (NOx)
Carbon monoxide and carbon dioxide
Sulphur oxides (SOx)
Phosphorus compounds

SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity** Based on available data, the classification criteria are not met.
· **Primary irritant effect:**
· **Skin corrosion/irritation**
Causes severe skin burns and eye damage.
· **Serious eye damage/irritation**
Causes serious eye damage.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Additional toxicological information:**
ROUTES OF EXPOSURE: The component substances can variously be absorbed into the body by inhalation and by ingestion.

EFFECTS OF SHORT-TERM EXPOSURE: The product is corrosive to the eyes, the skin and the respiratory tract.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **12.2 Persistence and degradability** The organic portion of the product is biodegradable.
· **12.3 Bioaccumulative potential** Product is not expected to bioaccumulate.

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· **12.4 Mobility in soil** No further relevant information available.
· **Ecotoxical effects:**
· **Remark:** Harmful to fish
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Danger to drinking water if even small quantities leak into the ground.
Harmful to aquatic organisms
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Recommended Hierarchy of Controls:
- Minimise waste;
- Reuse if not contaminated;
- Recycle, if possible; or
- Safe disposal (if all else fails).
Contact waste processors for recycling information.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Used, degraded or contaminated product may be classified as hazardous waste. Anyone classifying hazardous waste and determining its fate must be qualified in accordance with state and international legislation.

· **Uncleaned packaging:**
· **Recommendation:**
Disposal must be made according to official regulations.
Container remains hazardous when empty. Continue to observe all precautions.
Containers, even those that are “empty,” may contain residues that can develop hazardous gases and vapours upon heating. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.
· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· **14.1 UN-Number** · **ADR, ADN, IMDG, IATA**	Void
· **14.2 UN proper shipping name** · **ADR, ADN, IMDG, IATA**	Void
· **14.3 Transport hazard class(es)** · **ADR, ADN, IMDG, IATA** · **Class**	Void
· **14.4 Packing group** · **ADR, IMDG, IATA**	Void
· **14.5 Environmental hazards:**	Not applicable.
· **14.6 Special precautions for user**	Not applicable.
· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.

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· **UN "Model Regulation":** Void

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** None of the ingredients is listed.
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H361d Suspected of damaging the unborn child.
H411 Toxic to aquatic life with long lasting effects.
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Repr. 2: Reproductive toxicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

AquaTrol® 12922

Cooling Water Treatment

Blended solid concentrate 12922 is a proprietary water treatment product of choice where a stabilized phosphate program is required for superior corrosion inhibition such as high temperatures and where good scale control may also be needed. Utilizing the very latest anti-fouling and corrosion inhibition technology, this product contains SHMP, PBTC phosphonate, Ortho phosphate, high performance polymer and triazole. Contains no heavy metals such as zinc or molybdate. In addition, this product contains traced amounts of PTSA dye, to allow more accurate dosing when used in conjunction with appropriate system monitoring controllers.

WATER QUALITY RANGE		DOSAGE	TEST RANGE				
L.S.I.	R.S.I.	Product in Recirc. Water	Total Organo Phosphonate	UV Digested as PO_4	Total Phosphate Acid Digested as PO_4	TT	PTSA
(-1.5) – 2.5	8.5 – 2.8	40 – 60 ppm	2.9 – 4.4 ppm Palintest OP Drop Test 2 – 3 Drops	1.0 – 1.5 ppm	7.8 – 11.6 ppm	2.8 – 4.2 ppm	160 – 240 ppb

12922 BOTTLES

Application/Feed-rate: Control limits for stabilized phosphate programs depend upon many variables including system corrosion inhibition needs, pH, calcium levels, and retention time. Required phosphate, polymer levels and product dosage can then be specified.

Note on liquid equivalencies: @ 20 ppm, a 44-pound case of bottles is equivalent to 500lbs of a conventional liquid product (approximately 55 gallons). Comparative values will vary, dependent upon liquid concentration.

Maximum Solubility: 2.1% @ 80°F

Feeding: Suggested use with the enduroTEQ™ Ultra-Series dissolvers.

Packaging: Case of 4 bottles, 1 gallon each @ 44 pounds per case.

12922 DISCS

Application/Feed-rate: Control limits for stabilized phosphate programs depend upon many variables including system corrosion inhibition needs, pH, calcium levels, and retention time. Required phosphate, polymer levels and product dosage can then be specified.

Note on liquid equivalencies: @ 20 ppm, a 40-pound case of discs is equivalent to 450 lbs. of a conventional liquid product (approximately 50 gallons.) Comparative values will vary, dependent upon liquid concentration.

Maximum Solubility: 2.1% @ 80°F

Feeding: Suggested use with the enduroTEQ™ Ultra-Series dissolvers.

Packaging: Case of 8 discs, 5 pounds each @ 40 pounds per case.

12922 STICKS

Application/Feed-rate: Stick products are an idealsolution for system start up, lay up or catch up, in the case of significant water loss or inhibitor feed interruption. Each 0.8-pound stick will provide 25 ppm of product in 4,000 system gallons.

Maximum Solubility: 2.1% @ 80°F

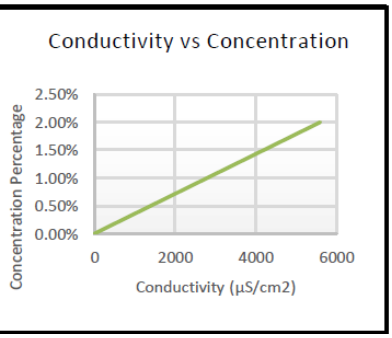
Feeding: Add sticks to open portion of coolingsystem where appropriate.

Packaging: Case of 30 sticks packaged in water soluble bags, 0.8 pounds each @ 24 pounds per case.

For optimal performance, store in temperature-controlled environment at less than 85°F. Follow Safety Data Sheet (SDS) regarding proper storage and handling.

PRODUCT DISSOLVING DATA

This chart shows the enduroTEQ reservoir solution strength of our bottle and disc products based on solution conductivity. Chart Data was generated with DI water, so make up water conductivity needs to be considered in field conditions.



0.00%
0
2000
4000
6000
Conductivity (µS/cm2)

MOMAR 1830 ELLSWORTH INDUSTRIAL BLVD, NW ATLANTA, GA 30318 (404) 355–4580 MOMAR.COM INFO@MOMAR.COM

SAFETY DATA SHEET

BromiCide® Tablets

Section 1. Identification

Product identifier	:	BromiCide® Tablets
Product code	:	Not available.
Chemical name	:	Biocide
Other means of identification	:	BromiCide® Tablets
Product type	:	solid

Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Biocide

Uses advised against		
Reason	:	None identified.

Supplier's details	:	BWA Water Additives US LLC A Company of Italmatch Chemicals Group 5544 Oakdale Road SE Smyrna USA GA 30082 404-696-6711 Monday - Friday (9.00 - 17.00)
Emergency telephone number (with hours of operation)	:	For Chemical Emergency Spill, Leak, Fire, Exposure or Accident Call CHEMTREC Day or Night: National contact +1-800-424-9300 International Emergency Telephone number: +1-703-527-3887 (call collect)

Section 2. Hazards identification

OSHA/HCS status	:	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	:	OXIDIZING SOLIDS - Category 3 ACUTE TOXICITY (oral) - Category 4

SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger
Hazard statements : May intensify fire; oxidizer.
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Very toxic to aquatic life.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention : Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water [or shower]. 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.
Storage : Store locked up.
Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mono-constituent substance
Chemical name : Biocide
Other means of identification : BromiCide® Tablets

CAS number/other identifiers

CAS number : 16079-88-2

Ingredient name	%	CAS number
2,4-Imidazolidinedione, 1-bromo-3-chloro-5,5-dimethyl-	96	16079-88-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.
BromiCide® Tablets - 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. EPA Reg. No.83451-4

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.
Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim

to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes severe burns. May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.
Adverse symptoms may include the following:
respiratory tract irritation

Skin contact : Causes severe burns.
Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : May cause burns to mouth, throat and stomach.
Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing

apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	:	Foam.
Unsuitable extinguishing media	:	Do not use water. Carbon dioxide (CO_2). dry chemical
Specific hazards arising from the chemical	:	Oxidizing material. May intensify fire. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds
Special protective actions for fire-fighters	:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters	:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Remark	:	Not applicable.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See

also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from clothing, incompatible materials and combustible materials. Keep away from heat. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area,

away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from reducing agents and combustible materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Protect from moisture. Separate from acids. Avoid creating dusty conditions and prevent wind dispersal.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products

		if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	:	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	:	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state	:	solid [PLATES, TABLETS]
Color	:	White. / Off-white.
Odor	:	Slight
Odor threshold	:	Not available.
pH	:	3.5 [Conc. (% w/w): 1.5 g/l]
Melting point	:	156 - 162 °C (313 - 324 °F)
Boiling point	:	Not available.
Flash point	:	Not available.
Fire point	:	Not available.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Not available.
Lower and upper explosive (flammable) limits	:	**Lower:** Not available. **Upper:** Not available.
Vapor pressure	:	Not available.
Vapor density	:	Not available.
Relative density	:	0.9 Bulk density
Solubility	:	Partially soluble in the following materials: water Decomposes in water.

Solubility in water	:	Partially soluble in the following materials: water
Partition coefficient: n-octanol/water	:	0.35
Auto-ignition temperature	:	Not available.
Decomposition temperature	:	Not available.
Viscosity	:	**Dynamic:** Not available. **Kinematic:** Not available.
Flow time (ISO 2431)	:	Not available.

Section 10. Stability and reactivity

Reactivity : Oxidizing material. Contact with acids liberates toxic gas.

Chemical stability : Decomposes in water. Stable under recommended storage and handling conditions (see Section 7).

Possibility of hazardous reactions : Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing or intensifying fire

Conditions to avoid : Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from acids. Protect from moisture.

Incompatible materials : Reactive or incompatible with the following materials:
combustible materials
reducing materials
strong alkalis
strong acids

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced., In a fire, decomposition may produce toxic gases/fumes., Decomposition products may include the following materials:, carbon monoxide, carbon dioxide, oxides of nitrogen, HBr, Hydrogen chloride (HCl).

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure

BromiCide® Tablets				
	LD50 Oral	Rat	578 mg/kg	-
	LD50 Dermal	Rabbit	2,000 mg/kg	-

Conclusion/Summary : Harmful if swallowed.

Irritation/Corrosion

Conclusion/Summary
Skin : Corrosive to the skin.
Eyes : Causes serious eye damage.
Respiratory : No known significant effects or critical hazards.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
BromiCide® Tablets	Skin	Guinea pig	Sensitizing

Conclusion/Summary
Skin : May cause an allergic skin reaction.
Respiratory : No known significant effects or critical hazards.

Mutagenicity

Conclusion/Summary : Not mutagenic in Ames test.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.
Inhalation : No known significant effects or critical hazards.
Skin contact : Causes severe burns. May cause an allergic skin reaction.
Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.
Adverse symptoms may include the following:
respiratory tract irritation

Skin contact : Causes severe burns.
Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : May cause burns to mouth, throat and stomach.
Adverse symptoms may include the following:
stomach pains

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

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Conclusion/Summary : No known significant effects or critical hazards.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
BromiCide® Tablets			
	Acute LC50 0.87 mg/l	Rainbow trout,donaldson trout	96 h
	Acute EC50 0.46 mg/l	Water flea	48 h
Remarks - Acute - Aquatic invertebrates.:	Very toxic to aquatic organisms.		
	Acute LC50 > 640 mg/l	Mollusca	96 h

Conclusion/Summary : Very toxic to aquatic organisms.

Persistence and degradability

Conclusion/Summary : Biodegradable

Conclusion/Summary : Very toxic to aquatic organisms.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
BromiCide® Tablets	0.35	-	low

Mobility in soil

Soil/water partition coefficient (KOC) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	3085	3085	3085	3085	3085	3085
UN proper shipping name	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromo-Chloro-Dimethylhydantoin)	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromo-Chloro-Dimethylhydantoin)	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromo-Chloro-Dimethylhydantoin)	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromo-Chloro-Dimethylhydantoin)	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromo-Chloro-Dimethylhydantoin)	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromo-Chloro-Dimethylhydantoin)
Transport hazard class(es)	5.1 (8) 	5.1 (8) 	5.1 (8) 	5.1 (8) 	5.1 (8) 	5.1 (8) 

Packing group	III	III	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.

Additional information

ADR/RID : **Hazard identification number:** 58
Tunnel code: E

IMDG : **Emergency schedules (EmS):** F-A, S-Q

Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code

Not available.

Section 15. Regulatory information

U.S. Federal regulations : **United States - TSCA 5(a)2 - Final significant new use rules:** bromochloro-5,5-dimethylimidazolidine-2,4-dione;
TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : OXIDIZING SOLIDS - Category 3
ACUTE TOXICITY - oral - Category 4
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1

Composition/information on ingredients

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65
This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Chemical Weapons Convention List Schedule I Chemicals
None of the components are listed.

Chemical Weapons Convention List Schedule II Chemicals
None of the components are listed.

Chemical Weapons Convention List Schedule III Chemicals
None of the components are listed.

Montreal Protocol (Annexes A, B, C, E)
None of the components are listed.

Stockholm Convention on Persistent Organic Pollutants

Annex A - Elimination - Production
None of the components are listed.

Annex A - Elimination - Use
None of the components are listed.

Annex B - Restriction - Production
None of the components are listed.

Annex B - Restriction - Use
None of the components are listed.

Annex C - Unintentional - Production
None of the components are listed.

Rotterdam Convention on Prior Informed Consent (PIC)
None of the components are listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Heavy metals - Annex 1
None of the components are listed.

POPs - Annex 1 - Production
None of the components are listed.

POPs - Annex 1 - Use
None of the components are listed.

POPs - Annex 2
None of the components are listed.

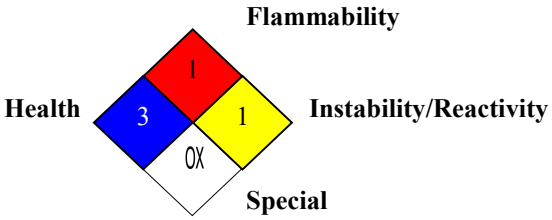
POPs - Annex 3
None of the components are listed.

Inventory list

Australia	:	All components are listed or exempted.
Canada	:	All components are listed or exempted.
China	:	All components are listed or exempted.
Europe	:	All components are listed or exempted.
Japan	:	**Japan inventory (ENCS)**: All components are listed or exempted. **Japan inventory (ISHL)**: All components are listed or exempted.
Malaysia	:	Not determined.
New Zealand	:	All components are listed or exempted.
Philippines	:	All components are listed or exempted.
Republic of Korea	:	All components are listed or exempted.
Taiwan	:	All components are listed or exempted.
Turkey	:	All components are listed or exempted.
United States	:	All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
OXIDIZING SOLIDS - Category 3	Expert judgment
ACUTE TOXICITY (oral) - Category 4	Expert judgment
SKIN CORROSION - Category 1B	Expert judgment
SERIOUS EYE DAMAGE - Category 1	Expert judgment
SKIN SENSITIZATION - Category 1	Expert judgment
AQUATIC HAZARD (ACUTE) - Category 1	Expert judgment

History

Date of printing : 03/09/2020
Date of issue/Date of revision : 04/14/2020
Date of previous issue : 00/00/0000
Version : 1.0
Prepared by : POLLAD
Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From

Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Bromicide® Tablets

www.wateradditives.com

Oxidizing Biocide for Industrial Water Systems

Description

BromiCide Tablets are designed for effective microbiological control in cooling water systems and industrial process waters.

Application

BromiCide Tablets possess NSF Std. 60 certification for Drinking Water Treatment Chemicals and NSF/FDA approval for various applications found in a food & beverage environment.

Benefits

BromiCide Tablets are an oxidizing biocide that provides:

- Broad spectrum kill for bacteria, algae, and fungi, all of which all are unable to develop a tolerance
- Easier handling than gas or liquid oxidizing biocides, and reduced risk of chemical accidents and environmental exposure
- 10-times slower dissolution than granules, providing a high degree of feed control
- A safer, easier to use, more effective alternative to chlorine-based oxidizing biocides and non-oxidizing biocides

Usage

*Please consult with your BWA Water Additives representative to determine optimal dosage recommendations for your system.

Packaging / Weight

Pail	50 lb	23 kg
Bag	500 lb	227 kg

*Consult your sales representative for availability.

Physical Properties

Appearance	White tablets
Odor	Faint halogen odor
Available bromine	≥ 60%
Available chlorine	≥ 26%
Tablet dimensions	1 3/16" x 3/4" (30 x 19 mm)
Tablet weight	20 grams
Bulk density	60.1 lb/ft3 (0.96 kg/l)
Solubility in:	
-water	Slightly soluble

Further details are available in the safety data sheet

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MiddleEast@wateradditives.com

SAFETY DATA SHEET

1. Identification

Product identifier **FORMULA 4655**

Other means of identification None.

Recommended use Cooling Water Biocide

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer Name ICONX Chemicals

Address 4160 Washington Rd. #7
McMurray, PA USA

Telephone +1-888-918-0658

Emergency Phone Number For Chemical Emergency ONLY (spill, leak, fire, exposure, or accident), 24 hour emergency telephone, call Infotrac (800) 535-5053.

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Acute toxicity, oral	Category 4
Acute toxicity, inhalation	Category 4
Serious eye damage/eye irritation	Category 2B

Label elements

Signal word Warning

Hazard statement Harmful if swallowed. Causes eye irritation. Harmful if inhaled.

Precautionary statement

Prevention Avoid breathing vapors. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area.

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

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Poly[oxyethylene(dimethylimino)ethylene(dimethylimino)ethylene dichloride]		31512-74-0	15
Other components below reportable levels			85

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

Composition comments Occupational Exposure Limits for impurities are listed in Section 8.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a poison center or doctor/physician if you feel unwell.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.
Most important symptoms/effects, acute and delayed	Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors and spray mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	This product is miscible in water. Prevent entry into waterways, sewer, basements or confined areas. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Do not taste or swallow. Avoid inhalation of vapors and spray mists. Avoid contact with eyes. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Biological limit values	No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	For prolonged or repeated skin contact use suitable protective gloves.
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
General hygiene considerations	Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Clear Liquid.
Color	Pale yellow
Odor	Mild
Odor threshold	Not available.
pH	6.0
Melting point/freezing point	3 °F (-16.1 °C)
Initial boiling point and boiling range	> 212 °F (> 100 °C) estimated
Flash point	> 212 °F (> 100 °C) Pensky-Martens Closed Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 1.0 mm Hg
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Complete
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	8.60 lb/gal
Explosive properties	Not explosive.
Flammability class	Combustible IIIB estimated
Oxidizing properties	Not oxidizing.
Percent volatile	> 80 % estimated
Specific gravity	1.03

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes eye irritation.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort.

Information on toxicological effects

Acute toxicity	Harmful if inhaled. Harmful if swallowed.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes eye irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	The 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.
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

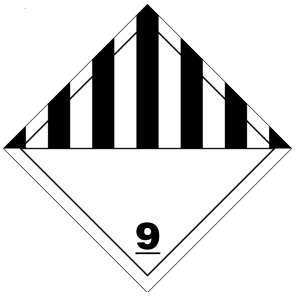
UN number	UN3082
UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (Poly[oxyethylene(dimethylimino)ethylene(dimethylimino)ethylene dichloride])
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
ERG Code	9L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Poly[oxyethylene(dimethylimino)ethylene(dimethylimino)ethylene dichloride]), MARINE POLLUTANT
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-F
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not regulated as dangerous goods.

IATA; IMDG



Marine pollutant

General information IMDG Regulated Marine Pollutant.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Acute toxicity (any route of exposure)
Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

California Proposition 65

WARNING: WARNING: Cancer - www.P65Warnings.ca.gov

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

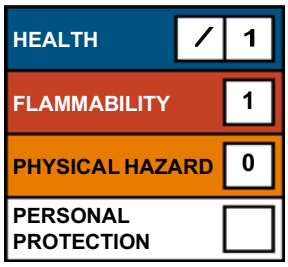
16. Other information, including date of preparation or last revision

Issue date 09-03-2019

Revision date 07-05-2022

Version # 02

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0



Disclaimer ICONX Chemicals, Inc cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage, and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

Revision information This document has undergone significant changes and should be reviewed in its entirety.

FORMULA 4655

Polymeric Quaternary Amine

TECHNICAL DATA SHEET

GENERAL DESCRIPTION

FORMULA 4655 is a polymeric quaternary amine and is used in recirculating cooling water systems, air washers, and decorative fountains to control microbial growth. The product is effective over a wide pH range against microorganisms typically found in these systems.

BENEFITS

- Excellent broad-spectrum microbicide
- Effective over the range of pH's found in typical cooling systems
- Non-foaming
- Effective against algae

PRODUCT SPECIFICATIONS

Appearance	Clear, pale-yellow liquid
Specific Gravity	1.03 ± 0.05
pH	~6.0
Density	8.60 lb/gal
Flash Point	> 212 °F (>100°C)
Water Solubility	Soluble

APPLICATIONS

FORMULA 4655 is normally shot fed according to the label instructions. The technical specialist servicing the facility will provide specific treatment control levels based on system conditions.

FORMULA 4655 is normally fed neat directly from the shipping container. Tanks, pumps, piping and valves should be made of stainless steel, polyethylene, or PVC

For the more information on dosage and application, please contact your ICONX Chemicals Technical Sales Representative.

STORAGE

Keep in a tightly closed container. Store indoors. Recommended storage temperature is 50° F - 105° F (10° C - 40° C). Do not reuse container. Dispose of empty container in compliance with federal, state/provincial and local laws and regulations. Refer to label for specific instructions.

Dispose of empty container in compliance with federal, state/provincial and local laws and regulations. Consult the SDS before handling product.

AVAILABILITY

FORMULA 4655 is available in pails & drum quantities.

SALES INQUIRIES

For sales and ordering information, please contact your ICONX Sales Representative or the office at:

(888) 918-0658

info@iconxchemicals.com

Revision Date: 07/2022