

## SECTION 1: Identification

### 1.1. Identification

Product form : Mixtures  
 Product name : RIO™  
 Other means of identification : EPA Reg. No. 66330-381

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use : Plant growth stimulant  
 Restrictions on use : Must not come into contact with food or be consumed.

### 1.3. Details of the supplier of the safety data sheet

Arysta LifeScience North America LLC  
 15401 Weston Parkway, Suite 150  
 Cary, NC 27513 - USA

### 1.4. Emergency telephone number

Emergency number : Exposure calls (PROPHARMA): 1-866-303-6952 or +1-651-603-3432 (international)  
 Spill calls (CHEMTREC) (Contract # CCN179): +1-800-424-9300 or +1-703-527-3887 (international)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### GHS-US classification

Repr. 1B H360  
 Full text of H statements : see section 16

### 2.2. Label elements

#### GHS-US labelling

Hazard pictograms (GHS-US) :



GHS08

Signal word (GHS-US) : Danger  
 Hazard statements (GHS-US) : H360 - May damage fertility or the unborn child  
 Precautionary statements (GHS-US) : P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P280 - Wear eye protection, protective clothing, protective gloves  
 P308+P313 - If exposed or concerned: Get medical advice/attention  
 P405 - Store locked up  
 P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

### 2.3. Other hazards

Other hazards not contributing to the classification : Harmful to aquatic life with long lasting effects.

### 2.4. Unknown acute toxicity (GHS US)

29.5% of the mixture consists of ingredient(s) of unknown acute toxicity (Oral)  
 30.55% of the mixture consists of ingredient(s) of unknown acute toxicity (Dermal)  
 30.55% of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	% (w/w)	GHS-US classification
zinc sulfate monohydrate	(CAS No) 7446-19-7	1.05	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Disodium Octaborate Tetrahydrate	(CAS No) 12280-03-4	0.4	Repr. 1B, H360

\*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

Full text of H-statements: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
First-aid measures after skin contact	: Remove contaminated clothing and shoes. Wash skin thoroughly with mild soap and water. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.
First-aid measures after ingestion	: Do NOT induce vomiting unless directed to do so by medical personnel. Drink plenty of water. Get immediate medical advice/attention. Rinse mouth.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	: May damage fertility or the unborn child.
Symptoms/injuries after ingestion	: Irritation of the respiratory tract and the other mucous membranes. Vomiting. Diarrhea.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

## SECTION 5: Fire-fighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: None known.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: Burning produces irritating, toxic and noxious fumes.
Explosion hazard	: Product is not explosive.
Reactivity	: No dangerous reactions known.

### 5.3. Advice for firefighters

Firefighting instructions	: Cool adjacent structures and containers with water spray to protect and prevent ignition. Do not allow run-off from fire fighting to enter drains or water courses. Dike and collect water used to fight the fire. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protection during firefighting	: Wear a self contained breathing apparatus. Wear fire/flame resistant/retardant clothing. Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Avoid all eye and skin contact and do not breathe vapour and mist.
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#### 6.1.1. For non-emergency personnel

Protective equipment	: Refer to section 8.2.
Emergency procedures	: Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

Protective equipment	: Refer to section 8.2.
Emergency procedures	: Stop leak if safe to do so. Ventilate area.

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Prevent dispersion. Notify authorities if liquid enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

- For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
- Methods for cleaning up : Absorb and/or contain spill with inert material, then place in suitable container. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

### 6.4. Reference to other sections

Section 7: safe handling. Section 8: personal protective equipment.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapour and mist. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.
- Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs, or potable water supplies.
- Incompatible products : Strong oxidizers. Strong acids.
- Incompatible materials : Sources of ignition. Direct sunlight.
- Storage temperature : <= 40 °C
- Heat and ignition sources : Keep away from heat, sparks and flame.
- Prohibitions on mixed storage : Incompatible materials.
- Storage area : Store in dry, cool, well-ventilated area. Store in a dark area. Protect from freezing.

### 7.3. Specific end use(s)

Growth rate. Regulation.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

RIO™	
ACGIH	Not applicable
OSHA	Not applicable
zinc sulfate monohydrate (7446-19-7)	
ACGIH	Not applicable
OSHA	Not applicable
Disodium Octaborate Tetrahydrate (12280-03-4)	
ACGIH	Not applicable
OSHA	Not applicable

### 8.2. Exposure controls

- Appropriate engineering controls : Avoid splashing. Provide adequate general and local exhaust ventilation.
- Personal protective equipment : Avoid all unnecessary exposure.
- Hand protection : Wear suitable gloves resistant to chemical penetration. PVC. Nitrile rubber gloves. neoprene gloves. VITON gloves. Barrier laminate.
- Eye protection : Chemical goggles or safety glasses.
- Skin and body protection : Long sleeved protective clothing.
- Respiratory protection : In case of inadequate ventilation wear respiratory protection. NIOSH. Approved respirator. Full face respirator.
- Environmental exposure controls : Prevent contaminated water run-off. Prevent leakage or spillage.
- Consumer exposure controls : Avoid contact during pregnancy/while nursing.
- Other information : Do not eat, drink or smoke when using this product. Do not eat, drink or smoke during use.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Physical state	: Liquid
Appearance	: Turbid. sediment.
Colour	: Light brown
Odour	: Fruity
Odour threshold	: No data available
pH	: 4.1 – 4.5
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 104 °C
Flash point	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Vapour pressure	: 17.5 mm Hg
Relative density	: No data available
Relative vapour density at 20 °C	: No data available
Density	: 1.15 g/cm <sup>3</sup>
Solubility	: Miscible with water.
Log Pow	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

**9.2. Other information**

No additional information available

**SECTION 10: Stability and reactivity****10.1. Reactivity**

No dangerous reactions known.

**10.2. Chemical stability**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**10.4. Conditions to avoid**

Heat. Direct sunlight. Extremely high or low temperatures.

**10.5. Incompatible materials**

Strong acids. Strong bases. Strong oxidizers.

**10.6. Hazardous decomposition products**

Burning produces irritating, toxic and noxious fumes. Carbon monoxide. Carbon dioxide.

**SECTION 11: Toxicological information****11.1. Information on toxicological effects**

Likely routes of exposure	: Inhalation; Skin and eye contact
Acute toxicity	: Not classified

RIO™

LD50 oral rat

&gt; 5050 mg/kg

RIO™	
LD50 dermal rabbit	> 5050 mg/kg
LC50 inhalation rat (mg/l)	> 2.12 mg/l/4h

zinc sulfate monohydrate (7446-19-7)	
ATE US (oral)	500.000 mg/kg bodyweight

Skin corrosion/irritation	: Not classified (Slightly irritant but not relevant for classification)
SeRIO™us eye damage/irritation	: Not classified. (Not irritating to rabbits on ocular application)
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified (Bacterial reverse mutation assay (e.g. Ames test). Negative)Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Reproductive toxicity	: May damage fertility or the unborn child.
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after ingestion	: Irritation of the respiratory tract and the other mucous membranes. Vomiting. Diarrhea.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - water : Harmful to aquatic life with long lasting effects.

RIO™	
LC50 fish 1	> 100 mg/l 96 h
EC50 Daphnia 1	> 100 mg/l 48 h

### 12.2. Persistence and degradability

RIO™	
Persistence and degradability	May cause long-term adverse effects in the environment.

### 12.3. Bioaccumulative potential

RIO™	
Bioaccumulative potential	Not established.

### 12.4. Mobility in soil

RIO™	
Ecology - soil	Not established.

### 12.5. Other adverse effects

Other information : Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Sewage disposal recommendations	: Do not dispose of waste into sewer.
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials	: Dispose of container in a licensed facility. Avoid release to the environment.

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT  
Not regulated.

**Additional information**

Other information : No supplementary information available.

**Transport by sea****IMDG**

Transport hazard class(es) (IMDG) : Not applicable  
 Marine pollutant : No

**Air transport****IATA**

Transport hazard class(es) (IATA) : Not applicable  
 Marine pollutant : No

**SECTION 15: Regulatory information****15.1. US Federal regulations**

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

This chemical is a pesticide product registered by the United States 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 (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.:

EPA Registration Number	66330-381
FIFRA Signal Word	CAUTION
FIFRA Hazard Statement	Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing
FIFRA Other	Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

**15.2. International regulations****CANADA****zinc sulfate monohydrate (7446-19-7)**

Listed on the Canadian DSL (Domestic Substances List) inventory.

**Disodium Octaborate Tetrahydrate (12280-03-4)**

Listed on the Canadian DSL (Domestic Substances List) inventory.

**15.3. US State regulations**

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

**SECTION 16: Other information**

Data sources : ACGIH (American Conference of Government Industrial Hygienists).  
 European Chemicals Agency (ECHA) C&L Inventory database. Accessed at <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>.  
 Krister Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition.  
 National Fire Protection Association. Fire Protection Guide to Hazardous Materials; 10th edition.  
 NIOSH Occupational Health Guide for chemical Substances - Vol. II, September, 1978.  
 OSHA 29CFR 1910.1200 Hazard Communication Standard.  
 TSCA Chemical Substance Inventory. Accessed at <http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html>.  
 REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of H-statements:

H302	Harmful if swallowed
H318	Causes serious eye damage
H360	May damage fertility or the unborn child
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

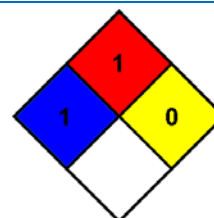
Abbreviations and acronyms:

	ATE: Acute Toxicity Estimate
	CAS (Chemical Abstracts Service) number
	EC50: Environmental Concentration associated with a response by 50% of the test population.
	GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).
	LD50: Lethal Dose for 50% of the test population
	OSHA: Occupational Safety & Health Administration
	STEL: Short Term Exposure Limits
	TSCA: Toxic Substances Control Act
	TWA: Time Weighted Average

NFPA health hazard : 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard : 1 - Materials that must be preheated before ignition can occur.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and not reactive with water.



Indication of changes:

Intended use.

**SDS Prepared by:** The Redstone Group, LLC.  
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*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*