

SAFETY DATA SHEET**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME: **ZEQUANOX[®] CS**

REGISTRATION NO: 84059-15

MANUFACTURER: Marrone Bio Innovations

ADDRESS: 1540 Drew Avenue, Davis CA, 95618

**EMERGENCY PHONE: INFOTRAC Chemical Response System
US and Canada 1-800-535-5053 (24 hours)
International 1-352-323-3500 (24 hours)**

OTHER CALLS: Marrone Bio Innovations 530-750-2800 (9am to 5 pm PST)

FAX PHONE: Marrone Bio Innovations 530-750-2808

PRODUCT USE: Biological zebra and quagga mussel control

SECTION 2: HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW:**

Harmful if inhaled
Causes eye irritation
Causes mild skin irritation

HAZARD SYMBOLS:

Pictogram



Signal Word Warning

HAZARD STATEMENTS:

H316 Causes mild skin irritation
H320 Causes eye irritation
H332 Harmful if inhaled

PRECAUTIONARY STATEMENTS

P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P264 Wash exposed areas thoroughly after handling
P271 Use only outdoors or in a well-ventilated area
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.
P312 Call a doctor if you feel unwell.
P332 + P313 If skin irritation occurs: Get medical attention.
P337 + P313 If eye irritation persists: Get medical attention.

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POTENTIAL ROUTES OF ENTRY: Oral, eye, and inhalation.

CARCINOGENICITY:

OSHA: Not listed ACGIH: Not listed NTP: Not listed. IARC: Not listed

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

synonym: MBI-401 SDP

COMPONENT	CAS NUMBER	PERCENT BY WEIGHT (%)
<i>Pseudomonas fluorescens</i> strain CL145A	None	50
Other (inert ingredients)	Several non-reactive	50

SECTION 4: FIRST AID MEASURES

EYES: Hold eye open and rinse slowly and gently with water for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Do not use an eye ointment. Call poison control center or doctor for treatment advice.

SKIN: Remove contaminated clothing. Rinse skin immediately with plenty of water for at least 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or physician. Do not give anything by mouth to an unconscious person.

INHALATION: Remove person to fresh air. If the person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for treatment.

SECTION 5: FIRE-FIGHTING MEASURES**FLAMMABLE LIMITS IN AIR, (% BY VOLUME)**

UPPER: Not applicable.

LOWER: Not applicable.

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

NFPA HAZARD CLASSIFICATION

HEALTH: 0

FLAMMABILITY: 0

REACTIVITY: 0

HMIS HAZARD CLASSIFICATION

HEALTH: 0

FLAMMABILITY: 0

REACTIVITY: 0

EXTINGUISHING MEDIA: Use extinguishing media appropriate for the surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: None

SECTION 6: ACCIDENTAL RELEASE MEASURES

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ACCIDENTAL RELEASE MEASURES: Wear suitable clothing such as eye protection, long-sleeved shirt, pants and shoes with socks. If spilled, contain - prevent run off into drains and waterways. Absorb liquid with an inert absorbent material. Seal absorbent material in a closed labeled container and dispose of in accordance with local ordinances.

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Store in the closed, original container in a well-ventilated area out of direct sunlight. Keep containers closed when not in use. Empty container completely and dispose of in accordance with all applicable federal, state and local environmental regulations.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Spill controls should be provided for working with large quantities.

VENTILATION: No TLV assigned. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and aerosols below the exposure levels. Ensure that eyewash stations and safety showers are proximal to the work-station location.

RESPIRATORY PROTECTION: Use a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95.

EYE PROTECTION: Safety goggles or glasses with side shields advisable when handling dry powder.

SKIN PROTECTION: Wear gloves made of Latex or other impervious material.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Clothing to prevent prolonged skin contact as needed such as long-sleeved shirt, long pants and shoes with socks.

WORK HYGIENIC PRACTICES: Wash any contamination from skin or eyes immediately. Wash hands and exposed skin before eating, drinking, smoking, after work or using the toilet.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Powder
COLOR:	Tan
ODOR:	Sweet, musty
pH:	5 to 7
DENSITY:	0.3 to 1 g/ml
BOILING POINT:	Not applicable
MELTING POINT:	Not applicable
SOLUBILITY IN WATER:	Dispersible in water

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable.

INCOMPATIBILITY (MATERIAL TO AVOID): None known

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: None known

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HAZARDOUS POLYMERIZATION: Not known to occur
CONDITIONS TO AVOID (POLYMERIZATION): None

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY LD₅₀: >5000 mg/kg (rat) Not categorized
ACUTE DERMAL TOXICITY LD₅₀: >5050 mg/kg (rabbit) Not categorized
ACUTE INHALATION LC₅₀: >2.14 mg/L (rat). Category 4
EYE IRRITATION: Minimally irritating (rabbit). Category 2B
SKIN IRRITATION: Slightly Irritating (rabbit). Category 3
SKIN SENSITIZATION: Non-sensitizing (guinea pigs). Not categorized

SECTION 11: TOXICOLOGICAL INFORMATION

This product is nontoxic or practically nontoxic to mammalian and avian wildlife. Effects of Zequanox are highly selective to dreissenid mussels (zebra and quagga) and it is low in toxicity to freshwater fish, native mollusks, insects, plants, crustaceans and other aquatic organisms.

Acute Freshwater Fish Toxicity: Rainbow Trout LC₅₀ = 150 mg/L. Not categorized.
Bluegill Sunfish LC₅₀ = 135 mg/L. Not categorized.
Common Carp LC₅₀ = 469 mg/L. Not categorized.
Chinook Salmon LC₅₀ = 184 mg/L. Not categorized.
Fathead Minnow LC₅₀ = 570 mg/L. Not categorized.

Acute Native Mollusk Toxicity: No effects to the listed native freshwater bivalves when exposed for 72-hours at 200 mg/L: *Pyganodon grandis*, *Lasmigona compressa*, *Strophitus undulatus*, *Elliptio complanata*, *Lampsilis radiata*, *Pyganodon cataracta*. . Not categorized.
Blue Mussel (*Mytilus edulis*) LC₅₀ = 1,612 mg/L. Not categorized.
Freshwater Mussel (*Anodonta sp.*) LC₅₀ > 500 mg/L. Not categorized.

Acute and/or Toxicity to other Aquatic Organisms: *Daphnia magna* LC₅₀ = 255 mg/L. Not categorized.
Freshwater Shrimp LC₅₀ > 100 mg/L. Not categorized.
Mayfly LC₅₀ = 196 mg/L. Not categorized.
Crayfish LC₅₀ > 500 mg/L. Not categorized.
Midge LC₅₀ = 1,075 mg/L. Not categorized.
Waterlouse LC₅₀ = 3,883 mg/L. Not categorized.
Common aquatic plants: No effects, 6 days > 200mg/L. Not categorized.

Sewage Microbes Toxicity: Mixture of sewage microbes 3-hour EC₅₀ > 5,000 mg/L. Not categorized.

Persistence/Biodegradation: This product is formulated with killed cells of *Pseudomonas fluorescens* strain CL145A and biodegrades rapidly and completely. No persistence expected.

Environmental Fate: Zequanox is stable as a dry powder. When mixed with water, Zequanox begins to lose activity within hours and the product rapidly and completely biodegrades. The risk of acute exposure to non-target aquatic organisms is mitigated by precautionary labeling and National Pollutant Discharge Elimination System (NPDES) permit requirements.

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

SAFETY DATA SHEET**SECTION 13: DISPOSAL CONSIDERATIONS**

Do not reuse containers. Dispose of in accordance with all applicable federal, state, and local environmental regulations.

SECTION 14: TRANSPORTATION INFORMATION

U.S. DOT: Not Regulated

IATA DGR: Not regulated

IMDG: Not Regulated

Freight Classification: Molluscicide. See NMFTA code.

SECTION 15: REGULATORY INFORMATION

ALLOWABLE TOLERANCES: Residues of Zequanox are exempted from the requirement of a tolerance when used in accordance with good agricultural practices and label application instruction to agricultural commodities directed on the product label.

U.S. FEDERAL REGULATIONS

TSCA:	Exempt
CERCLA:	Not applicable.

SARA TITLE III HAZARD CLASSIFICATION SECTIONS 311 AND 312:

Immediate (acute) Health:	None
Delayed (chronic) Health:	None
Fire:	None
Sudden Release of Pressure:	None
Reactivity:	None

STATE REGULATIONS: None

INTERNATIONAL REGULATIONS: Not applicable.

US STATE RIGHT TO KNOW REGULATIONS:

New Jersey Right To Know Components	CAS No.
Kaolin	1332-58-7

Pennsylvania Right To Know Components	CAS No.
Kaolin	1332-58-7

California Proposition 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
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SAFETY DATA SHEET**SECTION 16: OTHER INFORMATION**

NFPA HAZARD CLASSIFICATION

HEALTH: 0

FLAMMABILITY: 0

REACTIVITY: 0

HMIS HAZARD CLASSIFICATION

HEALTH: 0

FLAMMABILITY: 0

REACTIVITY: 0

SPECIAL HAZARDS: Not Determined

Date Issued: 10 January 2018

Revision Date: 1

Revision Note: Harmonize to other company documents

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