

Fuel Quality Services, Inc. encourages and expects you to read and understand the entire Safety Data Sheet (SDS), as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Manufacturer:
Fuel Quality Services, Inc.
 4584 Cantrell Road,
 P.O. Box 1380
 Flowery Branch, GA 30542
 USA

TRANSPORTATION EMERGENCY
 CALL PERS DOMESTIC: (800) 633-8253
 INTERNATIONAL: (801) 629-0667
 CUSTOMER ID# 9405
NON-TRANSPORTATION
 Emergency Phone Numbers:
 National Pesticides Information Center: (800) 858-7378
 Poison Control Center: (800) 222-1222
 Product Information Phone: (770) 967-9790

Product Name: FQS 1.5 Microbicide®
Product Use: Fuel System Biocide
Restriction on Use: All other uses prohibited

MSDS Date of Preparation/Revision: June 10, 2013
 Reviewed by: Angie Coley-McClure Date of Review: June 10, 2013

2. Hazards Identification

GHS Classification:

Health	Physical
Skin Corrosion Category 1B Eye Damage Category 1 Skin Sensitization Category 1	Not Hazardous

Label Elements



DANGER!

Causes severe skin burns and eye damage.
 May cause an allergic skin reaction.

Prevention:

Do not breathe vapors or mists.
 Wash exposed skin thoroughly after handling.
 Contaminated work clothing should not be allowed out of the workplace.
 Wear protective gloves, protective clothing and eye/face protection.

Response:**IF SWALLOWED:** Rinse mouth. Do NOT induce vomiting.**IF ON SKIN (or hair):** Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.**IF INHALED:** Remove person to fresh air and keep comfortable for breathing.**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 physician.

STORAGE:

P405: Store locked up.

DISPOSAL:

P501: Dispose of contents and container in accordance with local and national regulations.

3. Composition/Information on Ingredients**Components**

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
1.03%	5-Chloro-2-methyl-4-isothiazol-3-one (CMIT)	26172-55-4
0.36%	2-Methyl-4-isothiazol-3-one (MIT)	2682-20-4
98.61%	Inert Ingredients	N/A

4. First Aid Measures**IF SWALLOWED:** If swallowed, DO NOT induce vomiting. If the victim is alert have him rinse their mouth with water. Never give anything by mouth to a person who is unconscious or drowsy. Seek immediate medical attention.**IF ON SKIN (Hair):** In case of contact with skin, immediately remove contaminated clothing and flush affected areas with soap and water for at least 15-20 minutes. Seek immediate medical attention. Launder contaminated clothing before reuse. Discard contaminated clothing that cannot be decontaminated, such as leather shoes and belts.**IF INHALED:** Move to fresh air. Get medical attention, if irritation or other symptoms develop and persist. If breathing is difficult, have qualified person administer oxygen and seek immediate medical attention. If breathing has stopped, administer artificial respiration and seek immediate medical attention.**IF IN EYES:** In case of eye contact, flush eyes immediately with plenty of water for at least 15-20 minutes. Remove contact lenses, if present and easy to do after the first 5 minutes. Continue rinsing. Seek immediate medical attention.**Most Important Symptoms:** May cause eye and skin irritation and burns with pain, redness and tissue damage. Ingestion will cause burns to the mouth and throat, nausea, vomiting, severe abdominal pain and shock. Inhalation can cause nose, throat, and lungs irritation.**Indication of Immediate Medical Attention and Special Treatment, if needed:** Immediate medical attention is required for contact and ingestion.

5. Fire-Fighting Measures

Suitable Extinguishing Media: Use any media that is suitable for the surrounding fire.

Specific Hazards Arising from the Chemical: Not classified as flammable or combustible, however, this product will burn under fire conditions. Combustion product may include oxides of carbon, sulfur and nitrogen, hydrogen chloride and chlorine.

Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing to prevent contact. Cool containers with water spray. Minimize exposure. Do not breathe fumes. Contain run-off.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures:

SMALL SPILLS: For product spill less than 500mL (milliliters), use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent) and gloves during spill clean-ups and deactivation of this material. If exposed to material during clean-up operations, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. See Section 8 for Personal Protection Equipment (PPE) information. See SECTION 4, First Aid Measures, for further information.

LARGE SPILLS: For product spills in excess of 500mL (milliliters), wear a NIOSH approved (or equivalent) respirator (with organic vapor/acid gas cartridge and a dust/mist filter) and gloves during spill clean-ups and deactivation of this material. If exposed to material during clean-up operations, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. See SECTION 8 for Personal Protection Equipment (PPE) information. See SECTION 4, First Aid Measures, for further information.

Methods and Materials for Containment/Cleanup: Contain spilled material. For small spills, collect with an inert absorbent material and place in a suitable container for disposal. For large spills, dike spilled material or otherwise contain material to ensure that runoff does not reach a waterway. Collect all spilled material and transfer into appropriate containers. Clean spill residue area with a freshly prepared solution of 5% sodium bicarbonate and 5% sodium hypochlorite (bleach) in water to deactivate residual. Apply solution to the spill area at a ratio of 10 volumes deactivation solution per estimated volume of residual spill to deactivate any residual active ingredient. Let stand for 30 minutes. Flush the spill area with copious amounts of water to chemical sewer (if in accordance with local procedures, permits and regulations). DO NOT add solution to absorbent solids or collected liquid spill. Avoid contact of spilled material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal information.

7. Handling and Storage

Precautions for Safe Handling: Use suitable protective equipment (See Section 8 "Exposure Controls/ Personal Protection). Avoid breathing vapors or mists. Do not get in eyes, on skin or on clothing. Use only with adequate ventilation. Keep container closed. Wash thoroughly after handling. Refer to product label for additional precautions. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. Wash contaminated clothing before reuse. Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Conditions for Safe Storage, including any incompatibilities: Do not contaminate water, food or feed by storage, disposal or cleaning of equipment. Always store pesticides in the original container. Do not apply this product in a way that will contact workers or other persons. Store in a secure location away from excessive heat and strong oxidizers. Do not store this material in containers made of steel.

CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Emptied containers may retain product residue follow all MSDS and label warnings even after container is empty. Shelf life is based on retention of >95% actives during storage at 20°C – 25°C (68°F-77°F).

Storage Temperature: Between $\geq 1^{\circ}\text{C}$ ($\geq 34^{\circ}\text{F}$) and $\leq 55^{\circ}\text{C}$ ($\leq 131^{\circ}\text{F}$)

8. Exposure Controls / Personal Protection

Exposure Guidelines:

Chemical	OSHA PEL	ACGIH TLV
5-Chloro-2-methyl-2H-isothiazol-3-one	None Established	None Established
2-Methyl-2H-isothiazol-3-one	None Established	None Established

Appropriate Engineering Controls: Use with general or adequate local exhaust ventilation to minimize exposure levels.

Personal Protective Equipment:

Respiratory Protection: Typical use of this material does not result in workplace exposures that exceed the exposure limits listed in the Exposure Limit Information Section. In operations where exposure levels are excessive and irritation is experienced, a NIOSH approved respirator appropriate for the form and concentration of the contaminants should be used. Selection and use of respiratory equipment must be in accordance with OSHA 1910.134 and good industrial hygiene practice.

Hand Protection: Wear impervious gloves such as Butyl- rubber or nitrile- rubber gloves. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Wash the outside of gloves before removing and disposing of gloves. Note: Material is a possible skin sensitizer.

Eye Protection: Wear chemical splash safety goggles and face shield. Eye protection worn must be compatible with respiratory protection system employed.

Skin and Body Protection: Mixers, loaders, applicators, and other handlers exposed to this product must wear: long-sleeved shirt and long pants; socks and shoes; and a chemical resistant apron. Wash contaminated clothing before reuse. Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. As soon as possible, wash thoroughly and change into clean clothing. Keep and wash PPE separately from other laundry.

Additional Protective Measures: Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical and Chemical Properties

Parameter	Value	Parameter	Value
Form:	Liquid	Appearance:	Clear
Color:	Colorless	Odor:	None
Evaporation Rate:	<1.00	Odor Threshold:	Not determined
pH:	4.4	Boiling Point/Range:	229°C (444.2°F)
Flash Point:	138°C (280.4°F)	Vapor Pressure:	0.06 mmHg (solvent)
Lower Explosion Limit:	Not determined	Vapor Density:	>1 (air =1)
Upper Explosion Limit:	Not determined	Relative Density:	1.06 @ 25.00°C/77.00°F

Autoignition Temperature:	Not determined	Solubility in Water:	Complete
Decomposition Temperature:	Not determined	Melting/Freezing Point:	Not determined
Partition Coefficient: n-octanol/water	log POW: 0.401 measured CMIT; log POW: -0.486 measured MIT	Viscosity:	134.8 – 1.35.0 cSt @ 21.5°C (70.1°F)
Percent Volatility	<97%		

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

10. Stability and Reactivity

Reactivity: Not reactive.

Chemical Stability: Stable under normal storage and handling conditions.

Possibility of Hazardous Reactions: Reaction with strong oxidizers may generate heat. Product will not undergo polymerization.

Conditions to Avoid: Avoid excessive heat above 77F.

Incompatible Materials: Strong oxidizing agents, amines, reducing agents, mercaptans

Hazardous Decomposition Products: Thermal decomposition will release hydrogen chloride (HCl), nitrogen oxides (NOx), and sulfur oxides (SOx).

11. Toxicological Information

Health Effects of Exposure:

Ingestion: Swallowing may cause burns to the mouth, throat and gastrointestinal tract. May be harmful if swallowed.

Inhalation: Inhalation of mists may cause severe irritation of the nose, throat and upper respiratory tract. High concentrations may cause pulmonary edema.

Eye: Causes severe irritation and burns. May cause permanent eye damage.

Skin: Causes severe irritation and burns. May be harmful if absorbed through skin.

Chronic Effects of Exposure: Prolonged inhalation may cause lung damage. Prolonged or repeated exposure can cause central nervous system depression, nausea, headache and vomiting.

Carcinogenicity: None of the components at levels greater than or equal to 0.1% are listed as a carcinogen or suspected carcinogen by IARC, ACGIH, NTP or OSHA.

Reproductive Toxicity: No specific data are available. No adverse effects are expected.

Germ Cell Mutagenicity: No specific data are available. No adverse effects are expected.

Numerical Measures of Toxicity:

Toxicological information on this product or its components appear in this section when such data is available.

Acute Oral Toxicity	LD50 rat female 3,723 mg/kg LD50 rat male 3,600 mg/kg
Acute Dermal Toxicity	LD50 rabbit female >3,600 mg/kg LD50 rabbit male 3,500 mg/kg
Skin Irritation	Rabbit severe skin irritation
Eye Irritation	Rabbit corrosive
Sensitization	Guinea pig causes sensitization

12. Ecological Information

Additional Ecological Information: Information given is based on data on the components and the ecotoxicology of similar products in the "100% Neat" form.

The following ecotoxicological data refers to:

5-Chloro-2-methyl-4-isothiazol-3-one and 2-Methyl-4- isothiazol-3-one (mixture 3:1)

This chemical is toxic to aquatic plants, fish and aquatic invertebrates. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA. Do not contaminate water by cleaning of equipment or disposal of waste.

Ecotoxicity:

5-Chloro-2-methyl-4-isothiazolin-3-one

Ecotoxicity Effects

Toxicity to fish: LC50 96 Hour 0.065 mg/l

Toxicity to fish: LC50 Rainbow trout (*Oncorhynchus mykiss*) 96 Hour OECD Test Guideline 203 or Equivalent 1.6 mg/l

Toxicity to algae ErC50 Algae 120 Hour OECD Test Guideline 201 or Equivalent 0.31 mg/l

Toxicity to aquatic

Invertebrates EC50 *Daphnia magna* 0.13 mg/l

Toxicity to aquatic

Invertebrates EC50 *Daphnia magna* 48 Hour OECD Test Guideline 202 or Equivalent 4.71 mg/l

2-Methyl-4-Isothiazolin-3-one

Ecotoxicity Effects

Toxicity to fish: LC50 Rainbow trout (*Oncorhynchus mykiss*) 96 Hour OECD Test Guideline 203 or Equivalent 4.77 mg/l

Toxicity to algae EC50 Algae (*Selenastrum capricornutum*) 96 Hour 0.135 mg/l

Toxicity to aquatic

Invertebrates EC50 *Daphnia magna* (Water flea) 48 Hour 0.18 mg/l

Toxicity to aquatic

Invertebrates LC50 *Daphnia magna* (Water flea) 48 Hour 0.85 mg/l

Dipropylene glycol (Mixed isomers)

Ecotoxicity effects

Toxicity to fish LC50 Fish 1,800 mg/l

Toxicity to aquatic

Invertebrates EC50 *Daphnia magna* 48 Hour 1,000 mg/l

Persistence and Degradability: Components are readily biodegradable.

5-Chloro-2-methyl-4-isothiazolin-3-one

Elimination information (persistence and degradability)

Biodegradability OECD Test Guideline 302B or Equivalent, 98%, 10-day Window: Pass

2-Methyl-4-Isothiazolin-3-one

Elimination information (persistence and degradability)

Biodegradability Simulation Study, 98%. According to the results of tests of biodegradability this product is considered as being readily biodegradable.

Magnesium Chloride

Elimination information (persistence and degradability)

Biodegradability OECD Test Guideline 301C or Equivalent 94%, 10-day Window: Pass

Bioaccumulative Potential: Does not bioaccumulate.

Mobility in soil: No data is currently available

Other Adverse effects: None known.

13. Disposal Considerations

Waste Disposal Method

PESTICIDE DISPOSAL: Pesticide wastes may be hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. **[For containers 5 gallons or less:]** Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into the fuel system and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with fuel and recap. Shake for 10 seconds. Pour rinsate into the fuel system. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer container for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. **[For containers larger than 5 gallons:]** Completely empty the remaining contents into the fuel system. Recap the container then offer empty container to a Hazardous Waste Disposal Facility for reconditioning or recycling.

14. Transportation Information

49CFR

(Non-bulk shipments in containers less than 119 gallons): NOT REGULATED FOR TRANSPORT WHEN SHIPPING DOMESTICALLY ROAD, RAIL, AIR

49CFR

(Bulk shipments in containers greater than 119 gallons):

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (5-Chloro-2-methyl-4-isothiazolin-3-one)
UN Number	UN3082
Class	9
Packing Group	III
Marine Pollutant	5-Chloro-2-methyl-4-isothiazolin-3-one

Air Transport International (ICAO/IATA):

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (5-Chloro-2-methyl-4-isothiazolin-3-one)
UN Number	UN3082
Class	9
Packing Group	III
Marine Pollutant	5-Chloro-2-methyl-4-isothiazolin-3-one

Sea Transport (IMO/IMDG):

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (5-Chloro-2-methyl-4-isothiazolin-3-one)
UN Number	UN3082
Class	9
Packing Group	III
Marine Pollutant	5-Chloro-2-methyl-4-isothiazolin-3-one

Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations.

15. Regulatory Information

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.

DANGER**CORROSIVE****CAUSES IRREVERSIBLE EYE DAMAGE AND SKIN BURNS****HARMFUL IF SWALLOWED OR ABSORBED THROUGH THE SKIN****HARMFUL IF INHALED****CAUSES SKIN IRRITATION****United States Federal Regulations**

US OSHA Hazard Communication Classification: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200).

US Toxic Substance Control Act (TSCA): This product is a registered pesticide and not subject to TSCA.

US EPA CERCLA Hazardous Substances (40 CFR 302):**Components**

None

SARA Section 311/312 Hazard Categories: Acute Health**US EPA Emergency Planning and Community Right to Know Act (EPCRA) SARA Title III
Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):****Components**

None

Section 313 Toxic Chemicals (40 CFR 372.65) – Supplier Notification Required:

Components

Magnesium nitrate 10377-60-3

California Proposition 65:

Warning! This product contains a chemical(s) known to the State of California to cause cancer.

Weight%

Components

CAS-No.

None

Federal Regulatory Information

This product is EPA Registered – EPA Registration No. 65597-1

WHMIS

This product is subject to regulation under the Canadian Pest Control Products Act (P.C.P. Act). Therefore, this product is excluded from the supplier labeling and material safety data sheet requirements as specified in Section 12 of the Hazardous Product Act.

16. Other Information

The information is furnished without warranty, expressed or implied. This information is believed to be accurate to the best knowledge of Fuel Quality Services, Inc. The information in this MSDS relates only to the specific material designated herein. Fuel Quality Services, Inc. assumes no legal responsibility for the use or reliance upon the information in this MSDS.

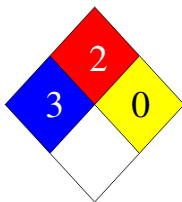
NFPA:

Flammability: 2

Health: 3

Instability: 0

Special Hazards:



Legend	
ACGIH	American Conference of Governmental Industrial Hygienists
BAC	Butyl acetate
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short-term Exposure Limit (STEL)
TLV	Threshold Limit Value
TWA	Time Weighted Average

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

GUIDE SUBSTANCES (Low to Moderate Hazard)

171

Environmentally hazardous substances, liquid, n.o.s. (ID No. 3082)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Some may be transported hot.

HEALTH

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Do not scatter spilled material with high pressure water streams.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

Small Dry Spill

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spill

- Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.