

FuelClear™ M68 Fuel Biocide

Safety Data Sheet according to Reg. (EU) No 2015/830

Version: 2.2

Revision Date: 13/11/23

Print Date: 13/11/23

Fuelcare Limited encourages and expects you to read and understand the entire MSDS, 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.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name: FuelClear™ M68 Fuel Biocide**1.2 Relevant identified uses of the substance or mixture and uses advised against Identified uses:** Biocidal product.

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION

Fuelcare Limited
Mercury House
Shrewsbury Business Park
Shrewsbury
SY2 6LG
UNITED KINGDOM

Customer Information Number: +44 (0)1743 360784**Customer Information Email:** info@fuelcare.com

1.4 EMERGENCY TELEPHONE NUMBER

In Europe, Middle East, Africa and Asia Pacific 24 hour / 7 day emergency response for our products is provided by the NCEC CARECHEM 24 global network.



Country information	Emergency telephone number	Location
Europe, Middle East, Africa (all countries, English Language)	+44 1865 407333	London, UK
Asia Pacific (all countries, English Language)	+65 3165 2217	Singapore

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

Classification according to Regulation (EC) No 1272/2008:

Skin corrosion - Sub-category 1C - H314
 Serious eye damage - Category 1 - H318
 Skin sensitisation - Category 1 - H317
 Short-term (acute) aquatic hazard - Category 1 - H400
 Long-term (chronic) aquatic hazard - Category 1 - H410
 For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008:
Hazard pictograms

Signal word: DANGER
Hazard statements

H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements

P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P391	Collect spillage.

Supplemental information

EUH071	Corrosive to the respiratory tract. Restricted to professional users. NOT FOR AVIATION FUEL.
--------	--

Contains

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

2.3 Other hazards

Endocrine disrupting properties (human health):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Endocrine disrupting properties (environment):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

This product is a mixture.

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
CASRN 10377-60-3 EC-No. 233-826-7 Index-No. -	01-2119491164-38	>= 1.0 - < 10.0 %	Magnesium dinitrate	Ox. Sol. 3 - H272
CASRN 55965-84-9 EC-No. 911-418-6 Index-No. 613-167-00-5	01-2120764691-48	>= 1.0 - < 2.5 %	mixture of: 5-chloro- 2-methyl-4- isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)	Acute Tox. - 3 - H301 Acute Tox. - 2 - H330 Acute Tox. - 2 - H310 Skin Corr. - 1C - H314 Eye Dam. - 1 - H318 Skin Sens. - 1A - H317 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Move to fresh air. Give artificial respiration if breathing has stopped. If symptoms persist, call a physician.

Skin contact: IMMEDIATELY get under a safety shower. Remove contaminated clothing. Wash off with soap and water. Immediate medical attention is required. Wash contaminated clothing before re-use. Do not take clothing home to be laundered. Discard contaminated shoes, belts, and other articles made of leather.

Eye contact: Rinse immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Ingestion: Drink 1 or 2 glasses of water. IMMEDIATELY see a physician. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed:

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

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician: MATERIAL IS SEVERELY IRRITATING. It may not be advisable to induce vomiting. Possible mucosal damage may contraindicate the use of gastric lavage.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media: No data available

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: Combustion generates toxic fumes of the following: hydrogen chloride Nitrogen oxides (NOx) sulphur oxides

5.3 Advice for firefighters

Fire Fighting Procedures: Cool containers/tanks with water spray. Minimize exposure. Do not breathe fumes. Contain run-off.

Special protective equipment for firefighters: Wear self-contained breathing apparatus and protective suit.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear a CEN approved (or equivalent) respirator (with organic vapor/acid gas cartridge and a dust/mist filter) 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 4, First Aid Measures, for further information.

6.2 Environmental precautions: Do not allow material to contaminate ground water system. Prevent product from entering drains.

6.3 Methods and materials for containment and cleaning up: WARNING: KEEP SPILLS AND CLEAN-UP RESIDUALS OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER. Adsorb the spill with spill pillows or inert solids such as clay or vermiculite, and transfer contaminated materials to suitable containers for disposal. Deactivate spill area with freshly prepared solution of 5% sodium bicarbonate and 5% sodium hypochlorite in water. 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 deactivation solution to the waste pail to deactivate the adsorbed material. See Section 13, "Disposal Considerations", for information regarding the disposal of contained materials.

6.4 Reference to other sections: References to other sections, if applicable, have been provided in the previous sub-sections.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling: This material is a severe irritant. For personal protection see section 8. Do not handle material near food, feed or drinking water.

7.2 Conditions for safe storage, including any incompatibilities: Keep in a well-ventilated place. The product as supplied may evolve gas (largely carbon dioxide) slowly. To prevent the buildup of pressure the product is packaged in specially vented containers, where necessary. Keep this product in the original container when not in use. Container must be stored and transported in an upright position to prevent spilling the contents through the vent, where fitted. Do not store this material in containers made of the following: steel. Do not store this material near food, feed or drinking water. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all MSDS and label warnings even after container is emptied. Expiration date based only on retention of >95% actives during storage at 20°C -25°C (68°F -77°F).

Storage stability

Storage temperature: 1 - 55 °C

7.3 Specific end use(s): See the technical data sheet on this product for further information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

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

Component	Regulation	Type of Listing	Value/Notation
mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-	-	TWA	0.075 mg/m ³ , as 5-chloro-2-methyl-2H-isothiazol-3-one
		STEL	0.23 mg/m ³ , as 5-chloro-2-methyl-2H-isothiazol-3-one

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

isothiazol-3-one [EC no. 220-239-6] (3:1)		TWA	1.5 mg/m3, as 2- methyl-2H-isothiazol-3- one
		STEL	4.5 mg/m3, as 2- methyl-2H-isothiazol-3- one

Derived No Effect Level

Magnesium dinitrate

Workers

Acute systemic effects		Acute local effects		Long-term systemic effects		Long-term local effects	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	20.8 mg/kg bw/day	147 mg/m3	n.a.	n.a.

Consumers

Acute systemic effects		Acute local effects		Long-term systemic effects		Long-term local effects	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	12.5 mg/kg bw/day	43.5 mg/m3	n.a.	n.a.

Predicted No Effect Concentration

Magnesium dinitrate

Compartment	PNEC
Fresh water	0.045 mg/l
Marine water	0.045 mg/l
Intermittent use/release	4.5 mg/l
Sewage treatment	18 mg/l

8.2 Exposure controls

Engineering controls: Use local exhaust ventilation with a minimum capture velocity of 150 ft/min. (0.75 m/sec.) at the point of dust or mist evolution. Refer to the current edition of "Industrial Ventilation: A Manual of Recommended Practice" published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

Protective measures: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Individual protection measures

Eye/face protection: Eye protection: Use chemical splash goggles and face shield (EN166). Eye protection worn must be compatible with respiratory protection system employed. Use chemical splash goggles and face shield (EN166).

Skin protection

Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear as appropriate:

Chemical resistant apron

Complete suit protecting against chemicals

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. For those special workplace conditions where the listed exposure limits are exceeded, a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed. For concentrations up to 10 times the exposure limit, wear a properly fitted NIOSH approved (or equivalent) half-mask or full facepiece air purifying respirator equipped with organic vapor cartridges and N95 filters. If oil mist is present, use R95 or P95 filters. For those unlikely situations where exposure may greatly exceed the listed exposure limits (i.e. greater than 10-fold), or in any emergency situation, wear a properly fitted NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode or a full facepiece airline respirator in the pressure demand mode with emergency escape provision. See SECTION 6, Accidental Release Measures, for respirator and protective clothing requirements for spill clean-up and decontamination of this material.

Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental

exposure during use and waste disposal.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid
Colour	Colourless to pale yellow clear
Odour	aromatic
Odour Threshold	No data available
pH	4.4
Melting point/range	No data available
Freezing point	<-20°C
Boiling point (760 mmHg)	229.00 °C Solvent
Flash point	138.00 °C <i>PENSKY MARTENS CLOSED CUP</i>
Evaporation Rate (Butyl Acetate = 1)	<1.00 Water
Flammability (solid, gas)	Not Applicable
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	0.08 hPa solvent-like
Relative Vapor Density (air = 1)	0.6500
Relative Density (water = 1)	1.0440 at 25 °C
Water solubility	completely soluble
Partition coefficient: n- octanol/water	log Pow: 0.401 <i>Measured</i> log Pow: -0.486 <i>Measured</i>
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	97.800 mPa.s at 25 °C
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

9.2 Other information

Molecular weight	No data available
Percent volatility	< 97.00 %

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 data available

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

10.2 Chemical stability: No data available

10.3 Possibility of hazardous reactions: Stable under recommended storage conditions. Product will not undergo polymerization.

10.4 Conditions to avoid: No data available

10.5 Incompatible materials: Avoid contact with the following: Oxidizing agents Amines Reducing agents Mercaptans.

10.6 Hazardous decomposition products: Nitrogen oxides (NO_x) Sulphur oxides hydrogen chloride

SECTION 11: TOXICOLOGICAL INFORMATION

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

11.1 Information on toxicological effects

Acute toxicity

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

Acute inhalation toxicity

Product test data not available. Refer to component data.

Skin corrosion/irritation

For similar material(s):

In skin corrosion/irritation test conducted in compliance with GLP standards is considered as causing severe skin irritation.

Serious eye damage/eye irritation

In eye damage/eye irritation tests conducted in compliance with GLP standards the product caused effects which were not reversible within 21 days. Based on these observations the product is considered as causing serious damage to eyes.

Sensitization

Causes sensitisation.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Product test data not available. Refer to component data.

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Product test data not available. Refer to component data.

Carcinogenicity

Product test data not available. Refer to component data.

Teratogenicity

Product test data not available. Refer to component data.

Reproductive toxicity

Product test data not available. Refer to component data.

Mutagenicity

Product test data not available. Refer to component data.

Aspiration Hazard

Product test data not available. Refer to component data.

COMPONENTS INFLUENCING TOXICOLOGY:**Magnesium Dinitrate****Acute inhalation toxicity**

The LC50 has not been determined.

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For similar material(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity

No relevant data found.

Teratogenicity

For similar material(s):

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity

For similar material(s):

In animal studies, did not interfere with reproduction.

Mutagenicity

In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects

Aspiration Hazard

No aspiration toxicity classification

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H - isothiazol-3-one [EC no. 220-239-6]

(3:1)

Acute inhalation toxicity

LC50, Rat, 4 Hour, dust/mist, 0.33 mg/l

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Carcinogenicity

Did not cause cancer in laboratory animals.

Teratogenicity

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects

Aspiration Hazard

No aspiration toxicity classification

11.2. Information on other hazards**Endocrine disrupting properties**

The substance/mixture does not contain components considered to have endocrine disrupting properties according to

REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

No data available

SECTION 12: ECOLOGICAL INFORMATION

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

12.1 Toxicity**Magnesium dinitrate****Acute toxicity to fish**

Not expected to be acutely toxic to aquatic organisms. For similar material(s):
LC50, Poecilia reticulata (guppy), 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates

For similar material(s):
EC50, Daphnia magna, 48 Hour, > 100 mg/l

Acute toxicity to algae/aquatic plants

For similar material(s):
ErC50, Algae, 72 Hour, Growth rate, > 100 mg/l

Toxicity to bacteria

Based on data from similar materials
EC50, 3 Hour, > 1,000 mg/l, OECD Test Guideline 209

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H - isothiazol-3-one [EC no. 220-239-6]**(3:1)****Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 0.19 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), flow-through test, 48 Hour, 0.16 mg/l, OECD Test Guideline 202 or Equivalent

EC50, Acartia tonsa, static test, 48 Hour, 0.007 mg/l

Acute toxicity to algae/aquatic plants

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 0.027 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate, 0.0014 mg/l

EC50, Skeletonema costatum (marine diatom), 72 Hour, 0.0063 mg/l, OECD Test Guideline 201

Chronic toxicity to fish

NOEC, Rainbow trout (*Oncorhynchus mykiss*), flow-through, 14 d, 0.05 mg/l NOEC, *Pimephales promelas* (fathead minnow), flow-through test, 36 d, 0.02 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, *Daphnia magna*, flow-through test, 21 d, 0.1 mg/l

12.2 Persistence and degradability**Magnesium dinitrate**

Biodegradability: No relevant data found.

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H - isothiazol-3-one [EC no. 220-239-6]**(3:1)**

Biodegradability: Considered to be rapidly degradable.

Biodegradation: < 50 %

Exposure time: 10 d

Biodegradation: 62 %

Exposure time: 28 d

Method: OECD Test Guideline 301B

Photodegradation

Atmospheric half-life: 0.38 - 1.3 d

12.3 Bioaccumulative potential

Bioaccumulation: 5-Chloro-2-methyl-4-isothiazolin-3-one (CMIT): 5-Chloro-2-methyl-4- isothiazolin-3-one (MIT):

Partition coefficient: n-octanol/water(log Pow): 0.401 Measured **Partition coefficient: n- octanol/water(log Pow):** - 0.486 Measured

12.4 Mobility in soil**Magnesium dinitrate**

Potential for mobility in soil is very high (Koc between 0 and 50).

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Partition coefficient (Koc): 24

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H - isothiazol-3-one [EC no. 220-239-6]

(3:1)

Potential for mobility in soil is very high (Koc between 0 and 50).

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Partition coefficient (Koc): 28 Estimated.

12.5 Results of PBT and vPvB assessment

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H - isothiazol-3-one [EC no. 220-239-6]

(3:1)

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Magnesium dinitrate

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

Contaminated packaging: Empty containers retain product residues. Follow label warnings even after container is emptied.

Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable federal, state and local regulations.

SECTION 14: TRANSPORT INFORMATION

Classification for ROAD and Rail transport (ADR/RID):

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

14.1 UN number	UN 3265
14.2 UN proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(Mixture of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H- isothiazol-3-one (3:1))
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental group	Mixture of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H- isothiazol-3-one (3:1))
14.6 Special precautions for user	Hazard Identification Number: 80

Classification for SEA transport (IMO-IMDG):

14.1 UN number	UN 3265
14.2 UN proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(Mixture of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H- isothiazol-3-one (3:1))
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental group	Mixture of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H- isothiazol-3-one (3:1))
14.6 Special precautions for user	EmS: F-A, S-B
14.7 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

14.1 UN number	UN 3265
14.2 UN proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(Mixture of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H- isothiazol-3-one (3:1))
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental group	Not applicable
14.6 Special precautions for user	No data available

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

SECTION 15: REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

REACH Regulation (EC) No 1907/2006

This product contains only components that have been either pre-registered, registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Listed in Regulation: ENVIRONMENTAL HAZARDS

Number in Regulation: E1

100 t

200 t

Further information

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture.

SECTION 16: OTHER INFORMATION**Full text of H-Statements referred to under sections 2 and 3.**

H301	Toxic if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008

Skin Corr. - 1C - H314 - Calculation method

Eye Dam. - 1 - H318 - Based on product data or assessment

Skin Sens. - 1 - H317 - Calculation method

Aquatic Acute - 1 - H400 - Calculation method

Aquatic Chronic - 1 - H410 - Calculation method

Revision

Identification Number: FM68 / A002 / Issue Date: 13.11.2023

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

Legend

STEL	Short term exposure limit
TWA	Time weighted average
Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Eye Dam.	Serious eye damage
Skin Corr.	Skin corrosion
Skin Sens.	Skin sensitisation

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This MSDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company. Fuelcare Limited urges each customer or recipient of this MSDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this MSDS 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

The information contained in this document is provided free of charge and is based on technical data that Fuelcare believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Fuelcare accepts no liability for any loss, damage or expense arising from, or in connection with, the use of the information. Furthermore, none of the contents of this publication should be taken as a license to operate under any patent, nor as a recommendation to infringe any patent. **USE BIOCIDES SAFELY. ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FOR PROFESSIONAL USERS ONLY.**

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 MSDS's, we are not and cannot be responsible for MSDS's obtained from any source other than ourselves. If you have obtained an MSDS from another source or if you are not sure that the MSDS you have is current, please contact us for the most current version.