

## 1. Identification

<b>Product identifier</b>	<b>WATERMARK® KARL FISCHER COULOMETRIC GENERATOR SOLUTION, PYRIDINE-BASED</b>	
<b>Other means of identification</b>		
<b>Product code</b>	1623	
<b>Recommended use</b>	Laboratory reagent for water determination using the Karl Fischer method.	
<b>Recommended restrictions</b>	None known.	
<b>Manufacturer/Importer/Supplier/Distributor information</b>		
<b>Manufacturer</b>		
<b>Company name</b>	GFS Chemicals, Inc.	
<b>Address</b>	P.O. Box 245 Powell, OH 43065 United States	
<b>Telephone</b>	Phone	740-881-5501
	Toll Free	800-858-9682
	Fax	740-881-5989
<b>Website</b>	www.gfschemicals.com	
<b>E-mail</b>	service@gfschemicals.com	
<b>Emergency phone number</b>	Emergency Assistance	Chemtrec 800-424-9300

## 2. Hazard(s) identification

<b>Physical hazards</b>	Flammable liquids	Category 2
<b>Health hazards</b>	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Sensitization, skin	Category 1
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 1
	Specific target organ toxicity, single exposure	Category 1 (nervous system, respiratory system)
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 1 (central nervous system, kidney, liver, nervous system, visual organs)
<b>Environmental hazards</b>	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2
<b>OSHA defined hazards</b>	Not classified.	

### Label elements



**Signal word** Danger

**Hazard statement** Highly flammable liquid and vapor. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of causing cancer. May damage fertility or the unborn child. Causes damage to organs (nervous system, respiratory system). Causes damage to organs (central nervous system, kidney, liver, nervous system, visual organs) through prolonged or repeated exposure. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

## Precautionary statement

### Prevention

Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

### Response

If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. 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 doctor/physician. Wash contaminated clothing before reuse.

### Storage

Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

### Disposal

Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

### Hazard(s) not otherwise classified (HNOC)

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

### Supplemental information

% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment.  
% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

## 3. Composition/information on ingredients

### Mixtures

Chemical name	Common name and synonyms	CAS number	%
METHYL ALCOHOL	WOOD ALCOHOL METHANOL	67-56-1	40 - < 50*
ETHYLENEGLYCOLMONOMETHYL ETHER	METHYL CELLOSOLVE ETHYLENE GLYCOL MONOMETHYL ETHER 2-METHOXYETHANOL	109-86-4	30 - < 40*
PYRIDINE		110-86-1	10 - < 20*
SULFUR DIOXIDE		7446-09-5	3 - < 5*
IODINE		7553-56-2	<2.2

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

## 4. First-aid measures

### Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

### Skin contact

Remove contaminated clothing immediately and wash skin with soap and water. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

### Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

### Ingestion

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

### Most important symptoms/effects, acute and delayed

Behavioral changes. Burning pain and severe corrosive skin damage. Decrease in motor functions. Edema. Narcosis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Jaundice. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Irritation of nose and throat. May cause respiratory irritation. Prolonged exposure may cause chronic effects.

### Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

### General information

Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

## 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Alcohol resistant foam. Water fog. Carbon dioxide (CO <sub>2</sub> ). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	Highly flammable liquid and vapor.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	<p>ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Should not be released into the environment.</p> <p>Large Spills: Stop leak if you can do so without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Clean up in accordance with all applicable regulations. Following product recovery, flush area with water.</p> <p>Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.</p> <p>Never return spills in original containers for re-use.</p>
<b>Environmental precautions</b>	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases. Use appropriate containment to avoid environmental contamination.

## 7. Handling and storage

### Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".

### Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
ETHYLENEGLYCOLMONOME THYL ETHER (CAS 109-86-4)	PEL	80 mg/m <sup>3</sup>
IODINE (CAS 7553-56-2)	Ceiling	25 ppm 1 mg/m <sup>3</sup> 0.1 ppm
METHYL ALCOHOL (CAS 67-56-1)	PEL	260 mg/m <sup>3</sup>
PYRIDINE (CAS 110-86-1)	PEL	200 ppm 15 mg/m <sup>3</sup> 5 ppm
SULFUR DIOXIDE (CAS 7446-09-5)	PEL	13 mg/m <sup>3</sup> 5 ppm

#### US. ACGIH Threshold Limit Values

Components	Type	Value
ETHYLENEGLYCOLMONOME THYL ETHER (CAS 109-86-4)	TWA	0.1 ppm
METHYL ALCOHOL (CAS 67-56-1)	STEL	250 ppm
PYRIDINE (CAS 110-86-1)	TWA	200 ppm
SULFUR DIOXIDE (CAS 7446-09-5)	TWA	1 ppm
	STEL	0.25 ppm

#### US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
ETHYLENEGLYCOLMONOME THYL ETHER (CAS 109-86-4)	TWA	0.3 mg/m <sup>3</sup>
IODINE (CAS 7553-56-2)	Ceiling	0.1 ppm 1 mg/m <sup>3</sup> 0.1 ppm

**US. NIOSH: Pocket Guide to Chemical Hazards**

Components	Type	Value
METHYL ALCOHOL (CAS 67-56-1)	STEL	325 mg/m3
	TWA	250 ppm 260 mg/m3
PYRIDINE (CAS 110-86-1)	TWA	200 ppm 15 mg/m3
	STEL	5 ppm 13 mg/m3
SULFUR DIOXIDE (CAS 7446-09-5)	TWA	5 ppm 5 mg/m3
		2 ppm

**Biological limit values****US. ACGIH. BEIs. Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)	1 mg/g	2-Methoxyacetic acid	Creatinine in urine	*
METHYL ALCOHOL (CAS 67-56-1)	15 mg/l	Methanol	Urine	*

\* - For sampling details, please see the source document.

**Exposure guidelines****US - Tennessee OELs: Skin designation**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4) Can be absorbed through the skin.  
METHYL ALCOHOL (CAS 67-56-1) Can be absorbed through the skin.

**US. ACGIH Threshold Limit Values**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4) Can be absorbed through the skin.  
METHYL ALCOHOL (CAS 67-56-1) Can be absorbed through the skin.

**US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants**

2-METHOXYETHANOL (CAS 109-86-4) Can be absorbed through the skin.  
METHYL ALCOHOL; METHANOL (CAS 67-56-1) Can be absorbed through the skin.

**US. Minnesota Hazardous Substances List (Minn. Rules 5206.0400).**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4) Skin designation applies.  
METHYL ALCOHOL (CAS 67-56-1) Skin designation applies.

**US. NIOSH: Pocket Guide to Chemical Hazards**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4) Can be absorbed through the skin.  
METHYL ALCOHOL (CAS 67-56-1) Can be absorbed through the skin.

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4) Can be absorbed through the skin.

**Appropriate engineering controls**

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Chemical respirator with organic vapor cartridge and full facepiece.

**Skin protection**

**Hand protection** Chemical resistant gloves.

**Other**

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

**Respiratory protection** Chemical respirator with organic vapor cartridge and full facepiece.

**Thermal hazards**

Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

**9. Physical and chemical properties****Appearance**

<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Color</b>	Light brown.
<b>Odor</b>	strong pungent.
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	-117.29 °F (-82.94 °C) estimated
<b>Initial boiling point and boiling range</b>	201.14 °F (93.96 °C) estimated
<b>Flash point</b>	> 53.6 °F (> 12.0 °C) 74.2 °F (23.5 °C) estimated
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	> 6 %
<b>Flammability limit - upper (%)</b>	< 36 %
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	89.08 hPa estimated
<b>Vapor density</b>	Not available.
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	573.39 °F (300.77 °C) estimated
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Density</b>	0.95 g/cm <sup>3</sup>
<b>Flammability class</b>	Flammable IB estimated
<b>Flash point class</b>	Flammable IB
<b>Percent volatile</b>	> 85 %
<b>Specific gravity</b>	0.95
<b>VOC (Weight %)</b>	> 85 %

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
<b>Incompatible materials</b>	Strong acids. Strong oxidizing agents. Caustics.
<b>Hazardous decomposition products</b>	Carbon dioxide, carbon monoxide, oxides of sulfur and nitrogen. Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	May cause damage to organs by inhalation. May cause damage to organs through prolonged or repeated exposure by inhalation. May cause drowsiness and dizziness. Headache. Nausea, vomiting. May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
<b>Skin contact</b>	Causes severe skin burns. May cause an allergic skin reaction.

**Eye contact**

Causes serious eye damage.

**Ingestion**

Causes digestive tract burns.

**Symptoms related to the physical, chemical and toxicological characteristics**

Behavioral changes. Burning pain and severe corrosive skin damage. Decrease in motor functions. Edema. Narcosis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Jaundice. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Irritation of nose and throat. May cause respiratory irritation.

**Information on toxicological effects****Acute toxicity**

Narcotic effects. May cause an allergic skin reaction. May cause respiratory irritation.

**Product****Species****Test Results**

WATERMARK® KARL FISCHER COULOMETRIC GENERATOR SOLUTION, PYRIDINE-BASED (CAS Mixture)

**Acute***Dermal*

LD50

Rabbit

6228 mg/kg

*Inhalation*

LC50

Cat

187.7143 mg/l, 4.5 Hours estimated

96 mg/l, 6 Hours estimated

Guinea pig

33333.332 ppm, 20 Hours estimated

33333.332 mg/l, 20 Hours estimated

18833 mg/l

4333.3335 mg/l, 154 Hours estimated

4333.3335 ppm, 154 Hours estimated

Mouse

33333.332 ppm, 4 Hours estimated

33333.332 mg/l, 4 Hours estimated

19167 mg/l

5000 ppm, 847 Hours estimated

5000 mg/l, 847 Hours estimated

Rat

50000 mg/l, 1 Hours estimated

50000 ppm, 1 Hours estimated

22222.2227 ppm, 4 Hours estimated

22222.2227 mg/l, 4 Hours estimated

4207 mg/l

192.3077 mg/l, 6 Hours estimated

LD50

Rat

50000 mg/l

50000 ppm, 1 Hours estimated

50000 mg/l, 1 Hours estimated

*Oral*

LD50

Dog

17582.418 mg/kg estimated

Guinea pig

22222 mg/kg

Monkey

4.3956 g/kg estimated

Mouse

7449 mg/kg

4.4266 g/kg estimated

Rabbit

99999 mg/kg

29.7644 g/kg estimated

Rat

2821 mg/kg

*Other*

LD50

Dog

4889 mg/kg

Guinea pig

7815.3848 mg/kg estimated

5.5556 ml/kg estimated

Hamster

18802.1973 mg/kg estimated

<b>Product</b>	<b>Species</b>	<b>Test Results</b>
	Monkey	6.5934 g/kg estimated
	Mouse	2333 mg/kg
	Rabbit	4013.1868 mg/kg estimated
	Rat	1161.8301 mg/kg estimated
<b>Components</b>	<b>Species</b>	<b>Test Results</b>
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	1280 mg/kg
<i>Inhalation</i>		
LC50	Rat	1500 mg/l 7 hours
<i>Oral</i>		
LD50	Guinea pig	950 mg/kg
	Mouse	2560 mg/kg
	Rabbit	890 mg/kg
	Rat	2370 mg/kg
<i>Other</i>		
LD50	Mouse	2147 mg/kg
	Rat	2140 mg/kg
IODINE (CAS 7553-56-2)		
<b>Acute</b>		
<i>Oral</i>		
LD50	Mouse	22 g/kg
	Rabbit	10 g/kg
	Rat	14 g/kg
METHYL ALCOHOL (CAS 67-56-1)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	15800 mg/kg
<i>Inhalation</i>		
LC50	Cat	85.41 mg/l, 4.5 Hours 43.68 mg/l, 6 Hours
	Rat	64000 mg/l, 4 Hours 87.5 mg/l, 6 Hours
<i>Oral</i>		
LD50	Dog	8000 mg/kg
	Monkey	2 g/kg
	Mouse	7300 mg/kg
	Rabbit	14.4 g/kg
	Rat	5628 mg/kg
<i>Other</i>		
LD50	Guinea pig	3556 mg/kg
	Hamster	8555 mg/kg
	Monkey	3 g/kg
	Mouse	4100 mg/kg
	Rabbit	1826 mg/kg
	Rat	2131 mg/kg



Components	Species	Test Results
PYRIDINE (CAS 110-86-1)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	1121 mg/kg
<i>Inhalation</i>		
LC50	Rat	9000 ppm, 1 Hours 9000 mg/l, 1 Hours 4000 ppm, 4 Hours 4000 mg/l, 4 Hours
LD50	Rat	9000 ppm, 1 Hours 9000 mg/l, 1 Hours
<i>Oral</i>		
LD50	Guinea pig	4000 mg/kg
	Mouse	800 - 1600 mg/kg 1500 mg/kg 0.8 g/kg
	Rat	800 - 1600 mg/kg 1580 mg/kg 1500 mg/kg 891 mg/kg 0.8 g/kg
<i>Other</i>		
LD50	Dog	880 mg/kg
	Guinea pig	1 ml/kg
	Mouse	420 mg/kg 0.8 g/kg
	Rat	360 mg/kg 0.8 g/kg
SULFUR DIOXIDE (CAS 7446-09-5)		
<b>Acute</b>		
<i>Inhalation</i>		
LC50	Guinea pig	1000 ppm, 20 Hours 1000 mg/l, 20 Hours 130 ppm, 154 Hours 130 mg/l, 154 Hours
	Mouse	1000 ppm, 4 Hours 1000 mg/l, 4 Hours 150 ppm, 847 Hours 150 mg/l, 847 Hours

\* Estimates for product may be based on additional component data not shown.

<b>Skin corrosion/irritation</b>	Causes severe skin burns and eye damage.
<b>Serious eye damage/eye irritation</b>	Causes serious eye damage.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	Not available.
<b>Skin sensitization</b>	May cause an allergic skin reaction.
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
<b>Carcinogenicity</b>	Suspected of causing cancer.

## IARC Monographs. Overall Evaluation of Carcinogenicity

PYRIDINE (CAS 110-86-1)	3 Not classifiable as to carcinogenicity to humans.
SULFUR DIOXIDE (CAS 7446-09-5)	3 Not classifiable as to carcinogenicity to humans.

<b>Reproductive toxicity</b>	May damage fertility or the unborn child.
<b>Specific target organ toxicity - single exposure</b>	Causes damage to organs (nervous system, respiratory system). May cause respiratory irritation. May cause drowsiness and dizziness.
<b>Specific target organ toxicity - repeated exposure</b>	Causes damage to organs (central nervous system, kidney, liver, nervous system, visual organs) through prolonged or repeated exposure.
<b>Aspiration hazard</b>	Not available.
<b>Chronic effects</b>	Prolonged inhalation may be harmful. Causes damage to organs through prolonged or repeated exposure.

## 12. Ecological information

**Ecotoxicity** Harmful to aquatic life with long lasting effects.

Product		Species	Test Results
WATERMARK® KARL FISCHER COULOMETRIC GENERATOR SOLUTION, PYRIDINE-BASED (CAS Mixture)			
<b>Aquatic</b>			
Crustacea	EC50	Daphnia	37765.5664 mg/l, 48 hours estimated
Fish	LC50	Fish	92.3242 mg/l, 96 hours estimated
<b>Components</b>			
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)			
<b>Aquatic</b>			
Fish	LC50	Bluegill (Lepomis macrochirus)	> 10000 mg/l, 96 hours
IODINE (CAS 7553-56-2)			
<b>Aquatic</b>			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.48 - 0.58 mg/l, 96 hours
			0.48 - 0.58 mg/l, 96 hours
METHYL ALCOHOL (CAS 67-56-1)			
<b>Aquatic</b>			
Crustacea	EC50	Water flea (Daphnia magna)	> 10000 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	> 100 mg/l, 96 hours
PYRIDINE (CAS 110-86-1)			
<b>Aquatic</b>			
Fish	LC50	Chinook salmon (Oncorhynchus tshawytscha)	2.9 mg/l, 96 hours

\* Estimates for product may be based on additional component data not shown.

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential** No data available.

### Partition coefficient n-octanol / water (log Kow)

ETHYLENEGLYCOLMONOMETHYL ETHER	-0.77
IODINE	2.49
METHYL ALCOHOL	-0.77
PYRIDINE	0.65

**Mobility in soil** No data available.

**Other adverse effects** No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

## 13. Disposal considerations

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

**14. Transport information**

**DOT**

<b>UN number</b>	UN1993
<b>UN proper shipping name</b>	Flammable liquids, n.o.s. (METHYL ALCOHOL RQ = 10989 LBS, PYRIDINE RQ = 5556 LBS), MARINE POLLUTANT
<b>Transport hazard class(es)</b>	
<b>Class</b>	3
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	3
<b>Packing group</b>	II
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	Yes
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Special provisions</b>	IB2, T7, TP1, TP8, TP28
<b>Packaging exceptions</b>	150
<b>Packaging non bulk</b>	202
<b>Packaging bulk</b>	242

**IATA**

<b>UN number</b>	UN1993
<b>UN proper shipping name</b>	Flammable liquid, n.o.s. (METHYL ALCOHOL, PYRIDINE)
<b>Transport hazard class(es)</b>	
<b>Class</b>	3
<b>Subsidiary risk</b>	-
<b>Packing group</b>	II
<b>Environmental hazards</b>	No.
<b>ERG Code</b>	3H
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Other information</b>	
<b>Passenger and cargo aircraft</b>	Allowed.
<b>Cargo aircraft only</b>	Allowed.

**IMDG**

<b>UN number</b>	UN1993
<b>UN proper shipping name</b>	FLAMMABLE LIQUID, N.O.S. (METHYL ALCOHOL, PYRIDINE)
<b>Transport hazard class(es)</b>	
<b>Class</b>	3
<b>Subsidiary risk</b>	-
<b>Packing group</b>	II
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	No.
<b>EmS</b>	F-E, S-E
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not established.

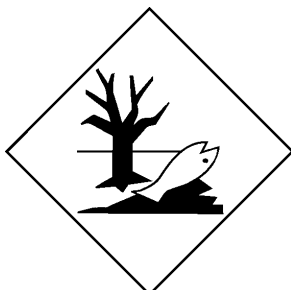
**DOT**



IATA; IMDG



Marine pollutant



General information

DOT Regulated Marine Pollutant.

## 15. Regulatory information

### US federal regulations

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

All components are on the U.S. EPA TSCA Inventory List.

#### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4) 1.0 % One-Time Export Notification only.

#### CERCLA Hazardous Substance List (40 CFR 302.4)

METHYL ALCOHOL (CAS 67-56-1) Listed.

PYRIDINE (CAS 110-86-1) Listed.

#### SARA 304 Emergency release notification

SULFUR DIOXIDE (CAS 7446-09-5) 500 LBS

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

#### Hazard categories

Immediate Hazard - Yes

Delayed Hazard - Yes

Fire Hazard - Yes

Pressure Hazard - No

Reactivity Hazard - No

#### SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
SULFUR DIOXIDE	7446-09-5	500	500 lbs		

#### SARA 311/312

No

#### Hazardous chemical

#### SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
METHYL ALCOHOL	67-56-1	40 - < 50
ETHYLENEGLYCOLMONOMETHYL ETHER	109-86-4	30 - < 40
PYRIDINE	110-86-1	10 - < 20

### Other federal regulations

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

METHYL ALCOHOL (CAS 67-56-1)

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

SULFUR DIOXIDE (CAS 7446-09-5)

**Safe Drinking Water Act (SDWA)** Not regulated.

#### Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

IODINE (CAS 7553-56-2) 2.2 %WV

Material name: WATERMARK® KARL FISCHER COULOMETRIC GENERATOR SOLUTION, PYRIDINE-BASED

1623

Version #: 01

Revision date: Issue date: June-18-2015

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**DEA Exempt Chemical Mixtures Code Number**

IODINE (CAS 7553-56-2)

6699

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

Not listed.

**US. Massachusetts RTK - Substance List**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)

IODINE (CAS 7553-56-2)

METHYL ALCOHOL (CAS 67-56-1)

PYRIDINE (CAS 110-86-1)

SULFUR DIOXIDE (CAS 7446-09-5)

**US. New Jersey Worker and Community Right-to-Know Act**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)

IODINE (CAS 7553-56-2)

METHYL ALCOHOL (CAS 67-56-1)

PYRIDINE (CAS 110-86-1)

SULFUR DIOXIDE (CAS 7446-09-5)

**US. Pennsylvania Worker and Community Right-to-Know Law**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)

IODINE (CAS 7553-56-2)

METHYL ALCOHOL (CAS 67-56-1)

PYRIDINE (CAS 110-86-1)

SULFUR DIOXIDE (CAS 7446-09-5)

**US. Rhode Island RTK**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)

METHYL ALCOHOL (CAS 67-56-1)

PYRIDINE (CAS 110-86-1)

SULFUR DIOXIDE (CAS 7446-09-5)

**US. California Proposition 65**

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

**US - California Proposition 65 - CRT: Listed date/Carcinogenic substance**

PYRIDINE (CAS 110-86-1)

Listed: May 17, 2002

**US - California Proposition 65 - CRT: Listed date/Developmental toxin**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)

Listed: January 1, 1989

METHYL ALCOHOL (CAS 67-56-1)

Listed: March 16, 2012

SULFUR DIOXIDE (CAS 7446-09-5)

Listed: July 29, 2011

**US - California Proposition 65 - CRT: Listed date/Male reproductive toxin**

ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)

Listed: January 1, 1989

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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

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

**Issue date** June-18-2015

**Version #** 01

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

**Revision Information** Product and Company Identification: Alternate Trade Names  
Composition / Information on Ingredients: Ingredients  
Physical & Chemical Properties: Multiple Properties  
Transport Information: Proper Shipping Name/Packing Group