

1. Identification

Product identifier **PHOTOVOLT AQUATEST PYRIDINE-FREE VESSEL SOLUTION for DIAPHRAGMLESS GENERATORS**

Other means of identification

Product code 0891014, 2791014

Recommended use Laboratory reagent for water determination using the Karl Fischer method.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company name	Photovolt Instruments, Inc.	
Address	6323 Cambridge St. Minneapolis MN 55416 US	
Telephone	952-848-2000	800-222-5711
Website	www.photovolt.com	
E-mail	sales@photovolt.com	
Emergency phone number	800-451-8346	Contract #7612

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity, dermal	Category 3
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
	Sensitization, skin	Category 1
	Reproductive toxicity	Category 1
	Specific target organ toxicity, single exposure	Category 1 (central nervous system, kidney, liver, respiratory system, testes)
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
Specific target organ toxicity, repeated exposure	Category 1 (central nervous system, hematopoietic system, respiratory system, testes, thyroid gland, visual organs)	
OSHA hazard(s)	Not classified.	

Label elements



Signal word Danger

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

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting equipment. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

Response

Eliminate all ignition sources if safe to do so. 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. If exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER or doctor/physician. If eye irritation persists: Get medical advice/attention. In case of fire: Use appropriate media for extinction.

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 approved incineration plant.

Hazard(s) not otherwise classified (HNOC)

Static accumulating flammable liquid

Environmental hazards

Hazardous to the aquatic environment, acute hazard Category 3

Hazardous to the aquatic environment, long-term hazard Category 3

Supplemental information

Hazard statement

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.

Precautionary statement

Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. These alone may be insufficient to remove static electricity. Avoid release to the environment.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

4.9% of the mixture consists of component(s) of unknown acute dermal toxicity. 10.7% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 10.7% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Hazardous components Chemical name	CAS number	%
METHYL ALCOHOL	67-56-1	40 - < 50*
ETHYLENEGLYCOLMONOMETHYL ETHER	109-86-4	20 - < 30*
DIETHANOLAMINE	111-42-2	10 - < 20*
SULFUR DIOXIDE	7446-09-5	5 - < 10*
TRADE SECRET*	Proprietary*	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 physician or poison control center immediately.

Skin contact

Take off immediately all contaminated clothing. Wash off with soap and plenty of water. Call a physician or poison control center immediately. Call a POISON CENTER or doctor/physician if you feel unwell. For minor skin contact, avoid spreading material on unaffected skin. If skin irritation or rash occurs: Get medical advice/attention.

Eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately. Get medical attention if irritation develops and persists.

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	Irritation of eyes and mucous membranes. May cause allergic skin reaction. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Unconsciousness. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Proteinuria. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Provide general supportive measures and treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Carbon dioxide (CO ₂). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Alcohol resistant foam. Powder.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	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. By heating and fire, harmful vapors/gases may be formed. Material will float and may ignite on surface of water.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection. Wear SCBA.
Fire-fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.
Specific methods	In the event of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Remove all possible sources of ignition in the surrounding area. 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. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Immediately evacuate personnel to safe areas. Local authorities should be advised if significant spillages cannot be contained. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Avoid inhalation of vapors or mists. Wear appropriate personal protective equipment.
Methods and materials for containment and cleaning up	<p>ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Should not be released into the environment. Prevent entry into waterways, sewers, basements or confined areas.</p> <p>Large Spills: Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. 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. Use water spray to reduce vapors or divert vapor cloud drift. This material and its container must be disposed of as hazardous waste. Following product recovery, flush area with water. Prevent entry into waterways, sewer, basements or confined areas. Clean up in accordance with all applicable regulations.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills in original containers for re-use. For waste disposal, see section 13 of the MSDS.</p>

Environmental precautions

Contact local authorities in case of spillage to drain/aquatic environment. Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment. Use appropriate containment to avoid environmental contamination. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

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. Vapors may form explosive mixtures with air. 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. 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". DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. 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 this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Avoid contact during pregnancy/while nursing. Do not get this material on clothing. Use personal protective equipment as required. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

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. Store in cool place. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a well-ventilated place. Keep container tightly closed. Keep in an area equipped with sprinklers. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight.

8. Exposure controls/personal protection**Occupational exposure limits****U.S. - OSHA****Components**

Components	Type	Value
DIETHANOLAMINE (CAS 111-42-2)	TWA	15 mg/m ³
		3 ppm

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

Components	Type	Value
ETHYLENEGLYCOLM ONOMETHYL ETHER (CAS 109-86-4)	PEL	80 mg/m ³
IODINE (CAS 7553-56-2)	Ceiling	25 ppm 1 mg/m ³ 0.1 ppm
METHYL ALCOHOL (CAS 67-56-1)	PEL	260 mg/m ³
SULFUR DIOXIDE (CAS 7446-09-5)	PEL	200 ppm 13 mg/m ³
		5 ppm

ACGIH**Components**

Components	Type	Value
DIETHANOLAMINE (CAS 111-42-2)	TWA	2 mg/m ³

US. ACGIH Threshold Limit Values**Components**

Components	Type	Value	Form
ETHYLENEGLYCOLM ONOMETHYL ETHER (CAS 109-86-4)	TWA	0.1 ppm	
IODINE (CAS 7553-56-2)	STEL	0.1 ppm	Vapor and aerosol.
	TWA	0.01 ppm	Inhalable fraction and vapor.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
METHYL ALCOHOL (CAS 67-56-1)	STEL	250 ppm	
	TWA	200 ppm	
SULFUR DIOXIDE (CAS 7446-09-5)	STEL	0.25 ppm	

U.S. - NIOSH

Components	Type	Value
DIETHANOLAMINE (CAS 111-42-2)	REL	15 mg/m3
		3 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)	REL	0.3 mg/m3
		0.1 ppm
IODINE (CAS 7553-56-2)	Ceiling	1 mg/m3
		0.1 ppm
METHYL ALCOHOL (CAS 67-56-1)	REL	260 mg/m3
		200 ppm
	STEL	325 mg/m3
		250 ppm
SULFUR DIOXIDE (CAS 7446-09-5)	REL	5 mg/m3
		2 ppm
	STEL	13 mg/m3
		5 ppm

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

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

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

Exposure guidelines**US. ACGIH Threshold Limit Values**

DIETHANOLAMINE (CAS 111-42-2)	Can be absorbed through the skin.
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.
DIETHANOLAMINE (CAS 111-42-2)	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.
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US. OSHA Table Z-1-A (29 CFR 1910.1000)

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. Rhode Island Hazardous Substances Right-to-Know Act (R.I. Gen. Laws Section 28-21-1 et. seq.)

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. Tennessee. OELs. Occupational Exposure Limits, Table Z1A

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

Appropriate engineering controls Explosion-proof general and local exhaust ventilation. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection Chemical goggles are recommended. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin protection

Hand protection Wear protective gloves.

Other Wear appropriate chemical resistant clothing. It may provide little or no thermal protection. Wear protective gloves. Provide eyewash station and safety shower.

Respiratory protection Chemical respirator with organic vapor cartridge. Use in well ventilated hood.

Thermal hazards Not available.

General hygiene considerations When using, do not eat, drink or smoke. Do not get in eyes. Do not get this material in contact with skin. Do not get this material on clothing. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	Clear.
Physical state	Liquid.
Form	Liquid.
Color	Light yellow.
Odor	Sulfur dioxide odor.
Odor threshold	Not available.
pH	6 approximate
Melting point/freezing point	< 32 °F (< 0 °C)
Initial boiling point and boiling range	255.2 °F (124 °C)
Flash point	51.80 - 71.60 °F (11.00 - 22.00 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	5.1 % estimated
Flammability limit - upper (%)	36 % estimated
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	340.6 hPa estimated
Vapor density	1.1 air = 1
Relative density	Not available.
Solubility(ies)	Miscible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	492.58 °F (255.88 °C) estimated
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	1.01 g/cm ³
Flammability class	Flammable IB estimated
Flash point class	Combustible II
Percent volatile	> 70 %

Specific gravity 1.01
VOC (Weight %) 87.1 % estimated

10. Stability and reactivity

Reactivity Oxidizing materials.
Chemical stability Risk of explosion. Stable at normal conditions.
Possibility of hazardous reactions Hazardous polymerization does not occur.
Conditions to avoid Heat, flames and sparks. Avoid temperatures exceeding the flash point.
Incompatible materials Aluminum. Strong oxidizing agents. Strong acids. Ammonia. Caustics.
Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion Causes digestive tract burns.
Inhalation Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause irritation to the respiratory system.
Skin contact Toxic in contact with skin. Causes severe skin burns. May cause an allergic skin reaction.
Eye contact Causes severe eye burns.

Symptoms related to the physical, chemical and toxicological characteristics Skin irritation. Permanent eye damage including blindness could result. Unconsciousness. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Edema. Liver enlargement. Jaundice. Proteinuria. Behavioral changes. Decrease in motor functions. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity Causes severe skin burns and eye damage. Toxic in contact with skin.

Product	Species	Test Results
PHOTOVOLT AQUATEST PYRIDINE-FREE VESSEL SOLUTION for DIAPHRAGMLESS GENERATORS (CAS Mixture)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	4205.3779 mg/kg, estimated
<i>Inhalation</i>		
LC50	Cat	175.7407 mg/l, 4.5 Hours, estimated 89.8765 mg/l, 6 Hours, estimated
	Guinea pig	17241.3789 mg/l, 20 Hours, estimated 9741 mg/l 2241.3794 mg/l, 154 Hours, estimated
	Mouse	17241.3789 mg/l, 4 Hours, estimated 9914 mg/l 2586.2068 mg/l, 847 Hours, estimated
	Rat	5660 mg/l 5427.1016 mg/l, 4 Hours, estimated 180.0412 mg/l, 6 Hours, estimated
<i>Oral</i>		
LD50	Dog	16460.9063 mg/kg, estimated
	Guinea pig	3584.9058 mg/kg, estimated
	Monkey	4.1152 g/kg, estimated
	Mouse	99999 mg/kg 10.4556 g/kg, estimated
	Rabbit	99999 mg/kg 27.8164 g/kg, estimated
	Rat	3995.9211 mg/kg, estimated 636.3636 g/kg, estimated

Product	Species	Test Results
<i>Other</i>		
LD50	Guinea pig	7316.8726 mg/kg, estimated
	Hamster	17602.8809 mg/kg, estimated
	Monkey	6.1728 g/kg, estimated
	Mouse	4132.8354 mg/kg, estimated
	Rabbit	3757.2017 mg/kg, estimated
	Rat	2841.7671 mg/kg, estimated
Components	Species	Test Results
DIETHANOLAMINE (CAS 111-42-2)		
Acute		
<i>Oral</i>		
LD50	Rat	1820 mg/kg
		710 mg/kg
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)		
Acute		
<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
		2.8 g/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)		
Acute		
<i>Oral</i>		
LD50	Mouse	22 g/kg
	Rabbit	10 g/kg
	Rat	14 g/kg
METHYL ALCOHOL (CAS 67-56-1)		
Acute		
<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

Components	Species	Test Results
<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

SULFUR DIOXIDE (CAS 7446-09-5)

Acute

Inhalation

LC50	Guinea pig	1000 mg/l, 20 Hours 130 mg/l, 154 Hours
	Mouse	1000 mg/l, 4 Hours 150 mg/l, 847 Hours

TRADE SECRET (CAS Proprietary)

Acute

Oral

LD50	Rat	970 mg/kg
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* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes severe eye burns.
Respiratory sensitization	Due to lack of data the classification is not possible.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	Due to lack of data the classification is not possible.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

DIETHANOLAMINE (CAS 111-42-2)	2B Possibly carcinogenic to humans.
SULFUR DIOXIDE (CAS 7446-09-5)	3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity	Possible reproductive hazard. May damage fertility or the unborn child.
Specific target organ toxicity - single exposure	May cause irritation to the respiratory system. Narcotic effects. Causes damage to organs (central nervous system, kidney, liver, respiratory system, testes).
Specific target organ toxicity - repeated exposure	Causes damage to organs (central nervous system, hematopoietic system, respiratory system, testes, thyroid gland, visual organs) through prolonged or repeated exposure.
Aspiration hazard	Due to lack of data the classification is not possible.
Chronic effects	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. Accumulation in aquatic organisms is expected. Contains a substance which causes risk of hazardous effects to the environment.
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Product	Species	Test Results	
PHOTOVOLT AQUATEST PYRIDINE-FREE VESSEL SOLUTION for DIAPHRAGMLESS GENERATORS (CAS Mixture)			
Crustacea	EC50	Daphnia	34568 mg/l, 24 hours 606 mg/l, 48 hours
		LC50	Daphnia
			33.44 mg/l, 96 hours
	Fish		7050 mg/l, 48 hours

Product	Species	Test Results
		4667 mg/l, 6 days
		4111 mg/l, 72 hours
		134 mg/l, 24 hours
		96.58 mg/l, 96 hours
Components	Species	Test Results
DIETHANOLAMINE (CAS 111-42-2)		
Aquatic		
Crustacea	EC50	Water flea (Ceriodaphnia dubia) 61.8 - 86.04 mg/l, 48 hours
	LC50	Brine shrimp (Artemia salina) 2800 mg/l, 24 hours
		Oligochaete, worm (Lumbriculus variegatus) 100 mg/l, 96 hours
		> 100 mg/l, 96 hours
		Opossum shrimp (Americamysis bahia) 207 mg/l, 96 hours
		Ramshorn snail (Helisoma trivolvis) 100 mg/l, 96 hours
		> 100 mg/l, 96 hours
		Scud (Gammarus fasciatus) > 100 mg/l, 96 hours
		100 mg/l, 96 hours
		Water flea (Ceriodaphnia dubia) 150 - 250 mg/l, 48 hours
		95.9 - 160 mg/l, 48 hours
		87.1 - 127.7 mg/l, 48 hours
		81 - 124.2 mg/l, 48 hours
		63.6 - 93.7 mg/l, 48 hours
		26.5 - 36.2 mg/l, 48 hours
		22.6 - 34.6 mg/l, 48 hours
		22.2 - 39.1 mg/l, 48 hours
		18.2 - 47.8 mg/l, 48 hours
		10 - 37 mg/l, 168 hours
		Water flea (Daphnia magna) 250 - 418 mg/l, 48 hours
		208 - 268 mg/l, 24 hours
		180 mg/l, 24 hours
		170 mg/l, 24 hours
		154 - 196 mg/l, 24 hours
		140 - 180 mg/l, 24 hours
		119.5 - 155.2 mg/l, 48 hours
		114 - 151 mg/l, 48 hours
		110.4 - 139.4 mg/l, 48 hours
		101 - 134 mg/l, 48 hours
		> 100 mg/l, 96 hours
		100 mg/l, 96 hours
		97.1 - 124 mg/l, 48 hours
		96.3 - 124.6 mg/l, 48 hours
		92.9 - 127 mg/l, 48 hours
		67.7 - 89.5 mg/l, 48 hours
		44 - 68 mg/l, 48 hours
		24 - 48 mg/l, 264 hours
		Water flea (Daphnia pulex) 2.64 mg/l, 48 hours
		2.15 mg/l, 48 hours

Components		Species	Test Results		
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)	2100 mg/l, 24 hours 1850 mg/l, 48 hours		
		Carp (<i>Leuciscus idus melanotus</i>)	1850 mg/l, 48 hours 1430 mg/l, 48 hours		
		Fathead minnow (<i>Pimephales promelas</i>)	4461 - 4981 mg/l, 96 hours 1360 - 1630 mg/l, 96 hours 1300 - 1990 mg/l, 96 hours 1200 - 1580 mg/l, 96 hours > 100 mg/l, 96 hours 100 mg/l, 96 hours		
		Goldfish (<i>Carassius auratus</i>)	> 5000 mg/l, 24 hours 800 mg/l, 24 hours		
		Sheepshead minnow (<i>Cyprinodon variegatus</i>)	> 540 mg/l, 24 hours > 540 mg/l, 48 hours > 540 mg/l, 72 hours > 540 mg/l, 96 hours		
		Western mosquitofish (<i>Gambusia affinis</i>)	1800 mg/l, 24 hours 1550 mg/l, 48 hours 1400 mg/l, 96 hours 560 mg/l, 6 days		
		Other	LC50	Turbellarian, flatworm (<i>Dugesia tigrina</i>)	> 100 mg/l, 96 hours 100 mg/l, 96 hours
		ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)			
		Aquatic			
		Crustacea	LC50	Brine shrimp (<i>Artemia salina</i>)	> 10000 mg/l, 24 hours
				Water flea (<i>Daphnia magna</i>)	> 10000 mg/l, 24 hours
		Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)	> 10000 mg/l, 96 hours
				Carp (<i>Leuciscus idus melanotus</i>)	> 10000 mg/l, 48 hours
Goldfish (<i>Carassius auratus</i>)	> 5000 mg/l, 24 hours				
Inland silverside (<i>Menidia beryllina</i>)	> 10000 mg/l, 96 hours				
Rainbow trout,donaldson trout (<i>Oncorhynchus mykiss</i>)	14000 - 18000 mg/l, 96 hours				
IODINE (CAS 7553-56-2)					
Aquatic					
Crustacea	LC50	Water flea (<i>Daphnia magna</i>)	0.55 - 1.32 mg/l, 96 hours 0.03 - 1 mg/l, 48 hours		
Fish	LC50	Guppy (<i>Poecilia reticulata</i>)	3 mg/l, 24 hours		
		Rainbow trout,donaldson trout (<i>Oncorhynchus mykiss</i>)	> 0.01 mg/l, 96 hours		
METHYL ALCOHOL (CAS 67-56-1)					
Aquatic					
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	20450 - 29350 mg/l, 48 hours > 10000 mg/l, 24 hours > 10000 mg/l, 48 hours		
		Water flea (<i>Daphnia obtusa</i>)	22800 - 24400 mg/l, 24 hours		
	LC50	Brine shrimp (<i>Artemia salina</i>)	> 10000 mg/l, 24 hours 703.7 - 1723.9 mg/l, 24 hours		
		Cockle (<i>Cerastoderma edule</i>)	3300 - 10000 mg/l, 96 hours		

Components		Species	Test Results
			1000 mg/l, 48 hours
		Common bay mussel, blue mussel (Mytilus edulis)	13400 - 17300 mg/l, 96 hours
		Common shrimp, sand shrimp (Crangon crangon)	2500 mg/l, 48 hours
			1700 mg/l, 96 hours
		Harpacticoid copepod (Nitocra spinipes)	11500 - 12500 mg/l, 96 hours
		Mussel (Anodonta imbecillis)	37.02 mg/l, 48 hours
		Oligochaete, worm (Lumbriculus variegatus)	> 100 mg/l, 96 hours
		Ramshorn snail (Helisoma trivolvis)	> 100 mg/l, 96 hours
		Scud (Gammarus fasciatus)	> 100 mg/l, 96 hours
		Water flea (Daphnia magna)	3616 - 6414 mg/l, 24 hours
			2461 - 4395 mg/l, 48 hours
			> 100 mg/l, 96 hours
Fish	LC50	Bleak (Alburnus alburnus)	28000 mg/l, 96 hours
			> 28000 mg/l, 96 hours
		Bluegill (Lepomis macrochirus)	17400 - 21000 mg/l, 24 hours
			17300 - 21100 mg/l, 48 hours
			15510 - 20240 mg/l, 72 hours
			13500 - 17600 mg/l, 96 hours
		Carp (Leuciscus idus melanotus)	> 10000 mg/l, 48 hours
		Fathead minnow (Pimephales promelas)	29000 - 30500 mg/l, 24 hours
			29000 - 30500 mg/l, 48 hours
			28500 - 30400 mg/l, 96 hours
			27600 - 29200 mg/l, 72 hours
		Medaka, high-eyes (Oryzias latipes)	1400 mg/l, 48 hours
		Rainbow trout, donaldson trout (Oncorhynchus mykiss)	19800 - 20700 mg/l, 24 hours
			19500 - 20700 mg/l, 48 hours
			19500 - 20700 mg/l, 96 hours
Other	LC50	Turbellarian, flatworm (Dugesia tigrina)	> 100 mg/l, 96 hours

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

Persistence and degradability None known.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

ETHYLENEGLYCOLMONOMETHYL ETHER	-0.77
METHYL ALCOHOL	-0.77
DIETHANOLAMINE	-1.43
IODINE	2.49

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Not available.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F

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

UN number	UN1993
UN proper shipping name	Flammable liquids, n.o.s. (METHYL ALCOHOL RQ = 10288 LBS, ETHYLENEGLYCOLMONOMETHYL ETHER)
Transport hazard class(es)	3
Subsidiary class(es)	Not available.
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Labels required	3
Special provisions	IB2, T7, TP1, TP8, TP28
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1993
UN proper shipping name	Flammable liquids, n.o.s. (METHYL ALCOHOL, ETHYLENEGLYCOLMONOMETHYL ETHER)
Transport hazard class(es)	3
Subsidiary class(es)	-
Packaging group	II
Environmental hazards	No
Labels required	3
ERG Code	Not available.
Special precautions for user	Not available.

IMDG

UN number	UN1993
UN proper shipping name	Flammable liquids, n.o.s. (METHYL ALCOHOL, ETHYLENEGLYCOLMONOMETHYL ETHER)
Transport hazard class(es)	3
Subsidiary class(es)	-
Packaging group	II
Environmental hazards	
Marine pollutant	No
Labels required	3
EmS	Not available.
Special precautions for user	Not available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available.

DOT





15. Regulatory information

US federal regulations 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.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)

DIETHANOLAMINE (CAS 111-42-2)	LISTED
METHYL ALCOHOL (CAS 67-56-1)	LISTED

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 No

SARA 311/312 Hazardous chemical No

Other federal regulations

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

DIETHANOLAMINE (CAS 111-42-2)
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 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

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

IODINE (CAS 7553-56-2)	2.2 %WV
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DEA Exempt Chemical Mixtures Code Number

IODINE (CAS 7553-56-2)	6699
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Food and Drug Administration (FDA) Not regulated.

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

US. Massachusetts RTK - Substance List

DIETHANOLAMINE (CAS 111-42-2)
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)
IODINE (CAS 7553-56-2)
METHYL ALCOHOL (CAS 67-56-1)
SULFUR DIOXIDE (CAS 7446-09-5)

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

DIETHANOLAMINE (CAS 111-42-2)	500 LBS
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)	500 LBS
METHYL ALCOHOL (CAS 67-56-1)	500 LBS
SULFUR DIOXIDE (CAS 7446-09-5)	500 LBS

US. Pennsylvania RTK - Hazardous Substances

DIETHANOLAMINE (CAS 111-42-2)
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)
IODINE (CAS 7553-56-2)
METHYL ALCOHOL (CAS 67-56-1)
SULFUR DIOXIDE (CAS 7446-09-5)

US. Rhode Island RTK

DIETHANOLAMINE (CAS 111-42-2)
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)
IODINE (CAS 7553-56-2)
METHYL ALCOHOL (CAS 67-56-1)
SULFUR DIOXIDE (CAS 7446-09-5)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

DIETHANOLAMINE (CAS 111-42-2)
ETHYLENEGLYCOLMONOMETHYL ETHER (CAS 109-86-4)
METHYL ALCOHOL (CAS 67-56-1)
SULFUR DIOXIDE (CAS 7446-09-5)

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 this product complies with the inventory requirements administered by the governing country(s)

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

Issue date February-20-2013

Version # 01

Further information Not available.

Disclaimer The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Information Product and Company Identification: Alternate Trade Names
Hazards Identification: US Hazard Categories
Composition / Information on Ingredients: Ingredients
Physical & Chemical Properties: Multiple Properties
Transport Information: Proper Shipping Name/Packing Group
Regulatory Information: Canada
GHS: Classification