SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

Revision date 02-Jul-2024 **Revision Number** 1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Catalog Number:	Product Description:
40-4330-XX	0.02M Iodine in Tetrahydrofuran/Pyridine/Water (70:20:10)

Product Code(s)
40-4330-XX

Product Name
Oxidizing Solution

Pure substance/mixture Mixture
Contains Pyridine; Tetrahydrofuran

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use For research use only

Uses advised against Not for human diagnostic use

1.3. Details of the supplier of the safety data sheet

Manufacturer
Glen Research LLC
22825 Davis Drive
Sterling, VA 20164 USA

For further information, please contact

Company Phone Number 1-703-437-6191

Website www.glenresearch.com

E-mail address support@glenresearch.com

1.4. Emergency telephone number

Emergency Telephone
CHEMTREC Customer Number (CCN): 234802 Glen Research Corporation
US: 1-800-424-9300 or Local: +1-703-527-3887
EMEA: +44 20 3885 0382
APAC: +65 3163 8374

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to
Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity - Oral	Category 4 - (H302)
Acute toxicity - Dermal	Category 4 - (H312)
Acute toxicity - Inhalation (Dusts/Mists)	Category 4 - (H332)
Serious eye damage/eye irritation	Category 2 - (H319)

Carcinogenicity	Category 2 - (H351)
Specific target organ toxicity (single exposure)	Category 3 - (H335)
Category 3 Respiratory irritation	
Chronic aquatic toxicity	Category 3 - (H412)
Flammable liquids	Category 2 - (H225)

2.2. Label elements

Contains Pyridine; Tetrahydrofuran

Signal word
Danger

Hazard statements
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer
H412 - Harmful to aquatic life with long lasting effects
H225 - Highly flammable liquid and vapor
EUH019 - May form explosive peroxides

Precautionary Statements - EU (§28, 1272/2008)
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P312 - Call a POISON CENTER or doctor if you feel unwell
P370 + P378 - In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish
P501 - Dispose of contents/ container to an approved waste disposal plant

Additional information
This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

Toxic to aquatic life.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical name	Weight-%	REACH registration number	EC No. (Index No.)	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Tetrahydrofuran 109-99-9	58-83	No data available	(603-025-00 -0) 203-726-8	Eye Irrit. 2 (H319) Carc. 2 (H351) STOT SE 3 (H335)	Eye Irrit. 2 :: C>=25% STOT SE 3 ::	-	-

				Flam. Liq. 2 (H225) (EUH019)	C>=25%		
Pyridine 110-86-1	10-30	No data available	203-809-9 (613-002-00 -7)	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Flam. Liq. 2 (H225)	-	-	-
Iodine 7553-56-2	0.1-1	No data available	231-442-4 (053-001-00 -3)	Acute Tox. 4 (H312) Acute Tox. 4 (H332) Aquatic Acute 1 (H400)	-	-	-

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate
If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapor - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Tetrahydrofuran 109-99-9	1650	2000	No data available	No data available	No data available
Pyridine 110-86-1	866	1000	12.898	No data available	No data available
Iodine 7553-56-2	14000	1425 2000	4.588	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention. If symptoms persist, call a physician. If breathing has stopped, give artificial respiration. Get medical attention immediately.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Not an expected route of exposure. IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. Get medical attention.

Self-protection of the first aider Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Avoid breathing vapors or mists.

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

Symptoms May cause redness and tearing of the eyes. Burning sensation. Coughing and/ or wheezing.

Difficulty in breathing.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam.

Large Fire CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Hazardous combustion products Nitrogen oxides (NOx). Carbon oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Avoid breathing vapors or mists.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Use personal protection equipment. Avoid breathing vapors or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. In case of insufficient ventilation, wear suitable respiratory equipment.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Handle in accordance with good industrial hygiene and safety practice. Take off contaminated clothing and wash before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Keep out of the reach of children. Store locked up.

7.3. Specific end use(s)

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
Tetrahydrofuran 109-99-9	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ *	TWA: 50 ppm TWA: 150 mg/m³ STEL 100 ppm STEL 300 mg/m³ H*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ D*	STEL: 100 ppm STEL: 300.0 mg/m³ TWA: 50.0 ppm TWA: 150.0 mg/m³ K*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ *
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 ppm TWA: 15 mg/m³ STEL 20 ppm STEL 60 mg/m³ Sk*	TWA: 1 ppm TWA: 3.3 mg/m³	TWA: 15.0 mg/m³	TWA: 5 ppm TWA: 15 mg/m³
Iodine	-	TWA: 0.1 ppm	TWA: 0.01 ppm	TWA: 3.0 mg/m³	STEL: 0.1 ppm

7553-56-2		TWA: 1 mg/m³ STEL 0.1 ppm STEL 1 mg/m³ Ceiling: 0.1 ppm Ceiling: 1 mg/m³ Sk*	TWA: 0.1 mg/m³ STEL: 0.1 ppm STEL: 1 mg/m³		STEL: 1.1 mg/m³
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
Tetrahydrofuran 109-99-9	* STEL: 100 ppm STEL: 300 mg/m³ TWA: 50 ppm TWA: 150 mg/m³	TWA: 150 mg/m³ Ceiling: 300 mg/m³ D*	TWA: 50 ppm TWA: 150 mg/m³ H* STEL: 300 mg/m³ STEL: 100 ppm	S+ TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ A*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ iho*
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 mg/m³ Sk* Ceiling: 10 mg/m³	TWA: 5 ppm TWA: 15 mg/m³ STEL: 10 ppm STEL: 30 mg/m³	TWA: 5 ppm TWA: 15 mg/m³	TWA: 1 ppm TWA: 3 mg/m³ STEL: 5 ppm STEL: 16 mg/m³ Sk*
Iodine 7553-56-2	-	TWA: 0.1 mg/m³ Ceiling: 1 mg/m³	Ceiling: 0.1 ppm Ceiling: 1 mg/m³	STEL: 0.1 ppm STEL: 1 mg/m³	STEL: 0.1 ppm STEL: 1.1 mg/m³ Sk*
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
Tetrahydrofuran 109-99-9	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ *	TWA: 50 ppm TWA: 150 mg/m³ H*	TWA: 20 ppm TWA: 60 mg/m³ Peak: 40 ppm Peak: 120 mg/m³ *	TWA: 200 ppm TWA: 590 mg/m³ STEL: 250 ppm STEL: 735 mg/m³	TWA: 150 mg/m³ TWA: 50 ppm STEL: 300 mg/m³ STEL: 100 ppm b*
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m³ STEL: 10 ppm STEL: 30 mg/m³	-	Sk*	TWA: 5 ppm TWA: 15 mg/m³ STEL: 10 ppm STEL: 30 mg/m³	TWA: 15 mg/m³ TWA: 5 ppm STEL: 30 mg/m³ STEL: 10 ppm Sk* sz+
Iodine 7553-56-2	STEL: 0.1 ppm STEL: 1 mg/m³	-	Sk*	TWA: 0.1 ppm TWA: 1 mg/m³ STEL: 0.1 ppm STEL: 1 mg/m³	TWA: 1 mg/m³ TWA: 0.1 ppm STEL: 1 mg/m³ STEL: 0.1 ppm Sk* sz+
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
Tetrahydrofuran 109-99-9	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ Sk*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ cute*	TWA: 50 ppm TWA: 147 mg/m³ STEL: 100 ppm STEL: 295 mg/m³ cute*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ Ada*	O* TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m³ STEL: 10 ppm STEL: 30 mg/m³	-	TWA: 1 ppm TWA: 3.2 mg/m³	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 ppm TWA: 15 mg/m³
Iodine 7553-56-2	TWA: 0.01 ppm TWA: 0.01 mg/m³ STEL: 0.1 ppm	-	TWA: 0.01 ppm STEL: 0.1 ppm	TWA: 1 mg/m³	Ceiling: 0.1 ppm Ceiling: 1 mg/m³
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Tetrahydrofuran 109-99-9	Peau* STEL: 100 ppm STEL: 300 mg/m³ TWA: 50 ppm TWA: 150 mg/m³	skin* STEL: 100 ppm STEL: 300 mg/m³ TWA: 50 ppm TWA: 150 mg/m³	TWA: 100 ppm TWA: 300 mg/m³ STEL: 200 ppm STEL: 600 mg/m³ H*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 75 ppm STEL: 187.5 mg/m³ H*	STEL: 300 mg/m³ TWA: 150 mg/m³ skóra*
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 ppm TWA: 15 mg/m³	TWA: 0.3 ppm TWA: 0.9 mg/m³	TWA: 5 ppm TWA: 15 mg/m³ STEL: 10 ppm	TWA: 5 mg/m³ Sk*

				STEL: 22.5 mg/m³	
Iodine 7553-56-2	-	-	-	Ceiling: 0.1 ppm Ceiling: 1 mg/m³	TWA: 0.5 mg/m³ STEL: 1 mg/m³

Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Tetrahydrofuran 109-99-9	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ Cutânea*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ P*	TWA: 50 ppm TWA: 150 mg/m³ K* Ceiling: 300 mg/m³	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ K*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ vía dérmica*
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 ppm TWA: 15 mg/m³	TWA: 5 ppm TWA: 15 mg/m³	TWA: 1 ppm TWA: 3 mg/m³
Iodine 7553-56-2	TWA: 0.01 ppm STEL: 0.1 ppm	TWA: 0.09 ppm TWA: 0.5 mg/m³ STEL: 0.2 ppm STEL: 1 mg/m³	TWA: 0.1 ppm TWA: 1.1 mg/m³ Ceiling: 1.1 mg/m³	-	TWA: 0.01 ppm TWA: 0.1 mg/m³ STEL: 0.1 ppm STEL: 1 mg/m³

Chemical name	Sweden	Switzerland	United Kingdom
Tetrahydrofuran 109-99-9	NGV: 50 ppm NGV: 150 mg/m³ Bindande KGV: 100 ppm Bindande KGV: 300 mg/m³	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ H*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 100 ppm STEL: 300 mg/m³ Sk*
Pyridine 110-86-1	NGV: 2 ppm NGV: 7 mg/m³ Vägledande KGV: 3 ppm Vägledande KGV: 10 mg/m³	TWA: 5 ppm TWA: 15 mg/m³ STEL: 10 ppm STEL: 30 mg/m³	TWA: 5 ppm TWA: 16 mg/m³ STEL: 10 ppm STEL: 33 mg/m³
Iodine 7553-56-2	Bindande KGV: 0.1 ppm Bindande KGV: 1 mg/m³	TWA: 0.1 ppm TWA: 1 mg/m³ STEL: 0.1 ppm STEL: 1 mg/m³ Sk*	STEL: 0.1 ppm STEL: 1.1 mg/m³

Biological occupational exposure limits

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Tetrahydrofuran 109-99-9	-	-	-	2 mg/L - urine (Tetrahydrofuran) - at the end of the work shift	-

Chemical name	Denmark	Finland	France	Germany DFG	Germany TRGS
Tetrahydrofuran 109-99-9	-	-	-	2 mg/L (urine - Tetrahydrofuran end of shift) 2 mg/L - BAT (end of exposure or end of shift) urine	2 mg/L (urine - Tetrahydrofuran end of shift)

Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII
Tetrahydrofuran 109-99-9	2 mg/L (urine - Tetrahydrofuran end of shift) 28 µmol/L (urine - Tetrahydrofuran end of shift)	2 mg/L (urine - Tetrahydrofuran end of shift)	-	2 mg/L - urine (Tetrahydrofuran) - end of shift

Chemical name	Latvia	Luxembourg	Romania	Slovakia
Tetrahydrofuran 109-99-9	-	-	-	2 mg/L (urine - Tetrahydrofuran end of exposure or work shift)

Chemical name	Slovenia	Spain	Switzerland	United Kingdom
Tetrahydrofuran 109-99-9	2 mg/L - urine (Tetrahydrofuran) - at the end of the work shift	2 mg/L (urine - Tetrahydrofuran end of shift)	2 mg/L (urine - Tetrahydrofuran end of shift)	-

			27.7 µmol/L (urine - Tetrahydrofuran end of shift)	

Derived No Effect Level (DNEL) No information available.
Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering controls Showers
Eyewash stations
Ventilation systems

Personal protective equipment

Eye/face protection Tight sealing safety goggles.

Hand protection Contact glove manufacturer for recommendations. Gloves must conform to standard EN 374. Wear suitable gloves. Impervious gloves.

Skin and body protection Protective clothing must conform to standard EN ISO 6529:2013. Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Handle in accordance with good industrial hygiene and safety practice. Take off contaminated clothing and wash before reuse.

Environmental exposure controls No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state Liquid
Appearance Liquid
Color Dark Red
Odor Sweet Ether-like odor
Odor threshold No information available

Property	Values	Remarks • Method
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
pH	No data available	None known
pH (as aqueous solution)	No data available	No information available

Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Water solubility	No data available	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Vapor pressure	No data available	None known
Relative density	0.93g/mL	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		
Particle Size	No information available	
Particle Size Distribution	No information available	

9.2. Other information

9.2.1. Information with regard to physical hazard classes
Not applicable

9.2.2. Other safety characteristics
No information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data
Sensitivity to mechanical impact None.
Sensitivity to static discharge Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

10.4. Conditions to avoid

Conditions to avoid Heat, flames and sparks. Excessive heat.

10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products Nitrogen oxides (NOx). Carbon oxides.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. Not an expected route of exposure. Harmful by inhalation. (based on components).

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.

Skin contact Specific test data for the substance or mixture is not available. May cause irritation. Prolonged contact may cause redness and irritation. May be absorbed through the skin in harmful amounts. Harmful in contact with skin. (based on components).

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Not an expected route of exposure. Harmful if swallowed. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms May cause redness and tearing of the eyes. Coughing and/ or wheezing.

Acute toxicity

Numerical measures of toxicity
No information available

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	1,526.30 mg/kg
ATEmix (dermal)	1,880.30 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-dust/mist)	2.250 mg/l
ATEmix (inhalation-vapor)	99,999.00 mg/l

Unknown acute toxicity
70 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Tetrahydrofuran	= 1650 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 14.7 mg/L (Rat) 4 h
Pyridine	= 866 mg/kg (Rat)	1000 - 2000 mg/kg (Rabbit)	= 12.898 mg/L (Rat) 4 h
Iodine	= 14 g/kg (Rat)	= 1425 mg/kg (Rabbit) > 2000 mg/kg (Rabbit)	> 4.588 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation May cause skin irritation.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye irritation.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. Suspected of causing cancer.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	European Union
Tetrahydrofuran	Carc. 2

Reproductive toxicity No information available.

STOT - single exposure May cause respiratory irritation.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties No information available.

11.2.2. Other information

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

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

Unknown aquatic toxicity Contains -0.5 % of components with unknown hazards to the aquatic environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Tetrahydrofuran	-	LC50: 1970 - 2360mg/L (96h, Pimephales promelas) LC50: 2700 - 3600mg/L (96h, Pimephales promelas)	-	-
Pyridine	-	LC50: 63.4 - 73.6mg/L (96h, Pimephales promelas) LC50: =26mg/L (96h, Cyprinus carpio) LC50: =4.6mg/L (96h, Oncorhynchus mykiss)	-	-
Iodine	-	LC50: =1.67mg/L (96h, Oncorhynchus mykiss)	-	-

12.2. Persistence and degradability

Persistence and degradability Not Likely.

12.3. Bioaccumulative potential

Bioaccumulation

Bioconcentration factor (BCF) log Pow <= 4

Component Information

Chemical name	Partition coefficient
Tetrahydrofuran	0.45
Pyridine	0.65

12.4. Mobility in soil

Mobility in soil Not expected to adsorb on soil.

Mobility Soluble in water.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment No information available.

Chemical name	PBT and vPvB assessment
Tetrahydrofuran	The substance is not PBT / vPvB
Pyridine	The substance is not PBT / vPvB
Iodine	The substance is not PBT / vPvB

12.6. Endocrine disrupting properties

Endocrine disrupting properties No information available.

12.7. Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

SECTION 14: Transport information

IATA

14.1 UN number or ID number UN1993
14.2 UN proper shipping name Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine)
14.3 Transport hazard class(es) 3
14.4 Packing group II
Description UN1993, Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine), 3, II
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions A3
ERG Code 3H

IMDG

14.1 UN number or ID number UN1993
14.2 UN proper shipping name Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine)
14.3 Transport hazard class(es) 3
14.4 Packing group II

Description	UN1993, Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine), 3, II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	274
EmS-No.	F-E, S-E
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	UN1993
14.2 UN proper shipping name	Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine)
14.3 Transport hazard class(es)	3
14.4 Packing group	II
Description	UN1993, Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine), 3, II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	274, 601, 640D
Classification code	F1

ADR

14.1 UN number or ID number	UN1993
14.2 UN proper shipping name	Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine)
14.3 Transport hazard class(es)	3
14.4 Packing group	II
Description	UN1993, Flammable liquid, n.o.s. (Tetrahydrofuran, Pyridine), 3, II, (D/E)
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	274, 601, 640C
Classification code	F1
Tunnel restriction code	(D/E)

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

France

Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
Tetrahydrofuran 109-99-9	RG 84	-
Pyridine 110-86-1	RG 84	-

Germany

TA Luft (German Air Pollution Control Regulation)

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Authorizations and/or restrictions on use:

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorization per REACH Annex XIV
Tetrahydrofuran - 109-99-9	75.	-
Iodine - 7553-56-2	75.	-

Persistent Organic Pollutants
Not applicable

Dangerous substance category per Seveso Directive (2012/18/EU)
P5a - FLAMMABLE LIQUIDS
P5b - FLAMMABLE LIQUIDS
P5c - FLAMMABLE LIQUIDS

Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Not applicable

Biocidal Products Regulation (EU) No 528/2012 (BPR)

Chemical name	Biocidal Products Regulation (EU) No 528/2012 (BPR)
Iodine - 7553-56-2	Product-type 2: Disinfectants and algaecides not intended for direct application to humans or animals Product-type 3: Veterinary hygiene Product-type 4: Food and feed area Product-type 22: Embalming and taxidermist fluids Product-type 1: Human hygiene

International Inventories

TSCA	All of the components of this product are listed in the TSCA Inventory or exempt.
DSL/NDSL	Listed or exempt
EINECS/ELINCS	Listed or exempt
ENCS	Listed or exempt
IECSC	Listed or exempt
KECI	Listed or exempt
PICCS	Listed or exempt
AIIC	Listed or exempt

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing Chemicals Inventory
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals

15.2. Chemical safety assessment

Chemical Safety Report No information available

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H225 - Highly flammable liquid and vapor
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer
H400 - Very toxic to aquatic life

Legend
SVHC: Substances of Very High Concern for Authorization:

Legend	**Section 8: Exposure controls/personal protection**		
TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	Sk*	Skin designation

Revision date 02-Jul-2024

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)
Disclaimer
The information provided herein is based on sources believed to be reliable as of the issue date of this document, and pertains only to the material designated. Glen Research LLC makes no warranty or representation to its completeness, accuracy or currency. This material is intended for use by persons with the pertinent technical skills an at their discretion and risk. It is responsibility of the user to determine te product's suitability for its intended use, the product's safe use and the product's proper disposal. disposal of hazardous material may be subject to federal. state or local regulations.

End of Safety Data Sheet