

Revision date 01-Jul-2024

Revision Number 1

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

### 1.1. Product identifier

<b>Product Catalog Number:</b> 40-4032-XX	<b>Product Description:</b> 0.02M Iodine in Tetrahydrofuran/ Pyridine/ Water (88:10:2)
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**Product Code(s)**  
40-4032-XX

**Product Name**  
Oxidizing Solution

**Pure substance/mixture** Mixture  
Contains Pyridine; Tetrahydrofuran; Iodine

### 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](http://www.glenresearch.com)

**E-mail address** [support@glenresearch.com](mailto: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]

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

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

## 2.2. Label elements

Contains Pyridine; Tetrahydrofuran; Iodine



**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, CO<sub>2</sub>, 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	75-89	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 <sub>2</sub> ≥25%		
Pyridine 110-86-1	7-13	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	0.5-1.5	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 (ATE<sub>mix</sub>) 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  $\geq 0.1\%$  (Regulation (EC) No. 1907/2006 (REACH), Article 59)

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

<b>General advice</b>	Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.
<b>Inhalation</b>	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.
<b>Eye contact</b>	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.
<b>Skin contact</b>	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.
<b>Ingestion</b>	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.
<b>Self-protection of the first aider</b>	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

<b>Symptoms</b>	May cause redness and tearing of the eyes. Burning sensation. Coughing and/ or wheezing.
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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 (CO<sub>2</sub>). 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 (NO<sub>x</sub>). 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/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> *	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL 100 ppm STEL 300 mg/m <sup>3</sup> H*	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> D*	STEL: 100 ppm STEL: 300.0 mg/m <sup>3</sup> TWA: 50.0 ppm TWA: 150.0 mg/m <sup>3</sup> K*	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> *
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup> STEL 20 ppm STEL 60 mg/m <sup>3</sup> Sk*	TWA: 1 ppm TWA: 3.3 mg/m <sup>3</sup>	TWA: 15.0 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup>
Iodine	-	TWA: 0.1 ppm	TWA: 0.01 ppm	TWA: 3.0 mg/m <sup>3</sup>	STEL: 0.1 ppm

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

Iodine 7553-56-2	-	-	-	STEL: 22.5 mg/m <sup>3</sup> Ceiling: 0.1 ppm Ceiling: 1 mg/m <sup>3</sup>	TWA: 0.5 mg/m <sup>3</sup> STEL: 1 mg/m <sup>3</sup>
<b>Chemical name</b>	<b>Portugal</b>	<b>Romania</b>	<b>Slovakia</b>	<b>Slovenia</b>	<b>Spain</b>
Tetrahydrofuran 109-99-9	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> Cutânea*	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> P*	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> K* Ceiling: 300 mg/m <sup>3</sup>	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> K*	TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> vía dérmica*
Pyridine 110-86-1	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 15 mg/m <sup>3</sup>	TWA: 1 ppm TWA: 3 mg/m <sup>3</sup>
Iodine 7553-56-2	TWA: 0.01 ppm STEL: 0.1 ppm	TWA: 0.09 ppm TWA: 0.5 mg/m <sup>3</sup> STEL: 0.2 ppm STEL: 1 mg/m <sup>3</sup>	TWA: 0.1 ppm TWA: 1.1 mg/m <sup>3</sup> Ceiling: 1.1 mg/m <sup>3</sup>	-	TWA: 0.01 ppm TWA: 0.1 mg/m <sup>3</sup> STEL: 0.1 ppm STEL: 1 mg/m <sup>3</sup>
<b>Chemical name</b>	<b>Sweden</b>		<b>Switzerland</b>		<b>United Kingdom</b>
Tetrahydrofuran 109-99-9	NGV: 50 ppm NGV: 150 mg/m <sup>3</sup> Bindande KGV: 100 ppm Bindande KGV: 300 mg/m <sup>3</sup>		TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> H*		TWA: 50 ppm TWA: 150 mg/m <sup>3</sup> STEL: 100 ppm STEL: 300 mg/m <sup>3</sup> Sk*
Pyridine 110-86-1	NGV: 2 ppm NGV: 7 mg/m <sup>3</sup> Vägledande KGV: 3 ppm Vägledande KGV: 10 mg/m <sup>3</sup>		TWA: 5 ppm TWA: 15 mg/m <sup>3</sup> STEL: 10 ppm STEL: 30 mg/m <sup>3</sup>		TWA: 5 ppm TWA: 16 mg/m <sup>3</sup> STEL: 10 ppm STEL: 33 mg/m <sup>3</sup>
Iodine 7553-56-2	Bindande KGV: 0.1 ppm Bindande KGV: 1 mg/m <sup>3</sup>		TWA: 0.1 ppm TWA: 1 mg/m <sup>3</sup> STEL: 0.1 ppm STEL: 1 mg/m <sup>3</sup> Sk*		STEL: 0.1 ppm STEL: 1.1 mg/m <sup>3</sup>

**Biological occupational exposure limits**

<b>Chemical name</b>	<b>European Union</b>	<b>Austria</b>	<b>Bulgaria</b>	<b>Croatia</b>	<b>Czech Republic</b>
Tetrahydrofuran 109-99-9	-	-	-	2 mg/L - urine (Tetrahydrofuran) - at the end of the work shift	-
<b>Chemical name</b>	<b>Denmark</b>	<b>Finland</b>	<b>France</b>	<b>Germany DFG</b>	<b>Germany TRGS</b>
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)
<b>Chemical name</b>	<b>Hungary</b>	<b>Ireland</b>	<b>Italy MDLPS</b>		<b>Italy AIDII</b>
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
<b>Chemical name</b>	<b>Latvia</b>	<b>Luxembourg</b>	<b>Romania</b>	<b>Slovakia</b>	
Tetrahydrofuran 109-99-9	-	-	-	2 mg/L (urine - Tetrahydrofuran end of exposure or work shift)	
<b>Chemical name</b>	<b>Slovenia</b>	<b>Spain</b>	<b>Switzerland</b>	<b>United Kingdom</b>	
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)	
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**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

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

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

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

<b>ATEmix (oral)</b>	1,532.90 mg/kg
<b>ATEmix (dermal)</b>	1,766.80 mg/kg
<b>ATEmix (inhalation-gas)</b>	99,999.00 ppm
<b>ATEmix (inhalation-dust/mist)</b>	1.55 mg/l
<b>ATEmix (inhalation-vapor)</b>	99,999.00 mg/l

#### **Unknown acute toxicity**

88 % 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

<b>Skin corrosion/irritation</b>	May cause skin irritation.
<b>Serious eye damage/eye irritation</b>	Classification based on data available for ingredients. Causes serious eye irritation.
<b>Respiratory or skin sensitization</b>	No information available.
<b>Germ cell mutagenicity</b>	No information available.
<b>Carcinogenicity</b>	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 -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

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

**RID**

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

**ADR**

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

<b>TSCA</b>	All of the components of this product are listed in the TSCA Inventory or exempt.
<b>DSL/NDSL</b>	Listed or exempt
<b>EINECS/ELINCS</b>	Listed or exempt
<b>ENCS</b>	Listed or exempt
<b>IECSC</b>	Listed or exempt
<b>KECI</b>	Listed or exempt
<b>PICCS</b>	Listed or exempt
<b>AIIC</b>	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 01-Jul-2024

**Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)**

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**End of Safety Data Sheet**