

part of Maravai LifeSciences

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of: GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) and Canadian Workplace Hazardous Material Information System (WHMIS 2015)

Revision date 01-Jul-2024

Revision Number 1

1. Identification

Product identifier

Product Catalog Number:		Product Description:
40-4122-XX		10% 1-Methylimidazole in Tetrahydrofuran/Pyridine
Product Code(s) 40-4122-XX		Product Name Cap Mix B
Other means of identification		
UN number or ID number	UN2924	
Synonyms	None	
Recommended use of the chemical	and restricti	ons on use
Recommended use	For research	n use only
Restrictions on use	Not for human diagnostic use	
Details of the supplier of the safety	data sheet	
Manufacturer Address Glen Research LLC 22825 Davis Drive Sterling, VA 20164 USA		
Emergency telephone number		
Company Phone Number	1-703-437-6	191
Emergency Telephone	US: 1-800-4	Customer Number (CCN): 234802 Glen Research Corporation 24-9300 or Local: +1-703-527-3887 20 3885 0382 3163 8374
Website	www.glenres	search.com
E-mail address	support@gle	enresearch.com
2 Hozard(a) identification		

2. Hazard(s) identification

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3

Flammable liquids		Catego	ory 2
Appearance Clear Liquid	Physical state Liquid	Odor	Pungent Sweet Ether-like odor
Label elements			
Signal word Danger			
Hazard statements Harmful if swallowed Harmful in contact with skin Harmful if inhaled Causes severe skin burns and eye damage Suspected of causing cancer May cause respiratory irritation Highly flammable liquid and vapor			
Precautionary Statements - Prevention Obtain special instructions before use Do not handle until all safety precautions have be Wear protective gloves, protective clothing, eye p Wash face, hands and any exposed skin thoroug Do not eat, drink or smoke when using this produ Use only outdoors or in a well-ventilated area Do not breathe dusts or mists Keep away from heat, hot surfaces, sparks, oper Keep container tightly closed Ground and bond container and receiving equipr Use explosion-proof electrical, ventilating, lighting Use only non-sparking tools Take action to prevent static discharges Keep cool	protection and face protection ghly after handling uct n flames and other ignition sources. nent	No smoking	
Precautionary Statements - Response Specific treatment (see .? on this label) Immediately call a POISON CENTER or doctor Eyes IF IN EYES: Rinse cautiously with water for seven Immediately call a POISON CENTER or doctor	eral minutes. Remove contact lenses	s, if present and	l easy to do. Continue rinsing
Skin Call a POISON CENTER or doctor if you feel um IF ON SKIN (or hair): Take off immediately all co Wash contaminated clothing before reuse Inhalation IF INHALED: Remove person to fresh air and ke	ntaminated clothing. Rinse skin with	n water and the	n shower
Immediately call a POISON CENTER or doctor Ingestion IF SWALLOWED: Call a POISON CENTER or do Rinse mouth Do NOT induce vomiting	octor if you feel unwell		
Fire In case of fire: Use CO2, dry chemical, or foam to	o extinguish		

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents and container to an approved waste disposal plant

Other information

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

Unknown acute toxicity

90 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

3. Composition/information on ingredients

Substance

Not applicable.

Mixture

Chemical name	CAS No.	Weight-%	Information Review	Date HMIRA filed and date exemption granted (if applicable)
Tetrahydrofuran	109-99-9	74-86	-	-
Pyridine	110-86-1	7-13	-	-
N-Methylimidazole	616-47-7	7-13	-	-

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First-aid measures	
Description of first aid measures	
General advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. IF exposed or concerned: Get medical advice/attention.
Inhalation	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical attention.
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 immediate medical attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate 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 direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Avoid breathing vapors or mists.

Most important symptoms and effects, both acute and delayed

Symptoms	Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Note to physiciansProduct is a corrosive material.Use of gastric lavage or emesis is contraindicated.Possible perforation of stomach or esophagus should be investigated.Do not give
chemical antidotes.Do not give
pressure may occur.Marked decrease in blood
pressure may occur with moist rales, frothy sputum, and high pulse pressure.

5. Fire-fighting measures

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.
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. The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.
Hazardous combustion products	Nitrogen oxides (NOx). Carbon oxides.
Explosion data Sensitivity to mechanical impac Sensitivity to static discharge	t None. Yes.
Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures

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. Attention! Corrosive material. Avoid breathing vapors or mists.
Other information	Ventilate the area. Refer to protective measures listed in Sections 7 and 8.
Methods and material for containm	ent 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

non-combustible material and transfer to containers for later disposal.

water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other

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.

7. Handling and storage

Precautions for safe handling Use personal protection equipment. Avoid breathing vapors or mists. Keep away from heat, Advice on safe handling 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 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, eves or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. 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. Protect from moisture. Store away from other materials.

Packaging materials

Glass.

8. Exposure controls/personal protection

Control parameters Exposure Limits

Chemical name		ACGIH T	LV	0	SHA PEL	NIOSH	
Tetrahydrofuran		STEL: 100	ppm	TWA	A: 200 ppm	IDLH: 2000 ppm	
109-99-9		TWA: 50 p	opm	TWA	: 590 mg/m³	TWA: 200 ppm	
		S*		(vacated)	TWA: 200 ppm	TWA: 590 mg/m ³	
				(vacated)	TWA: 590 mg/m ³	STEL: 250 ppm	
					STEL: 250 ppm	STEL: 735 mg/m ³	
				(vacated) \$	STEL: 735 mg/m ³		
Pyridine		TWA: 1 p	pm	TW	/A: 5 ppm	IDLH: 1000 ppm	
110-86-1			-	TWA	15 mg/m ³	TWA: 5 ppm	
				(vacated	d) TWA: 5 ppm	TWA: 15 mg/m ³	
				(vacated)	TWA: 15 mg/m ³		
Chemical name		Alberta	British C	olumbia	Ontario	Quebec	
Tetrahydrofuran	-	TWA: 50 ppm	TWA: 5	50 ppm	TWA: 50 ppm	n TWA: 50 ppm	
109-99-9	Τ\	NA: 147 mg/m ³	STEL: 1	00 ppm	STEL: 100 ppr	m STEL: 100 ppm	
	S	TEL: 100 ppm	Sk	kin	Skin	Skin	
	ST	EL: 295 mg/m ³					
		Skin					
Pyridine		TWA: 1 ppm	TWA:	1 ppm	TWA: 1 ppm	TWA: 5 ppm	
110-86-1	T	WA: 3.2 mg/m ³				TWA: 16 mg/m ³	

Biological occupational exposure limits

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Tetrahydrofuran 109-99-9	2 mg/L - urine (Tetrahydrofuran) - end of shift
Appropriate engineering controls	
Engineering controls	Showers Eyewash stations Ventilation systems.
Individual protection measures, suc	h as personal protective equipment
Eye/face protection	Tight sealing safety goggles. Face protection shield.
Hand protection	Contact glove manufacturer for recommendations. Wear suitable gloves. Impervious gloves.
Skin and body protection	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.
Environmental exposure controls	Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.
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. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

9. Physical and chemical properties

Information on basic physical and o	hemical properties	
Physical state	Liquid	
Appearance	Clear Liquid	
Color	Clear	
Odor	Pungent Sweet Ether-like odor	
Odor threshold	No information available	
Property_	Values	Remarks • Method
рН	No data available	None known
Melting point / freezing point	No data available	None known
Initial boiling point and boiling rang	eNo data available	None known
Flash point	No data available	None known
Evaporation rate	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	
Vapor pressure	No data available	None known
Relative vapor density	No data available	None known
Relative density	0.90g/mL	None known
Water solubility	Completely soluble	None known
Solubility in other solvents	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known

Decomposition temperature Kinematic viscosity Dynamic viscosity	No data available No data available No data available	None known None known None known
Other information		
Explosive properties	No information available	
Oxidizing properties	No information available	
Softening point	No information available	
Molecular weight	No information available	
VOC content	No information available	
Liquid Density	No information available	
Bulk density	No information available	

10. Stability and reactivity

Reactivity	No information available
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks. Exposure to air or moisture over prolonged periods. Excessive heat.
Incompatible materials	Acids. Bases. Oxidizing agent.

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

1	1.	Т	oxico	logical	information
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Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract. Harmful by inhalation.			
Eye contact	Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.			
Skin contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.			
Ingestion	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.			
Symptoms related to the physical	Symptoms related to the physical, chemical and toxicological characteristics			

Symptoms

Redness. Burning. May cause blindness. 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)	1,454.00 mg/kg
ATEmix (dermal)	1,718.80 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-dust/mist)	1.50 mg/l
ATEmix (inhalation-vapor)	99,999.00 mg/l

Unknown acute toxicity

90 % 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 109-99-9	= 1650 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 14.7 mg/L (Rat)4 h
Pyridine 110-86-1	= 866 mg/kg (Rat)	1000 - 2000 mg/kg (Rabbit)	= 12.898 mg/L (Rat)4 h
N-Methylimidazole 616-47-7	= 1144 mg/kg (Rat)	400 - 640 mg/kg (Rabbit)	-

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

Skin corrosion/irritation	Classification based on data available for ingredients. Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Classification based on data available for ingredients. Causes serious eye damage. Causes burns.
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	ACGIH	IARC	NTP	OSHA
Tetrahydrofuran	A3	Group 2B	-	Х
109-99-9		-		
Pyridine	A3	Group 2B	-	Х
110-86-1		-		

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Legend
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ACGIH (American Conference of Governmental Industrial Hygienists) A3 - Animal Carcinogen IARC (International Agency for Research on Cancer) Group 2B - Possibly Carcinogenic to Humans Occupational Safety and Health Administration of the US Department of Labor X - Present

Reproductive toxicity

No information available.

STOT - single exposure	May cause respiratory irritation.
STOT - repeated exposure	No information available.
Target organ effects	No information available.
Aspiration hazard	No information available.

12. Ecological information

Ecotoxicity

Harmful to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Tetrahydrofuran 109-99-9	-	LC50: 1970 - 2360mg/L (96h, Pimephales promelas) LC50: 2700 - 3600mg/L (96h, Pimephales promelas)	-	-
Pyridine 110-86-1	-	LC50: 63.4 - 73.6mg/L (96h, Pimephales promelas) LC50: =26mg/L (96h, Cyprinus carpio) LC50: =4.6mg/L (96h, Oncorhynchus mykiss)	-	-

Persistence and degradability

Not Likely.

Bioaccumulation Not likely to bioaccumulate.

Bioconcentration factor (BCF) log Pow <= 4

Component Information

Chemical name	Partition coefficient
Tetrahydrofuran 109-99-9	0.45
Pyridine 110-86-1	0.65
N-Methylimidazole 616-47-7	-0.19

Mobility in soil

Not expected to adsorb on soil.

Mobility Soluble in water.

Other adverse effects

No information available.

13. Disposal considerations

Disposal methods

Waste from residues/unused Should not be released into the environment. Dispose of in accordance with local

products	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.
California waste information	This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. Transport information

UN num	ber or ID number
Proper s	shipping name
Transpo	ort hazard class(es)
Packing	group
	ble quantity - lbs

Regulated UN2924 Flammable liquid, corrosive, n.o.s Class 3, (8) Packing Group II 1000 lbs

ΙΑΤΑ

DOT

UN number or ID number UN proper shipping name Transport hazard class(es) Packing group

IMDG UN number or ID number UN proper shipping name Transport hazard class(es) Packing group EmS-No. Regulated UN2924 Flammable liquid, corrosive, n.o.s. Class 3, (8) Packing Group II

Regulated UN1993 Flammable liquid, corrosive, n.o.s. Class 3, (8) Packing Group II F-E, S-C

15. Regulatory information

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

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

TSCA

All of the components of this product are listed in the TSCA Inventory or exempt.

Listed or exempt. Listed or exempt. Listed or exempt. Listed or exempt. Listed or exempt. Listed or exempt.
Listed or exempt. 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 and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical name	SARA 313 - Threshold Values %
Pyridine - 110-86-1	1.0

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	Reportable Quantity (RQ)
Tetrahydrofuran 109-99-9	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Pyridine 110-86-1	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:

Chemical name	California Proposition 65
Tetrahydrofuran - 109-99-9	Carcinogen
Pyridine - 110-86-1	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Tetrahydrofuran 109-99-9	Х	X	Х
Pyridine 110-86-1	Х	X	Х

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	Health hazards 3	Flammability 3	Instability 0	Special hazards -
HMIS	Health hazards 3 *	Flammability 3	Physical hazards 0	Personal protection X

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

<u>Legend Section</u> TWA Ceiling	8: Exposure controls/personal protection TWA (time-weighted average) Maximum limit value	STEL Sk*	STEL (Short Term Exposure Limit) Skin designation
Revision date	01-Jul-2024		
Revision Note <u>Disclaimer</u> The information	No information availa provided herein is based on sources bel		able as of the issue date of this document, a

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