



**GLEN RESEARCH**

## SAFETY DATA SHEET Product 40-4012-XX

### 1. Product and Company Identification

Product Codes: 40-4012-XX  
Product Name: Cap Mix A  
Product Use: For Research Use Only  
Manufacturer Information  
Company Name: Glen Research Corporation  
22825 Davis Drive, #100  
Sterling, VA 20164 USA  
Phone Number: +1-703-437-6191  
Web Site Address: www.glenresearch.com  
Email Address: msds@glenres.com  
Information in case of emergency: Chemtrec, 800-424-9300; Outside USA +1-703-527-3887

### 2. Hazards Identification



**Pictograms:**

**Signal Words:** Danger

**GHS Hazard Statements**

H225: Highly Flammable Liquid and Vapor.  
H302+313: Harmful if swallowed, and in contact with skin.  
H314: Causes severe skin burns and eye damage.  
H331: Toxic if inhaled.  
H335: May cause respiratory irritation.

**GHS Precautionary Statements**

P103: Read label before use.  
P210: Keep away from heat/sparks/open flames/hot surfaces – No Smoking.  
P233: Keep container tightly closed.  
P260: Avoid breathing fumes or vapors.  
P270: Do not eat, drink or smoke when using this product.  
P271: Use only in a well ventilated area.  
P280: Wear protective gloves / protective clothing / eye protection / face protection.

**GHS Response Statements**

P301+330: IF SWALLOWED: Rinse mouth with water.  
P302+350: IF ON SKIN: Gently wash with soap and water.  
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so - continue rinsing.  
P306+360: IF ON CLOTHING: Rinse contaminated clothing and skin immediately with plenty of water before removing clothes.  
P312: Call a POISON CENTER or doctor/physician if you feel unwell.  
P362: Take off contaminated clothing and wash before use.

**GHS Storage and Disposal Phrases**

P403+233: Store in a well-ventilated place. Keep container tightly closed.  
P501: Dispose of contents / container in a safe way in accordance with all federal, state and local regulations.

**Emergency Overview**

Flammable Liquid, Target organ effect, Harmful by ingestion, Extremely destructive to mucous membranes and upper respiratory tract. Causes skin burns.  
May form Explosive Peroxides.

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**Target Organs**

Kidney, Liver, Central Nervous System

**3. Composition/Information on Ingredients**

Product Name	CAS #	EC-No	Concentration	M.W.	Formula
Tetrahydrofuran	109-99-9	203-726-8	90%	72.11 g/mol	C <sub>4</sub> H <sub>8</sub> O
Acetic Anhydride	108-24-7	203-564-8	10%	102.09 g/mol	C <sub>4</sub> H <sub>6</sub> O <sub>3</sub>

**4. First Aid Measures**

**Emergency and First Aid Procedures**

**If inhaled:**

Remove to fresh air.

If not breathing, give artificial respiration. Get medical attention.

**In case of skin contact:**

Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Wash clothing before reuse. Get medical attention.

**If swallowed:**

Rinse mouth with water. Do not induce vomiting. Get medical attention.

**If in contact with eyes:**

Rinse cautiously with water for several minutes. Remove contact lenses if present and safe to do so.

Continue rinsing. Get medical attention.

**Signs and Symptoms of Exposure**

Acute exposure: Severe headache, Marked decrease in white blood cell count, Redness and inflammation of the eyes and eyelids, Coughing, Sneezing, Difficulty breathing, Central Nervous System depression, Anesthetic effects, Burning sensation.

**Treatment**

Treat symptomatically.

**5. Fire Fighting Measures**

**Suitable Extinguishing Media**

Use a Class A Extinguisher (Dry chemical, carbon dioxide, water or foam). For large fires, apply water from as far away as possible. Use very large quantities of water applied as mist or spray. Cool all affected containers with flooding quantities of water.

**Special protective equipment for fire fighters**

Wear self-contained breathing apparatus (SCBA) for fire fighting if necessary.

Wear protective clothing to prevent contact with skin and eyes.

**Flammable Properties and Hazards**

Highly flammable liquid and vapor. Vapor may travel distances to sources of ignition.

**6. Accidental Release Measures**

**Personal Precautions**

Avoid breathing vapors. Evacuate personnel to safe areas.

**Protective equipment**

Use personal protective equipment. Avoid contact with skin, eyes, and clothing.

**Emergency procedures**

Remove all sources of ignition. Vapors may travel distances to sources of ignition. Ensure adequate ventilation.

**Methods and Material for containment and cleaning up.**

Absorb spillage with sand, absorbent pads. Do not let product enter the drain. Wear impermeable gloves, safety glasses and a lab coat when cleaning up the spill. Dispose of absorbent and spillage in compliance with local and state regulations.

**7. Handling and Storage**

**Precautions To Be Taken in Handling**

Handle using safe laboratory practices. Avoid all direct contact. Use explosion proof equipment. Keep away from sources of ignition – No Smoking. Take measures to prevent the build up of electrostatic

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charges.

**Recommended Storage**

Controlled room temperature.

**Precautions To Be Taken in Storing**

Keep container tightly closed. Store in well-ventilated place.

**Other Precautions**

Protect from sunlight.

**8. Exposure Controls/Personal Protection**

Product Name	CAS #	OSHA PEL (TWA)	ACGIH TLV	OSHA (STEL)
Tetrahydrofuran	109-99-9	200 ppm	50 ppm	250 ppm
Acetic Anhydride	108-24-7	5 ppm	5 ppm	N/A

**Engineering Controls (Ventilation etc.)**

Local exhaust ventilation is usually sufficient.

**Respiratory Equipment (Specify Type)**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Eye Protection**

Safety glasses with side shields. Wear splash resistant goggles or face shield if splashes are likely to occur.

**Protective Gloves**

Impermeable, chemically resistant gloves.

**Other Protective Clothing**

Lab coat, chemical resistant lab coat, protective chemical suit, based on risk assessment of activities.

**Work/Hygienic/Maintenance Practices**

Wash hands after handling. Do not eat, drink, or smoke when using this product.

**9. Physical and Chemical Properties**

Physical State:	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid
Appearance:	Liquid, clear.
Odor:	Pungent, sweet, ether-like odor
Odor Threshold:	No data
pH:	No data
Melting Point:	No data
Initial Boiling Point and Boiling Range:	No data
Flash Point:	No data
Specific Gravity:	0.90 g/mL
Evaporation Rate:	No data
Flammability:	Highly flammable
Explosive Limits:	LEL: No data UEL: No data
Vapor Pressure (vs. Air or mm Hg):	No data
Vapor Density (vs. Air = 1):	No data
Solubility in Water:	Fully soluble
Partition Coefficient (n-octanol/water):	Log Pow: No data
Auto-ignition Temperature:	No data
Decomposition Temperature:	No data
Viscosity:	No data
Percent Volatile:	No data

**10. Stability and Reactivity**

**Reactivity**

Stable material, hazardous polymerization will not occur.

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**Chemical Stability:** Unstable [ ] Stable [X]

**Possibility of Hazardous Reactions:**

Vapors may form explosive mixture with air.

**Conditions To Avoid - Instability**

Heat, flames, and sparks. Extremes of temperature and direct sunlight. Avoid exposure to moisture or water.

**Incompatibility - Materials To Avoid**

Oxidizing agents, Oxygen, Acids, Alcohols, Bases, and Powdered metals. May attack plastics, rubber, and coatings.

**Hazardous Decomposition or Byproducts**

Oxides of carbon, Nitrogen Oxides. Contains BHT stabilizer

**11. Toxicological Information**

**Route(s) of Entry:**

Inhalation? Yes                      Skin? Yes            Eyes? Yes    Ingestion? Yes

**Acute Toxicity**

No data

**Skin corrosion/irritation**

Serious skin burns

**Serious eye damage/ eye irritation**

Serious eye damage

**Respiratory or skin sensitization**

No data available

**Germ Cell mutagenicity**

No data available

**Carcinogenicity**

Product Name	CAS #	NTP	IARC	OSHA
Tetrahydrofuran	109-99-9	Not listed	Not listed	Not listed
Acetic Anhydride	108-24-7	Not listed	Not listed	Not listed

Confirmed animal carcinogen with unknown relevance to humans (Tetrahydrofuran).

**Reproductive toxicity**

No data available

**Specific target organ toxicity – single exposure (GHS)**

May cause respiratory irritation

**Specific target organ toxicity – repeated exposure (GHS)**

No data available

**Aspiration hazard**

No

**Medical Conditions Generally Aggravated By Exposure**

No data available.

This product should be handled with the usual care when dealing with chemicals. To the best of our knowledge, the toxicological properties of this substance have not been investigated.

**12. Ecological Information**

**Ecotoxicity**

Pimephales promelas (fathead minnow) 96-hour LC50 2,160mg/L (Tetrahydrofuran)  
Leuciscus idus (Golden orfe) 48-hour LC50 265 mg/L (Acetic Anhydride)

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available.

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**Mobility in soil**

No data available

**Other adverse effects**

No data available

**13. Disposal Considerations**

**Waste Disposal Method**

Observe all federal, state and local regulations. For Contaminated Packaging - dispose of in compliance with regulations. Contact a licensed professional waste disposal service for proper disposal. Burn in a chemical incinerator equipped with afterburner and scrubber.

**14. Transport Information**

**LAND TRANSPORT (49CFR)**

UN Number – UN2924, Class 3, (8) Packing Group II

Proper Shipping Name: Flammable Liquid, Corrosive N.O.S. (Tetrahydrofuran, Acetic Anhydride Solution)

Reportable Quantity (RQ) 1000 lbs

Marine Pollutant: No

Poison Inhalation Hazard (PIH): No

**AIR TRANSPORT (ICAO/IATA)**

UN Number – UN2924, Class 3, (8) Packing Group II

Proper Shipping Name: Flammable Liquid, Corrosive N.O.S. (Tetrahydrofuran, Acetic Anhydride Solution)

**MARINE TRANSPORT (IMDG/IMO)**

UN Number – UN2924, Class 3, (8) Packing Group II, EMS-No: F-E, S-C

Proper Shipping Name: Flammable Liquid, Corrosive N.O.S. (Tetrahydrofuran, Acetic Anhydride Solution)

Marine Pollutant: No

**15. Regulatory Information**

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

Not Listed

**SARA 311/312**

Fire Hazard, Acute Health Hazard

**Massachusetts Right to Know Components**

Tetrahydrofuran 109-99-9

Acetic Anhydride 108-24-7

**Pennsylvania Right to Know Components**

Tetrahydrofuran 109-99-9

Acetic Anhydride 108-24-7

**New Jersey Right to Know Components**

Tetrahydrofuran 109-99-9

Acetic Anhydride 108-24-7

**California Prop. 65 Components**

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

**16. Other Information**

For all other inquiries about this product contact Glen Research at 1-800-327-GLEN or 1-703-437-6191.

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