

Revision date 01-Jul-2024

Revision Number 1

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

1.1. Product identifier

| | |
|--|--|
| Product Catalog Number: 40-4012-XX | Product Description: Tetrahydrofuran/ Acetic Anhydride |
|--|--|

Product Code(s)
40-4012-XX

Product Name
Cap Mix A

Pure substance/mixture Mixture
Contains Acetic Anhydride; 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 - Inhalation (Dusts/Mists) | Category 4 - (H332) |
| Skin corrosion/irritation | Category 2 - (H315) |
| Serious eye damage/eye irritation | Category 1 - (H318) |

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

2.2. Label elements

Contains Acetic Anhydride; Tetrahydrofuran



Signal word
Danger

Hazard statements

H302 - Harmful if swallowed
H315 - Causes skin irritation
H318 - Causes serious eye damage
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer
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
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P370 + P378 - In case of fire: Use dry chemical, CO₂, water spray or alcohol-resistant foam to extinguish

Additional information

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

2.3. Other hazards

No information available.

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 | 87-93 | No data available | (603-025-00-0) 203-726-8 | Eye Irrit. 2 (H319) Carc. 2 (H351) STOT SE 3 (H335) Flam. Liq. 2 (H225) | Eye Irrit. 2 :: C>=25% STOT SE 3 :: C>=25% | - | - |

| | | | | | | | |
|------------------------------|------|-------------------|---------------------------------|---|--|---|---|
| | | | | (EUH019) | | | |
| Acetic Anhydride 108-24-7 | 7-13 | No data available | (607-008-00 -9) 203-564-8 | Acute Tox. 4 (H302) Acute Tox. 4 (H332) Skin Corr. 1B (H314) Flam. Liq. 3 (H226) | Eye Dam. 1 :: 5%≤C<25% Eye Irrit. 2 :: 1%≤C<5% Skin Corr. 1B :: C≥25% Skin Irrit. 2 :: 5%≤C<25% STOT SE 3 :: C≥5% | - | - |

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 |
| Acetic Anhydride 108-24-7 | 630 | 4000 | 4.2 | 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

| | |
|---|---|
| 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. Get medical attention immediately if symptoms occur. 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. Get immediate medical attention. Remove contact lenses, if present and easy to do. Continue rinsing. |
| Skin contact | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists. |
| Ingestion | Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. 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 | 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 (NO_x). 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. For small spills absorb material on dry rags, cat litter or similar absorbent material and dispose of in the trash.

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. Take off contaminated clothing and wash before reuse. 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.

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 ³ STEL: 100 ppm STEL: 300 mg/m ³ * | TWA: 50 ppm TWA: 150 mg/m ³ STEL 100 ppm STEL 300 mg/m ³ H* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ D* | STEL: 100 ppm STEL: 300.0 mg/m ³ TWA: 50.0 ppm TWA: 150.0 mg/m ³ K* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ * |
| Acetic Anhydride 108-24-7 | - | TWA: 5 ppm TWA: 20 mg/m ³ STEL 10 ppm STEL 40 mg/m ³ | TWA: 1 ppm TWA: 4.2 mg/m ³ STEL: 3 ppm STEL: 13 mg/m ³ | - | TWA: 0.5 ppm TWA: 2.5 mg/m ³ STEL: 2 ppm STEL: 10 mg/m ³ |
| Chemical name | Cyprus | Czech Republic | Denmark | Estonia | Finland |
| Tetrahydrofuran 109-99-9 | * STEL: 100 ppm STEL: 300 mg/m ³ | TWA: 150 mg/m ³ Ceiling: 300 mg/m ³ D* | TWA: 50 ppm TWA: 150 mg/m ³ H* | S+ TWA: 50 ppm TWA: 150 mg/m ³ | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm |

| | | | | | |
|------------------------------|---|--|--|---|---|
| | TWA: 50 ppm TWA: 150 mg/m ³ | | STEL: 300 mg/m ³ STEL: 100 ppm | STEL: 100 ppm STEL: 300 mg/m ³ A* | STEL: 300 mg/m ³ iho* |
| Acetic Anhydride 108-24-7 | - | TWA: 4 mg/m ³ Ceiling: 20 mg/m ³ | Ceiling: 2 ppm Ceiling: 20 mg/m ³ | STEL: 5 ppm STEL: 20 mg/m ³ | STEL: 5 ppm STEL: 21 mg/m ³ |
| Chemical name | France | Germany TRGS | Germany DFG | Greece | Hungary |
| Tetrahydrofuran 109-99-9 | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ * | TWA: 50 ppm TWA: 150 mg/m ³ H* | TWA: 20 ppm TWA: 60 mg/m ³ Peak: 40 ppm Peak: 120 mg/m ³ * | TWA: 200 ppm TWA: 590 mg/m ³ STEL: 250 ppm STEL: 735 mg/m ³ | TWA: 150 mg/m ³ TWA: 50 ppm STEL: 300 mg/m ³ STEL: 100 ppm b* |
| Acetic Anhydride 108-24-7 | STEL: 5 ppm STEL: 20 mg/m ³ | TWA: 0.1 ppm TWA: 0.42 mg/m ³ | TWA: 0.1 ppm TWA: 0.42 mg/m ³ Peak: 0.2 ppm Peak: 0.84 mg/m ³ | TWA: 5 ppm TWA: 20 mg/m ³ STEL: 5 ppm STEL: 20 mg/m ³ | TWA: 0.42 mg/m ³ STEL: 0.84 mg/m ³ |
| Chemical name | Ireland | Italy MDLPS | Italy AIDII | Latvia | Lithuania |
| Tetrahydrofuran 109-99-9 | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ Sk* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ cute* | TWA: 50 ppm TWA: 147 mg/m ³ STEL: 100 ppm STEL: 295 mg/m ³ cute* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ Ada* | O* TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ |
| Acetic Anhydride 108-24-7 | TWA: 1 ppm TWA: 2.5 mg/m ³ STEL: 3 ppm STEL: 10 mg/m ³ | - | TWA: 1 ppm TWA: 4.2 mg/m ³ STEL: 3 ppm STEL: 12.5 mg/m ³ | TWA: 5 mg/m ³ | Ceiling: 5 ppm Ceiling: 20 mg/m ³ |
| Chemical name | Luxembourg | Malta | Netherlands | Norway | Poland |
| Tetrahydrofuran 109-99-9 | Peau* STEL: 100 ppm STEL: 300 mg/m ³ TWA: 50 ppm TWA: 150 mg/m ³ | skin* STEL: 100 ppm STEL: 300 mg/m ³ TWA: 50 ppm TWA: 150 mg/m ³ | TWA: 100 ppm TWA: 300 mg/m ³ STEL: 200 ppm STEL: 600 mg/m ³ H* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 75 ppm STEL: 187.5 mg/m ³ H* | STEL: 300 mg/m ³ TWA: 150 mg/m ³ skóra* |
| Acetic Anhydride 108-24-7 | - | - | - | Ceiling: 5 ppm Ceiling: 20 mg/m ³ | STEL: 24 mg/m ³ TWA: 12 mg/m ³ |
| Chemical name | Portugal | Romania | Slovakia | Slovenia | Spain |
| Tetrahydrofuran 109-99-9 | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ Cutânea* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ P* | TWA: 50 ppm TWA: 150 mg/m ³ K* Ceiling: 300 mg/m ³ | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ K* | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ vía dérmica* |
| Acetic Anhydride 108-24-7 | TWA: 1 ppm STEL: 1 ppm | TWA: 3.6 ppm TWA: 15 mg/m ³ STEL: 6 ppm STEL: 25 mg/m ³ | TWA: 5 ppm TWA: 21 mg/m ³ Ceiling: 21 mg/m ³ | TWA: 5 ppm TWA: 21 mg/m ³ STEL: 5 ppm STEL: 21 mg/m ³ | TWA: 5 ppm TWA: 21 mg/m ³ |
| Chemical name | Sweden | | Switzerland | | United Kingdom |
| Tetrahydrofuran 109-99-9 | NGV: 50 ppm NGV: 150 mg/m ³ Bindande KGV: 100 ppm Bindande KGV: 300 mg/m ³ | | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ H* | | TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ Sk* |
| Acetic Anhydride 108-24-7 | Bindande KGV: 5 ppm Bindande KGV: 20 mg/m ³ | | TWA: 1 ppm TWA: 4 mg/m ³ STEL: 2 ppm STEL: 8 mg/m ³ | | TWA: 0.5 ppm TWA: 2.5 mg/m ³ STEL: 2 ppm STEL: 10 mg/m ³ |

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.

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 | Clear Liquid |
| Color | Clear |
| Odor | Pungent Sweet Ether-like odor |
| Odor threshold | No information available |

| <u>Property</u> | <u>Values</u> | <u>Remarks • Method</u> |
|--|--------------------------|--------------------------|
| 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 | Completely soluble | 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 | 0.90g/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 Strong acids. Strong bases. Strong oxidizing agents.

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. Harmful by inhalation. (based on components). |
| Eye contact | Specific test data for the substance or mixture is not available. Causes serious eye damage. May cause irreversible damage to eyes. |
| Skin contact | Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components). |
| Ingestion | Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed. (based on components). |

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. Burning. May cause blindness. 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) | 1,420.10 mg/kg |
| ATEmix (dermal) | 2,105.30 mg/kg |
| ATEmix (inhalation-gas) | 99,999.00 ppm |
| ATEmix (inhalation-dust/mist) | 4.20 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 | = 1650 mg/kg (Rat) | > 2000 mg/kg (Rat) | > 14.7 mg/L (Rat) 4 h |
| Acetic Anhydride | = 630 mg/kg (Rat) | = 4000 mg/kg (Rabbit) | 4.2 - 8.5 mg/L (Rat) 4 h |

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

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 skin irritation. |
| Serious eye damage/eye irritation | Classification based on data available for ingredients. Causes burns. Causes serious eye damage. |
| 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**

| | |
|---------------------------------|---|
| Unknown aquatic toxicity | Contains 0 % 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) | | |
|--|--|----------------------------|--|--|

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 |
| Acetic Anhydride | -0.27 |

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 |
| Acetic Anhydride | 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 UN2924
14.2 UN proper shipping name Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride)
14.3 Transport hazard class(es) 3
Subsidiary hazard class 8
14.4 Packing group II

| | |
|--|--|
| Description | UN2924, Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride), 3 (8), II |
| 14.5 Environmental hazards | No |
| 14.6 Special precautions for user | |
| Special Provisions | A3, A803 |
| ERG Code | 3CH |

IMDG

| | |
|---|--|
| 14.1 UN number or ID number | UN2924 |
| 14.2 UN proper shipping name | Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride) |
| 14.3 Transport hazard class(es) | 3 |
| Subsidiary hazard class | 8 |
| 14.4 Packing group | II |
| Description | UN2924, Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride), 3 (8), II |
| 14.5 Environmental hazards | No |
| 14.6 Special precautions for user | |
| Special Provisions | 274 |
| EmS-No. | F-E, S-C |
| 14.7 Maritime transport in bulk according to IMO instruments | No information available |

RID

| | |
|--|--|
| 14.1 UN number or ID number | UN2924 |
| 14.2 UN proper shipping name | Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride) |
| 14.3 Transport hazard class(es) | 3 |
| Subsidiary hazard class | 8 |
| 14.4 Packing group | II |
| Description | UN2924, Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride), 3 (8), II |
| 14.5 Environmental hazards | No |
| 14.6 Special precautions for user | |
| Special Provisions | 274 |
| Classification code | FC |

ADR

| | |
|--|---|
| 14.1 UN number or ID number | UN2924 |
| 14.2 UN proper shipping name | Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride) |
| 14.3 Transport hazard class(es) | 3 |
| Subsidiary hazard class | 8 |
| 14.4 Packing group | II |
| Description | UN2924, Flammable liquid, corrosive, n.o.s. (Tetrahydrofuran, Acetic Anhydride), 3 (8), II, (D/E) |
| 14.5 Environmental hazards | No |
| 14.6 Special precautions for user | |
| Special Provisions | 274 |
| Classification code | FC |
| 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 | - |

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. | - |
| Acetic Anhydride - 108-24-7 | 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

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

H226 - Flammable liquid and vapor

H302 - Harmful if swallowed

H314 - Causes severe skin burns and eye damage

H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer

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)

Disclaimer

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End of Safety Data Sheet