Material Safety Data Sheet

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Section 1 – Product and Company Information

Reagent/Buffer Name: Tetracycline Hydrochloride (Component A)
Catalog Number: A1004-5, A1004-25

Company: Zymo Research Corp.
Street Address: 625 W. Katella Ave, Suite 30
City, State, Zip Code, Country: Orange, CA 92867 US
Phone: 714-288-9682
Fax: 714-288-9643

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Dangerous Components Name</th>
<th>CAS #</th>
<th>Formula</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetracycline Hydrochloride</td>
<td>64-75-5</td>
<td>C22H24N2O8</td>
<td>1%</td>
</tr>
</tbody>
</table>

Section 3 – Hazard Identification

Toxic Acute Effects: Possible risk or harm to the unborn child. May cause harm to breast feed babies. Harmful if swallowed, inhaled, or absorbed through skin. May cause irritation. California Prop. 65 reproductive hazard.

Toxic Chronic Effects: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals. Target organ(s): liver, teeth, bones.

HMIS Rating: (estimated)
Health: 2
Flammability: 1
Reactivity: 0

Section 4 – First Aid Measures

In Case of
Eye Contact: Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention.

Skin Contact: Wash contaminated areas with soap and water as contaminated clothing is removed. Do not wear contaminated clothing until after it has been properly cleaned.

Ingestion: If victim is conscious wash out mouth with water. Get medical attention.
Inhalation: Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Section 5 – Fire Fighting Measures

Extinguishing Media: Water spray, carbon dioxide, dry chemical powder, or appropriate foam.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective garments to prevent contact with skin and eyes.

Unusual Fire And Explosions Hazards: Emits toxic fumes under fire conditions.

Section 6 – Accidental Release Measures

General Information: Evacuate spill area. Wear self-contained breathing apparatus, chemical safety goggles, rubber boots, and heavy rubber gloves.

Spills / Leaks: Sweep up, while not raising dust. Place in closed containers for waste disposal. Ventilate area and wash spill site after substance is completely cleared.

Section 7 – Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.


Section 8 – Exposure Controls / Personal Protection

Wear appropriate approved/certified respirator, chemical-resistant gloves, safety goggles, other protective clothing. Safety shower and eye bath. Use only in a chemical fume hood. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure. Wash thoroughly after handling. Toxic. Keep tightly closed. Light sensitive. Store in a cool dry place. Toxic by inhalation, in contact with skin and if swallowed. Possible risk of irreversible effects. Target organ(s): Liver, teeth, bones. If you feel unwell, seek medical advice. Wear suitable protective clothing.

Section 9 – Physical and Chemical Properties

Physical States / Form: Liquid

Color: Clear

Boiling Point: Decomposes.

Melting Point: 214°C (417.2°F)

Section 10 – Stability and Reactivity

Chemical Stability: Stable

Conditions To Avoid: Light

Substances To Be Avoided: Strong oxidizing agents.

Section 11 – Toxicological Information

RTECS No: QI9100000

Toxicity Data:

<table>
<thead>
<tr>
<th>Route</th>
<th>Organism</th>
<th>Dose</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>LD50: 6443 mg/kg</td>
<td>TXAPA9 18, 185, 71</td>
</tr>
<tr>
<td>Intraperitoneal</td>
<td>Rat</td>
<td>LD50: 318 mg/kg</td>
<td>GNRIDX 2, 26, 68</td>
</tr>
<tr>
<td>Subcutaneous</td>
<td>Rat</td>
<td>LD50: 700 mg/kg</td>
<td>TXAPA9 9, 445, 66</td>
</tr>
<tr>
<td>Intravenous</td>
<td>Rat</td>
<td>LD50: 128 mg/kg</td>
<td>FRPSAX 10, 197, 55</td>
</tr>
<tr>
<td>Oral</td>
<td>Mouse</td>
<td>LD50: 2759 mg/kg</td>
<td>JPPMAB 16, 33, 64</td>
</tr>
<tr>
<td>Intraperitoneal</td>
<td>Mouse</td>
<td>LD50: 368 mg/kg</td>
<td>JPPMAB 16, 33, 64</td>
</tr>
<tr>
<td>Intravenous</td>
<td>Mouse</td>
<td>LD50: 157 mg/kg</td>
<td>FRPSAX 10, 197, 55</td>
</tr>
<tr>
<td>Unreported</td>
<td>Mouse</td>
<td>LD50:105 mg/kg</td>
<td>40YJAX -, 55, 79</td>
</tr>
</tbody>
</table>

Only selected registry of toxic effects of chemical substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

Section 12 – Ecological Information

Products of Biodegradation: Long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: May decompose in presence of light.

Section 13 – Disposal Considerations

Observe all federal, state, and local laws. Label Precautionary Statement: Toxic

Section 14 – Transport Considerations

DOT Classification: Not a DOT controlled material (United States).

Section 15 – Regulatory Information

European Information:
R60/61: May impair fertility, may cause harm to the unborn child
R23/24/25: Toxic by inhalation, in contact with skin, and if swallowed
R36/37/38: Irritating to eyes, respiratory system, and skin
S36/37/39: Wear suitable protective clothing and gloves eye/face protection

Federal and State Regulations:
TSCA 8(b) Inventory: Tetracycline HCl

Other Regulations:

California proposition 65: This product contains the following ingredients for which the state of California found to cause cancer, birth defects or other productive harm which require a warning under the statute: Tetracycline HCl

Other Classifications:
DSCL (EEC): This product is not classified according to the EU regulation.

Canada – WHMIS: Class D2A: Material causing other toxic effects (VERY TOXIC).
The above information is believed to be correct, but does not purport to be all-inclusive and should be used only as a guide. Zymo Research shall not be held liable for any damage or other consequences resulting from handling or from contact with the above product. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Zymo Research be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Zymo Research has been advised or the possibility of such damages. All materials supplied by Zymo Research Corp are intended to be used by trained professionals and are for research use only.
Material Safety Data Sheet

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Catalog Number: A1004-5, A1004-25

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<th>CAS #</th>
<th>Formula</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol 190 Proof, Ethanol, Undenatured; Ethyl Alcohol, Anhydrous</td>
<td>Mixture [Ethanol 200 Proof (95%): 64-17-5, Water (5%): 7732-18-5]</td>
<td>N/A</td>
<td>99%</td>
</tr>
</tbody>
</table>

Section 3 – Hazard Identification

NFPA Ratings (scale 0 - 4) :
- Health = 1
- Fire = 3
- Reactivity = 0

HMIS Ratings (scale 0 – 4) :
- Health = 1
- Fire = 3
- Reactivity = 0

Hazard Category: Acute, Chronic, Fire

Hazardous Identification Information:
Poison. Danger. Flammable. May be fatal if swallowed. Vapor harmful. Harmful if inhaled or absorbed through skin. Affects Nervous Central System. Causes eyes, skin and respiratory tract irritation. May affect liver, blood, reproductive system.

Route(s) of Entry:
- Inhalation, eye, ingestion, skin

Acute and Chronic Heal Hazards:
- Ingestion: Can cause nausea, vomiting, intoxication, depression of the Central Nervous System, diarrhea. In acute cases can cause death.
- Inhalation: May cause irritation to the mucous membranes of the upper respiratory tract.
Eyes: Liquid and vapor may cause irritation. Splashes may cause temporary pain and blurred vision.
Skin: On prolonged contact, may cause irritation, cracking, flaking and defatting of skin.

**Section 4 – First Aid Measures**

In Case of

**Eye Contact:**
Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention.

**Skin Contact:**
Rinse contaminated areas with large volumes of water for at least 15 minutes as contaminated clothing is removed. Get medical attention if area remains irritated. Do not wear contaminated clothing until after it has been properly cleaned.

**Ingestion:**
If conscious, have victim drink water or milk to dilute. Do NOT induce vomiting unless directed to do so by medical personnel. Get medical aid immediately. Never give anything by mouth to an unconscious person.

**Inhalation:**
Remove victim to fresh air. Give oxygen if breathing becomes difficult. Should breathing stop give artificial respiration. Get medical aid if cough or other symptoms appear.

**Section 5 – Fire Fighting Measures**

**Flash Point:** 16.66 °C (61.99 °F)

**Lower Explosive Limit:** 3.3 vol %

**Upper Explosive Limit:** 19.0 vol %

**Extinguishing Media:**
Use alcohol foam, dry chemical, CO₂. Water may be ineffective, but should be used to keep fire-exposed container cool.

**Special Fire Fighting Procedures:**
Wear self-contained breathing apparatus and protective garments to prevent contact with skin and eyes.

**Fire Hazards in Presence of Various Substances:**

**Products of Combustion:**
These products are carbon oxides (CO, CO₂).

**Explosion Hazards:**
Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Containers may explode in the heat of a fire.

**Section 6 – Accidental Release Measures**

**Spills / Leaks:**
Ventilate area. Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. A vapor suppressing foam may be used to reduce vapors. Wear appropriate personal protective equipment.

**Section 7 – Handling and Storage**

**Handling:**
Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

**Storage:**
Keep container tightly closed in a cool, dry, and well-ventilated place. Keep away from heat, sparks, and flame.
Section 8 – Exposure Controls / Personal Protection

Wear appropriate approved/certified respirator. Chemical resistant gloves. Chemical safety goggles. Lab coat. Safety shower and eye both. Mechanical exhaust required. Keep tightly closed. Wash thoroughly after handling. Do not get in contact with eyes, skin or on clothing. Do not inhale vapor. Severe eye irritant.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>OSHA - Final PELs</th>
<th>ACGIH</th>
<th>NIOSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl alcohol</td>
<td>1000 ppm TWA; 1900 mg/m3 TWA</td>
<td>1000 ppm TWA</td>
<td>1000 ppm TWA; 1900 mg/m3 TWA 3300 ppm IDLH</td>
</tr>
<tr>
<td>Water</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

Section 9 – Physical and Chemical Properties

Physical States / Form: Liquid
Color: Colorless
Odor: Mild
Melting/Freezing Point: -114.1 °C
Boiling Point: 78 °C
Flashpoint: 16.66 °C (61.99 °F)
Vapor Pressure: 59.3 mm Hg at 25 °C
pH: Not available
Specific Gravity: 0.790 at 20°C
Solubility In Water: Miscible

Section 10 – Stability and Reactivity

Chemical Stability: Stable.
Conditions To Avoid: Incompatible materials, ignition sources, excess heat, oxidizers.
Substances To Be Avoided: Strong oxidants, hydrazine, alkali metals, peroxides, silver salts, acid chlorides, metal hydrates, and others.
Hazardous Decomposition Products: Carbon dioxide, carbon monoxide.
Hazardous Polymerization: Will not occur.

Section 11 – Toxicological Information

LD50 Oral Rat: 7060 mg/kg
LC50 Inhalation Rat: 20,000 ppm/10H
LD50 Oral Rabbit: 6300 mg/kg
Carcinogenicity: Not listed by ACGIH, IARC, NTP, or CA Prop 65
Reproductive Effects: Ethanol has been linked to birth defects in humans.
Section 12 – Ecological Information

Water: Does not bioaccumulate, readily biodegrades, evaporates to modern extent.

Soil: Leaches into groundwater, readily biodegrades, quickly evaporates.

Air: Readily degrades by reaction with photochemically produced hydroxyl radicals. Readily removed by dry and wet deposition.

Section 13 – Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 – Transport Considerations

Domestic (Land, DOT): Shipping Name: Ethanol
Hazard Class: 3
UN/NA: UN3065
Packing Group: II

International (Water, I.M.O.): Shipping Name: Ethanol
Hazard Class: 3.2
UN/NA: UN3065
Packing Group: II

Section 15 – Regulatory Information

Federal and State Regulations
TSCA Inventory: CAS# 64-17-5: Listed
CAS# 7732-18-5: Listed

Health & Safety Reporting List: None

Chemical Test Rules: None

Section 12b: None

TSCA Significant New Use Rule: None

CERCLA Hazardous Substances and corresponding RQs: None

SARA Section 302: None

SARA Codes: CAS # 64-17-5: acute, chronic, flammable

Section 313: None

Clean Air Act: Hazardous air pollutants: None
Class 1 Ozone Depleters: None
Class 2 Ozone Depleters: None

Clean Water Act: Hazardous Substances: None
Priority Pollutants: None
Toxic Pollutants: None

OSHA: None
STATE: CAS# 64-17-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts. CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65: WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause developmental reproductive toxicity. California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
Hazard Symbols: F
Risk Phrases: R11
Safety Phrases: S16, S7

Canada - DSL/NDSL: CAS# 64-17-5: Listed CAS# 7732-18-5: Listed

Canada – WHMIS: WHMIS classification of B2, D2A.

Canadian Ingredient Disclosure List: CAS# 64-17-5: Listed

### Section 16 – Other Information

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