Material Safety Data Sheet

SECTION 1-CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: GLYOXAL (40%)
Synonyms: Oxalaldehyde; Biformal; Diformal; Ethandial; Ethane-1,2-dione; Glyoxylaldehyde
Supplier: ZHONGLAN INDUSTRY CO., LTD.
ADD: 7/F, Sangqing Fengrun Bldg, No. 100 South Gongye Road, Jinan, China
SANQING FENGRUN, BLDG, NO.100 SOUTH GONGYE ROAD, JINAN, CHINA P.C.: 250100
TEL: 86-531-82956570

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
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<tbody>
<tr>
<td>107-22-2</td>
<td>Glyoxal</td>
<td>40</td>
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SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Harmful: danger of serious damage to health by prolonged exposure through inhalation, skin contact and if swallowed. May cause sensitization by skin contact

Category of Danger:
Harmful, Skin Sensitizer, Mutagen. cat. 3, Lachrymator

Principle routes of exposure: Skin
Inhalation: Harmful: possible risk of irreversible effects through inhalation.
Ingestion: Harmful: danger of serious damage to health if ingested.
Skin contact: Harmful: danger of serious damage to health by prolonged skin contact.
May cause allergic skin reaction

Eye contact: Risk of serious damage to eyes
Vapors extremely irritating to eyes an respiratory tract

ANSI Classification Sensitizer - skin, Irritant - eye, severe
Statements of hazard HARMFUL IF SWALLOWED. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR
INHALED. MAY CAUSE ALLERGIC SKIN REACTION.

CAUSES EYE IRRITATION.

Statement of Spill or Leak - ANSI Label

Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment.

Statement of First Aid

If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call a physician. In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. In case of contact, flush eyes with running water for at least 15 minutes. Consult a physician for irritation or any other symptom.

Precautions - ANSI Label

Do not taste or swallow. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not breathe vapors or spray mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

SECTION 4. FIRST AID MEASURES

General advice: In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Inhalation: Move to fresh air. Call a physician immediately.

Skin contact: Wash off immediately with soap and plenty of water. Consult a physician if necessary.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician. Drink 1 or 2 glasses of water. Induce vomiting if person is conscious.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Protection of first-aiders: No information available.

Medical conditions aggravated by exposure: None known

SECTION 5. FIRE FIGHTING MEASURES
Suitable extinguishing media: Use dry chemical, CO2, water spray or "alcohol" foam

Specific hazards: Burning produces irritant fumes.

Unusual hazards: None known

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus
pressure-demand, MSHA/NIOSH (approved or equivalent)
and full protective gear

Specific methods: Water mist may be used to cool closed containers.

Flash point: 220 °C (closed cup)

Autoignition temperature: 285°C

NFPA rating:
NFPA Health: 1
NFPA Flammability: 3
NFPA Reactivity: 0

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment.

Environmental precautions: Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Soak up with inert absorbent material. Prevent product from entering drains

SECTION 7. HANDLING AND STORAGE

Storage:
ROOM TEMPERATURE

Handling: Use only in area provided with appropriate exhaust ventilation.

Safe handling advice: Wear personal protective equipment. Remove and wash contaminated clothing before reuse.

Technical measures/storage conditions: Keep containers tightly closed in a cool, well-ventilated place. Keep container tightly closed in a dry and well-ventilated place.

Incompatible products: Oxidising and spontaneously flammable products

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION
Engineering measures: Ensure adequate ventilation, especially in confined areas.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection: Breathing apparatus only if aerosol or dust is formed.
Hand protection: Pvc or other plastic material gloves
Skin and body protection: Impervious clothing Long sleeved clothing
Eye protection: Safety glasses with side-shields

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor Clear and colorless
Physical state: Liquid
Formula: C2H2O2
Molecular weight: 58.04
Melting point/range: -15 °C at 760 mmHg
Boiling point/range: 104 °C at 760 mmHg
Density: 1.270 g/ml
Vapor pressure: 293.3 hPa at 20 °C
Evaporation rate: No data available
Vapor density: No data available
Solubility (in water): Soluble
Flash point: 220 °C (closed cup)
Autoignition temperature: 285°C

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.
Polymerization: None under normal processing.
Hazardous decomposition products: Thermal decomposition can lead to release of irritating gases and vapours such as carbon oxides.
Materials to avoid: -
Forms explosive mixture with air. A strong reducing agent; reacts violently with oxidizers. Heat or contact with water, strong bases causes polymerization. Incompatible with strong acids, caustics,
Conditions to avoid: Exposure to air or moisture over prolonged periods.
SECTION 11. TOXICOLOGICAL INFORMATION

Product Information

Acute toxicity

Components RTECS Number: Selected LD50s and LC50s
GLYOXAL MD2650000 Oral LD50 Rat : 200 mg/kg
Oral LD50 Mouse : 400 mg/kg
Dermal LD50 Rabbit : 10 mL/kg

Chronic toxicity: Chronic exposure may cause nausea and vomiting, higher exposure causes unconsciousness.

Local effects: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Specific effects: May include moderate to severe erythema (redness) and moderate edema (raised skin), nausea, vomiting, headache.

Primary irritation: No data is available on the product itself.

Carcinogenic effects: No data is available on the product itself.

Mutagenic effects: Substances which cause concern for man owing to possible mutagenic effects but for which the available information is not adequate for making a satisfactory assessment.

Reproductive toxicity: No data is available on the product itself.

SECTION 12. ECOLOGICAL INFORMATION

Mobility: NA
Bioaccumulation: NA
Ecotoxicity effects: NA
Aquatic toxicity: May cause long-term adverse effects in the aquatic environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Residue from fires extinguished
with this material may be hazardous.  
**Contaminated packaging:** Do not re-use empty containers  
**Methods for cleaning up:** Soak up with inert absorbent material. Prevent product from entering drains

**SECTION 14. TRANSPORT INFORMATION**

**UN/Id No:** Not regulated  
**DOT:**  
**Proper shipping name:** Not Regulated  
**Components U.S. DOT - Appendix A Table 1 - Reportable Quantities**  
GLYOXAL Not Listed  
**TDG (Canada):**  
**WHMIS hazard class:** D2b toxic materials  
**IMDG/IMO**  
**IMDG - Hazard Classifications** Not Applicable  
**Components U.S. DOT - Appendix B - Marine Pollutan U.S. DOT - Appendix B - Severe Marine Pollutants**  
**GLYOXAL Not Listed**

**SECTION 15. REGULATORY INFORMATION**

**International Inventories**  
**U.S. regulations:**  
**Components California Proposition 65**  
**Massachusetts Right to Know List:**  
**New Jersey Right to Know List:**  
**Pennsylvania Right to Know List:**  
**GLYOXAL Not Listed**  
**Components Florida substance List: Rhode Island Right to Know List:**  
**Illinois - Toxic Air Contaminants**  
**Connecticut - Hazardous Air**
Pollutants
GLYOXAL Not Listed

Components SARA 313 Emission reporting/Toxic Release of Chemicals
CERCLA/SARA - Section 302 Extremely Haz

NTP: IARC:
GLYOXAL Not Listed
2-509; 2-510

Canada DSL Inventory List - Present
Korean KECL: KE-27447
Philippines PICCS: Present
Australia (AICS): Present
Inventory - United States TSCA - Sect. 8(b)
Inventory - China: Present
Present

EU EINECS List - 203-474-9; C2H2O2
Catalog Number: 203586 Product name: GLYOXAL

Components
GLYOXAL

SARA 313 Notification: The above is your notification as to the SARA 313 listing for this product(s) pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
If you are unsure if you are subject to the reporting requirements of Section 313, or need more information, please call the EPA Emergency Planning and Community Right-To-Know Information Hotline: (800) 535-0202 or (202) 479-2499 (in Washington, DC or Alaska).

State Notification: The above information is your notice as to the Right-to-Know listings of the stated product(s). Individual states will list chemicals for a variety of reasons including, but not limited to, the compounds toxicity; carcinogenic, tumorigenic and/or reproductive hazards; and the compounds environmental impact if accidentally released.

SECTION 16. OTHER INFORMATION

Prepared by: Health & Safety

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