

## MATERIAL SAFETY DATA SHEET

Date Updated: 29.06.2007  
Version: 3.0  
Regulation EC No. 1907/2006

### GLYOXAL 40%

#### \*\*\*\* Section 1 - Chemical Product and Company Identification \*\*\*\*

MSDS Name: Glyoxal 40%  
Chemical Name: Glyoxal, 40 wt.% solution in water  
Synonyms: Ethanedial  
GHS(Global Harmonization System) Code: 2912.1900  
Company Identification: Dalian Onichem Co., Ltd.  
218-220, No. 2 Gaoxin Street, Qixianling, Dalian 116023, P.R. China  
Tel: 86-411-84794022, Fax: 86-411-84794077  
For emergencies, call CHEMTREC 1-800-424-9300 or 1-202-483-7616

#### \*\*\*\* Section 2 - Composition, Information on Ingredients \*\*\*\*

CAS#	Chemical Name	wt %	EINECS#
107-22-2	Glyoxal	39.5 – 40.5	203-474-9
7732-18-5	Water	Max. 60	231-791-2
50-00-0	Formaldehyde	Max. 0.01	200-001-8
107-21-1	Ethylene Glycol	Max. 1.5	203-473-3

#### \*\*\*\* Section 3 - Hazards Identification \*\*\*\*

##### EMERGENCY OVERVIEW

Irritating to eyes and skin. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact. May be harmful by inhalation or swallow.

##### POTENTIAL HEALTH EFFECTS

Eye: Causes eye irritation.

Skin: Causes skin irritation. Harmful if absorbed through the skin. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

Ingestion: Harmful if swallowed. May cause irritation of the digestive tract.

Inhalation: Harmful if inhaled. May cause respiratory tract irritation.

Chronic: Not available.

Medical conditions aggravated by overexposure: Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product.

Aquatic toxicity: The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

#### \*\*\*\* Section 4 - First aid Measures \*\*\*\*

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** Get medical aid. Wash mouth out with water.

**Inhalation:** Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

#### \*\*\*\* Section 5 - Fire Fighting Measures \*\*\*\*

General Information: this is non-flammable liquid. Auto-ignition point is about 285 (DIN 51794). As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or foam.

Hazards during fire-fighting: No particular hazards known.

Protective equipment for fire-fighting: Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

NFPA Hazard codes: Health: 2 Fire: 0 Reactivity: 0 Special:

**MATERIAL SAFETY DATA SHEET**

Date Updated: 29.06.2007

Version: 3.0

Regulation EC No. 1907/2006

**\*\*\*\* Section 6 - Accidental Release Measures \*\*\*\***

General Information: Use proper personal protective equipment as indicated in Section 8. Avoid contact with the skin, eyes and clothing. Do not discharge into drains/surface waters/groundwater.

For large amounts: Pump off product.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container for disposal.

Dispose of absorbed material in accordance with regulations.

**\*\*\*\* Section 7 - Handling and Storage \*\*\*\***

General information: with thorough ventilation in storing and working areas.

Handling: Avoid contact with skin and eyes.

Storage: Store in a tightly closed container. Store in a dry and cool area.

Storage duration: 6 Months. May be yellow after longer storage. During the storage a product characteristic clouding or crystalline precipitation of the trimeric glyoxal hydrate may occur. The process is reversible if warmed up to about 40 °C).

**\*\*\*\* Section 8 - Exposure Controls, Personal Protection \*\*\*\***

Components with workplace control parameters

Chemical Name	ACGIH	OSHA
Glyoxal	TWA 0.1 mg/m <sup>3</sup> (inhalable fraction and vapor)	Not list
Formaldehyde	CLV 0.3 PPM	TWA 0.75 ppm, STEL 2 ppm, Action level 0.5 ppm
Ethylene Glycol	CLV 100 mg/m <sup>3</sup> aerosol	

Engineering Controls: Use adequate ventilation

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**\*\*\*\* Section 9 - Physical and Chemical Properties \*\*\*\***

Physical State: Clear liquid

Appearance: almost colorless (to light yellowish)

Odor: mild odor

PH: 2 – 3.5

Vapor Pressure: 18 mm Hg @20

Viscosity: about 8 mPa.S @20

Boiling Point: 104 °C @ 760.00mm Hg

Freezing/Melting Point: Not available.

Autoignition Temperature: 285

Flash Point: 285

Solubility in water: Soluble.

Specific Gravity/Density: 1.265

Molecular Formula: HCOCHO

Molecular Weight: 58.04

**\*\*\*\* Section 10 - Stability and Reactivity \*\*\*\***

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials.

**MATERIAL SAFETY DATA SHEET**

Date Updated: 29.06.2007

Version: 3.0

Regulation EC No. 1907/2006

Incompatibilities with Other Materials: Strong oxidizing agents, strong bases.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

**\*\*\*\* Section 11 - Toxicological Information \*\*\*\***

RTECS# CAS# 107-22-2: MD2625000 MD2650000 MD2700000

LD50/LC50 CAS# 107-22-2: Dermal, guinea pig: LD50 = 6600 mg/kg; Draize test, rabbit, eye: 20 mg Severe; Draize test, rabbit, eye: 100 uL/24H Moderate; Draize test, rabbit, eye: 100 uL Mild; Draize test, rabbit, skin: 500 uL/4H Mild; Inhalation, rat: LC50 = 2410 mg/m<sup>3</sup>/4H; Oral, mouse: LD50 = 400 mg/kg; Oral, mouse: LD50 = 1280 mg/kg; Oral, rabbit: LD50 = >3175 mg/kg; Oral, rat: LD50 = 200 mg/kg; Oral, rat: LD50 = 4290 mg/kg; Oral, rat: LD50 = 2960 mg/kg; Skin, rabbit: LD50 = 10 mL/kg; Skin, rat: LD50 = >2 gm/kg.

Carcinogenicity Glyoxal - CAS# 107-22-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**\*\*\*\* Section 12 - Ecological Information \*\*\*\*****ENVIRONMENTAL FATE AND TRANSPORT**

Biodegradation:

Test method: OECD 301 A (new version) (aerobic), activated sludge, domestic

Method of analysis: DOC reduction

Degree of elimination: 90 - 100 % (28 d)

Evaluation: Readily biodegradable (according to OECD criteria).

Bioaccumulation: Accumulation in organisms is not to be expected.

Chemical oxygen demand (COD): 350 mg/g

Biochemical oxygen demand (BOD): Incubation period 5.0 d: 175 mg/g

**ENVIRONMENTAL TOXICITY**

Acute and prolonged toxicity to fish: DIN 38412 Part 15 golden orfe/LC50 (96 h): &gt; 460 - &lt; 680 mg/l Nominal concentration.

Acute toxicity to aquatic invertebrates: Directive 79/831/EEC Daphnia magna/EC50 (48 h): 404 mg/l Nominal concentration.

Toxicity to aquatic plants: OECD Guideline 201 green algae/EC50 (72 h): &gt; 100 mg/l Nominal concentration.

Toxicity to microorganisms: DIN 38412 Part 8 bacterium/EC50 (16 h): 102 mg/l

Other: Readily biodegradable.

**\*\*\*\* Section 13 - Disposal Considerations \*\*\*\***

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

Do not discharge into waterways or sewer systems without proper authorization.

**\*\*\*\* Section 14 - Transport Information**

Not classified as a dangerous good under transport regulations e.g. IATA/ICAO, IMDG, DOT, RID/ADR

**\*\*\*\* Section 15 - Regulatory Information \*\*\*\***

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: Xn

Risk Phrases:

R 20: Harmful by inhalation.

R 36/38: Irritating to eyes and skin.

R 43: May cause sensitization by skin contact.

R 68: Possible risk of irreversible effects.

Safety Phrases:

S 2: Keep out of the reach of children.

S 36/37: Wear suitable protective clothing and gloves.

**MATERIAL SAFETY DATA SHEET**

Date Updated: 29.06.2007

Version: 3.0

Regulation EC No. 1907/2006

---

WGK (Water Danger/Protection)

CAS# 107-22-2: 1

United Kingdom Occupational Exposure Limits

Canada

CAS# 107-22-2 is listed on Canada's DSL List.

CAS# 107-22-2 is listed on Canada's Ingredient Disclosure List.

Exposure Limits

US FEDERAL

TSCA

CAS# 107-22-2 is listed on the TSCA inventory.

**\*\*\*\* Section 16 - Additional Information \*\*\*\***

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall we 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 we have been advised of the possibility of such damages.