

Material Safety Data Sheet

Glyoxal 40% Aqueous Solution

ACC# 61028

Section 1 - Chemical Product and Company Identification

MSDS Name: Glyoxal 40% Aqueous Solution

Catalog Numbers: BP1370-500

Synonyms: Biformyl; Biformal; Diformal; Ethandial; Diformyl; Glyoxylaldehyde; Oxalaldehyde; Ethanedial; Oxal; Glyoxal.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	60	231-791-2
107-22-2	Glyoxal	40	203-474-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: light yellow liquid.

Warning! Causes respiratory tract irritation. Harmful if inhaled. Causes eye and skin irritation. May cause allergic skin reaction. Do not freeze.

Target Organs: Respiratory system, eyes, skin.

Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. In a human maximization test for contact allergens, glyoxal rated 5 on a scale of 1 to 5. The induction concentration was 10% glyoxal and the challenge concentration was 2% glyoxal. Glyoxal is considered to be a strong human contact sensitizer.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Inhalation: Vapor or mist is irritating to the mucous membranes and upper respiratory tract. Squamous cell metaplasia was observed in the rat larynx after 29 days of exposure (6 hours/day, 5 days/week) to 2 and 10 mg/m³ of a 40% glyoxal aerosol.

Chronic: Prolonged or repeated skin contact may cause dermatitis. There is insufficient data to classify glyoxal as a human or animal carcinogen. Glyoxal was found to promote stomach carcinoma in animals in one study and to be a direct-acting mutagen in bacterial and mammalian cell assays in extensive testing. NIOSH has noted the similarity of its mutagenic profile to formaldehyde, acetaldehyde, and malonaldehyde and has advised concern regarding its carcinogenic potential.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

Skin: In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical aid if symptoms occur. Wash clothing before reuse.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

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

Flash Point: 220 deg C (428.00 deg F)

Autoignition Temperature: 285 deg C (545.00 deg F)

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Wash area with soap and water. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing vapor or mist.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do NOT freeze.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Glyoxal	0.1 mg/m3 TWA (inhalable fraction, vapor and aerosol)	none listed	none listed

OSHA Vacated PELs: Water: No OSHA Vacated PELs are listed for this chemical. Glyoxal: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

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 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: light yellow

Odor: mild odor

pH: 2.1 - 2.7

Vapor Pressure: 16 mm Hg @ 20 deg C

Vapor Density: 0.7

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 104 deg C

Freezing/Melting Point: -14 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: 1.265

Molecular Formula: C₂H₂O₂

Molecular Weight: 58.04

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. May polymerize.

Conditions to Avoid: Do not freeze, extreme temperatures, metals (slowly corrodes).

Incompatibilities with Other Materials: strong oxidizing agents, strong bases

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, formaldehyde.

Hazardous Polymerization: May occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 7732-18-5: ZC0110000

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

LD50/LC50:

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

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;
Draize test, rabbit, skin: 10 mg/24H;
Inhalation, rat: LC50 = 2410 mg/m³/4H;
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 = 200 mg/kg;
Oral, rat: LD50 = 4290

Carcinogenicity:

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

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

Epidemiology: No data available.

Teratogenicity: No data available.

Reproductive Effects: No data available.

Mutagenicity: See actual entry in RTECS for complete information.

Neurotoxicity: No data available.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. Fish toxicity: Brachidanio rerio LC50:760 mg/l (48 h)Daphnia toxicity: Daphnia magna EC50:430 mg/l (24 h)Bacteria toxicity: Pseudomonas putida EC50:134 mg/l (16 h)

Environmental: Biodegradability: >80% (Method OECD 302 B, 28 d)DOC = 176.8 mgC/lCOD = 342 mgO₂/g

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	CORROSIVE LIQUIDS, N.O.S.	No information available.
Hazard Class:	8	
UN Number:	UN1760	
Packing Group:	II	

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.

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

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 107-22-2: acute.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 107-22-2 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN

Risk Phrases:

R 36/38 Irritating to eyes and skin.

R 43 May cause sensitization by skin contact.

R 20 Harmful by inhalation.

R 68 Possible risk of irreversible effects.

Safety Phrases:

S 36/37 Wear suitable protective clothing and gloves.

WGK (Water Danger/Protection)

CAS# 7732-18-5: No information available.

CAS# 107-22-2: 1

Canada - DSL/NDSL

CAS# 7732-18-5 is listed on Canada's DSL List.

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

Canada - WHMIS

This product has a WHMIS classification of E.

Canadian Ingredient Disclosure List

CAS# 107-22-2 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/25/1999

Revision #4 Date: 7/30/2002

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 event shall Fisher 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 Fisher has been advised of the possibility of such damages.