

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**
**Product Identifier**

Perihal Produk:

Product Description:

Cat No. :

Synonyms

Molecular Formula

**GLIOKSAL, BERAT 40 % LARUTAN DALAM AIR**
**Glyoxal, 40 wt% solution in water**

156220000; 156220010; 156220025; 156220050; 156225000; 156220250

Diformal; Biformyl; Biformal

C2 H2 O2

**Relevant identified uses of the substance or mixture and uses advised against**

Recommended Use

Laboratory chemicals.

Uses advised against

No Information available

**Company**

 Thermo Fisher Scientific Fisher Scientific (M) Sdn Bhd  
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 No 12, Persiaran Perusahaan, Seksyen 23, 40300 Shah Alam,  
 Selangor Darul Ehsan, Malaysia.  
 Main line: +60 3-5525 7888

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Tel: +03-5525 7888

 CHEMTREC Malaysia **1-800-815-308** (Malay)

 CHEMTREC Malaysia (Kuala Lumpur) **+(60)-327884561** (Malay)

**SECTION 2: HAZARDS IDENTIFICATION**
**Classification of the substance or mixture**

Acute Inhalation Toxicity - Vapors	Category 4 (H332)
Skin Corrosion/Irritation	Category 2 (H315)
Serious Eye Damage/Eye Irritation	Category 2 (H319)
Skin Sensitization	Category 1 (H317)
Germ Cell Mutagenicity	Category 2 (H341)
Specific target organ toxicity - (single exposure)	Category 3 (H335)

**Label Elements**


Signal Word

Warning

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

## Hazard Statements

H332 - Harmful if inhaled  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H319 - Causes serious eye irritation  
H335 - May cause respiratory irritation  
H341 - Suspected of causing genetic defects

## Precautionary Statements

### Prevention

P201 - Obtain special instructions before use  
P272 - Contaminated work clothing should not be allowed out of the workplace  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P202 - Do not handle until all safety precautions have been read and understood  
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area

### Response

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P308 + P313 - IF exposed or concerned: Get medical advice/attention  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P362 + P364 - Take off contaminated clothing and wash it before reuse

### Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

### Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant

## Other Hazards

Toxic to terrestrial vertebrates  
This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight %
Water	7732-18-5	57-60.5
Glyoxal	107-22-2	39.5-40.5
Ethylene glycol	107-21-1	0-2.5

## SECTION 4: FIRST AID MEASURES

### Description of first aid measures

#### General Advice

If symptoms persist, call a physician.

#### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

#### Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

#### Ingestion

Clean mouth with water and drink afterwards plenty of water.

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

<b>Inhalation</b>	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
<b>Self-Protection of the First Aider</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.
<b><u>Most important symptoms and effects, both acute and delayed</u></b>	
May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.	
<b><u>Indication of any immediate medical attention and special treatment needed</u></b>	
<b>Notes to Physician</b>	Treat symptomatically. Symptoms may be delayed.

## SECTION 5: FIREFIGHTING MEASURES

### **Extinguishing media**

#### **Suitable Extinguishing Media**

Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam.

#### **Extinguishing media which must not be used for safety reasons**

No information available.

### **Special hazards arising from the substance or mixture**

Thermal decomposition can lead to release of irritating gases and vapors.

### **Hazardous Combustion Products**

None under normal use conditions.

### **Advice for fire-fighters**

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

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### **Personal Precautions, Protective Equipment and Emergency Procedures**

Ensure adequate ventilation. Use personal protective equipment as required.

### **Environmental precautions**

Should not be released into the environment.

### **Methods and Material for Containment and Cleaning Up**

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material.

### **Reference to Other Sections**

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

## Precautions for Safe Handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

## Conditions for Safe Storage, Including any Incompatibilities

Keep container tightly closed in a dry and well-ventilated place. To maintain product quality: Keep refrigerated.

## Specific End Uses

Use in laboratories.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

Component	Malaysia	ACGIH TLV	OSHA PEL
Glyoxal		TWA: 0.1 mg/m <sup>3</sup>	
Ethylene glycol		TWA: 25 ppm STEL: 50 ppm STEL: 10 mg/m <sup>3</sup>	(Vacated) Ceiling: 50 ppm (Vacated) Ceiling: 125 mg/m <sup>3</sup>

Component	European Union	The United Kingdom	Germany
Glyoxal			Haut
Ethylene glycol	TWA: 20 ppm (8h) TWA: 52 mg/m <sup>3</sup> (8h) STEL: 40 ppm (15min) STEL: 104 mg/m <sup>3</sup> (15min) Skin	STEL: 40 ppm 15 min STEL: 104 mg/m <sup>3</sup> 15 min STEL: 30 mg/m <sup>3</sup> 15 min TWA: 10 mg/m <sup>3</sup> 8 hr TWA: 20 ppm 8 hr TWA: 52 mg/m <sup>3</sup> 8 hr Skin	TWA: 10 ppm (8 Stunden). AGW - exposure factor 2 TWA: 26 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 2 TWA: 10 ppm (8 Stunden). MAK can occur as vapor and aerosol at the same time TWA: 26 mg/m <sup>3</sup> (8 Stunden). MAK can occur as vapor and aerosol at the same time Höhepunkt: 20 ppm Höhepunkt: 52 mg/m <sup>3</sup> Haut

### Exposure Controls

#### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

#### Personal protective equipment

##### **Eye Protection**

Goggles

##### **Hand Protection**

Protective gloves

##### **Skin and body protection**

Long sleeved clothing

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387 Particulates filter conforming to EN 143

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

When RPE is used a face piece Fit Test should be conducted

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice

**Environmental exposure controls** No information available

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

**Appearance** Colorless

**Physical State** Liquid

**Odor** Slight

**Odor Threshold** No data available

**pH** 2-3.5

  

**Melting Point/Range** -14 °C / 6.8 °F

**Softening Point** No data available

**Boiling Point/Range** 104 °C / 219.2 °F @ 760 mmHg

**Flash Point** > 104 °C / > 219.2 °F **Method -** No information available

**Evaporation Rate** No data available

**Flammability (solid,gas)** Not applicable Liquid

**Explosion Limits** No data available

**Vapor Pressure** No data available

**Vapor Density** No data available (Air = 1.0)

**Specific Gravity / Density** 1.265

**Bulk Density** Not applicable Liquid

**Water Solubility** Miscible

**Solubility in other solvents** No information available

### Partition Coefficient (n-octanol/water)

**Component** **log Pow**

Glyoxal -1

-1.15

-1.62

Ethylene glycol -1.36

**Autoignition Temperature** 285 °C / 545 °F

**Decomposition Temperature** No data available

**Viscosity** No data available

**Explosive Properties** No information available

**Oxidizing Properties** No information available

**Molecular Formula** C2 H2 O2

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

Molecular Weight 58.04

## SECTION 10: STABILITY AND REACTIVITY

### Reactivity

None known, based on information available.

### Chemical Stability

Stable under normal conditions.

### Possibility of Hazardous Reactions

#### **Hazardous Polymerization Hazardous Reactions**

Hazardous polymerization may occur.  
None under normal processing.

### Conditions to Avoid

Incompatible products.

### Incompatible Materials

Strong oxidizing agents. Strong bases.

### Hazardous Decomposition Products

None under normal use conditions.

## SECTION 11: TOXICOLOGICAL INFORMATION

### Information on Toxicological Effects

#### **Product Information**

#### **(a) acute toxicity;**

**Oral**

Based on available data, the classification criteria are not met

**Dermal**

Based on available data, the classification criteria are not met

**Inhalation**

Category 4

### Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	-	-
Glyoxal	LD50 = 200 mg/kg ( Rat )	LD50 = 12700 mg/kg ( Rabbit )	LC50 = 2.44 mg/L ( Rat ) 4 h
Ethylene glycol	7712 mg/kg ( Rat ) Human LD50 estimate: 1,400–1,600 mg/kg	LD50 = 9530 µL/kg ( Rabbit ) LD50 = 10600 mg/kg ( Rat ) LD50 > 3500 mg/kg (mice)	LC50 > 2.5 mg/L ( Rat ) 6 h

#### **(b) skin corrosion/irritation;**

Category 2

#### **(c) serious eye damage/irritation;**

Category 2

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

**(d) respiratory or skin sensitization;**

Respiratory  
Skin

No data available  
Category 1

May cause sensitization by skin contact

**(e) germ cell mutagenicity;**

Category 2

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

**(f) carcinogenicity;**

No data available

The table below indicates whether each agency has listed any ingredient as a carcinogen

**(g) reproductive toxicity;**

No data available

**(h) STOT-single exposure;**

Category 3

Results / Target organs

Respiratory system.

**(i) STOT-repeated exposure;**

No data available

Target Organs

No information available.

**(j) aspiration hazard;**

No data available

**Symptoms / effects, both acute and delayed**

Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

**Endocrine Disrupting Properties**

Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

**Ecotoxicity effects**

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Glyoxal	LC50: = 215 mg/L, 96h static (Pimephales promelas)	EC50: = 404 mg/L, 48h (Daphnia magna)	EC50: > 500 mg/L, 72h (Desmodesmus subspicatus) EC50: > 500 mg/L, 96h (Desmodesmus subspicatus) EC50: <= 348.59 mg/L, 96h static (Pseudokirchneriella subcapitata)	
Ethylene glycol	LC50: = 41000 mg/L, 96h (Oncorhynchus mykiss) LC50: = 27540 mg/L, 96h static (Lepomis macrochirus) LC50: 14 - 18 mL/L, 96h static	EC50: = 46300 mg/L, 48h (Daphnia magna)	EC50: 6500 - 13000 mg/L, 96h (Pseudokirchneriella subcapitata)	

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

	(Oncorhynchus mykiss) LC50: = 40761 mg/L, 96h static (Oncorhynchus mykiss) LC50: 40000 - 60000 mg/L, 96h static (Pimephales promelas) LC50: = 16000 mg/L, 96h static (Poecilia reticulata)			
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**Persistence and degradability**  
**Persistence**

Readily biodegradable  
Miscible with water, Persistence is unlikely, based on information available.

**Bioaccumulative potential**

Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Glyoxal	-1 -1.15 -1.62	No data available
Ethylene glycol	-1.36	No data available

**Mobility in soil**

The product is water soluble, and may spread in water systems. . Will likely be mobile in the environment due to its water solubility. Highly mobile in soils.

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**Other adverse effects**

No information available

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste treatment methods**  
**Waste from Residues/Unused Products**

Waste is classified as hazardous Dispose of in accordance with the European Directives on waste and hazardous waste Dispose of in accordance with local regulations

**Contaminated Packaging**

Dispose of this container to hazardous or special waste collection point.

**Other Information**

Waste codes should be assigned by the user based on the application for which the product was used Do not empty into drains

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO**

Not regulated

**Road and Rail Transport**

Not regulated

**IATA**

Not regulated

**Special Precautions for User**

No special precautions required

## SECTION 15: REGULATORY INFORMATION



# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

## Safety, health and environmental regulations/legislation specific for the substance or mixture

### International Inventories

X = listed

Component	EINECS	TSCA	DSL	PICCS	ENCS	ISHL	IECSC	AICS	KECL
Water	231-791-2	X	X	X	X		X	X	KE-35400
Glyoxal	203-474-9	X	X	X	X	X	X	X	KE-27447
Ethylene glycol	203-473-3	X	X	X	X	X	X	X	KE-13169

### National Regulations

**Persistent Organic Pollutant**  
**Ozone Depletion Potential**

This product does not contain any known or suspected substance  
This product does not contain any known or suspected substance

## SECTION 16: OTHER INFORMATION

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**POW** - Partition coefficient Octanol:Water

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

### **Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Revision Date**

21-Mar-2025

**Revision Summary**

Not applicable.

**In accordance with local and national regulations: Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013**

### **Disclaimer**

# SAFETY DATA SHEET

Glyoxal, 40 wt% solution in water

Revision Date 21-Mar-2025

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**