



MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Date of issue: 02/05/2013

Version 1.0

SECTION 1. Identification

Product identifier

Product number	814393
Product name	Glutardialdehyde (50% solution in water) for synthesis

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

Identified uses	Chemical for synthesis
-----------------	------------------------

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America SDS Phone Support: +1-978-715-1335 General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) e-mail: mm_sds@merckgroup.com
---------	--

Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
---------------------	--

SECTION 2. Hazards identification

GHS Classification

Acute toxicity, Category 3, Oral, H301
Acute toxicity, Category 3, Inhalation, H331
Skin corrosion, Category 1B, H314
Respiratory sensitization, Category 1, H334
Skin sensitization, Category 1, H317
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335
Acute aquatic toxicity, Category 1, H400

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word
Danger

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutardialdehyde (50% solution in water) for synthesis

Version 1.0

Hazard Statements

H301 + H331 Toxic if swallowed or if inhaled.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H400 Very toxic to aquatic life.

Precautionary Statements

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P309 + P310 IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician.

OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Chemical nature

Aqueous solution

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

Glutaraldehyde (>= 50 % - < 70 %)

111-30-8

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. Call in physician. If breathing stops: immediately apply artificial respiration, if necessary oxygen. Immediately call in physician.

Skin contact

After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Call a physician immediately.

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutardialdehyde (50% solution in water) for synthesis

Version 1.0

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Risk of perforation! Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion, conjunctivitis, Allergic reactions, Cough, Shortness of breath, Drowsiness, Dizziness, Diarrhea, Nausea, Vomiting, Circulatory collapse, Headache, drowsiness, Coma, death

Risk of corneal clouding.

Risk of blindness!

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Water, Carbon dioxide (CO₂), Foam, Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Mixture with combustible ingredients.

Ambient fire may liberate hazardous vapors.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutaraldehyde (50% solution in water) for synthesis

Version 1.0

Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

Render harmless: Treatment with excess sodium hydrogen sulfite solution.

SECTION 7. Handling and storage

Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +15°C to +25°C (+59°F to +77°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>Glutaraldehyde</i> 111-30-8			
ACGIH	Ceiling Limit Value:	0.05 ppm	
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified):	0.2 ppm 0.8 mg/m ³	
Z1A	Ceiling Limit Value:	0.2 ppm 0.8 mg/m ³	

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

protective clothing

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

814393

Version 1.0

Product name

Glutardialdehyde (50% solution in water) for synthesis

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	fruity
Odor Threshold	No information available.
pH	3.1 - 4.5 at 68 °F (20 °C)
Melting point	-33 °C
Boiling point/boiling range	213.3 °F (100.7 °C) at 1,013 hPa Method: OECD Test Guideline 103
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Vapor pressure	22 hPa at 68 °F (20 °C)
Relative vapor density	1.1
Relative density	1.13 g/cm ³ at 68 °F (20 °C)
Water solubility	at 68 °F (20 °C) soluble
Partition coefficient: n-octanol/water	log Pow: -0.36 (23 °C) (experimental) Bioaccumulation is not expected (log Pow <1). (External MSDS)

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	814393	Version 1.0
Product name	Glutardialdehyde (50% solution in water) for synthesis	

Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	15.4 mPa.s at 77 °F (25 °C)
Explosive properties	Not classified as explosive.
Ignition temperature	743 °F (395 °C) Method: DIN 51794
Viscosity, kinematic	12.75 mm²/s at 77 °F (25 °C)

SECTION 10. Stability and reactivity

Reactivity

See below

Chemical stability

heat-sensitive

Possibility of hazardous reactions

Violent reactions possible with:

strong alkalis, Acids, Amines, strong oxidizing agents

Conditions to avoid

Heating.

Incompatible materials

Aluminum, various metals

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

814393

Version 1.0

Product name

Glutardialdehyde (50% solution in water) for synthesis

Acute oral toxicity

absorption

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach., Pulmonary failure possible after aspiration of vomit., Aspiration may cause pulmonary edema and pneumonitis.

Acute toxicity estimate: 264.46 mg/kg

Calculation method

Acute inhalation toxicity

absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Acute toxicity estimate: 5.94 mg/l

Calculation method

Acute dermal toxicity

absorption

Acute toxicity estimate : > 2,000 mg/kg

Calculation method

Skin irritation

Mixture causes burns.

Eye irritation

Risk of corneal clouding. Lacrimal irritation due to vapors. conjunctivitis

Mixture causes serious eye damage. Risk of blindness!

Sensitization

Mixture may cause allergy or asthma symptoms or breathing difficulties if inhaled.

Mixture may cause an allergic skin reaction.

Specific target organ systemic toxicity - single exposure

Mixture may cause respiratory irritation.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

814393

Version 1.0

Product name

Glutaraldehyde (50% solution in water) for synthesis

by NTP.

ACGIH

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

Quantitative data on the toxicity of this product are not available.

Further toxicological data:

After uptake of large quantities:

Headache, Dizziness, Nausea, Vomiting, Diarrhea, Circulatory collapse, drowsiness, Drowsiness, Coma, death

Further data:

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Ingredients

Glutaraldehyde

Acute oral toxicity

LD50 rat: 134 mg/kg (RTECS)

Acute inhalation toxicity

LC50 rat: 0.48 mg/l; 4 h (RTECS)

Skin irritation

rabbit

Result: Severe irritations

Draize Test

(RTECS)

Eye irritation

rabbit

Result: Severe irritations

Draize Test

(RTECS)

methanol

Acute oral toxicity

LDLO human: 143 mg/kg (RTECS)

LD50 rat: 5,628 mg/kg (IUCLID)

Acute inhalation toxicity

LC50 rat: 85.26 mg/l; 4 h (IUCLID)

Acute dermal toxicity

LD50 rabbit: ca. 17,100 mg/kg (External MSDS)

Sensitization

Sensitization test: guinea pig

Result: negative

(IUCLID)

Germ cell mutagenicity

Genotoxicity in vivo

Mutagenicity (mammal cell test): micronucleus.

Result: negative

(IUCLID)

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutardialdehyde (50% solution in water) for synthesis

Version 1.0

Genotoxicity in vitro
Ames test
Result: negative
(IUCLID)

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 Pimephales promelas (fathead minnow): 10.8 mg/l; 96 h (External MSDS)

Toxicity to daphnia and other aquatic invertebrates

EC50 Daphnia magna (Water flea): 0.69 mg/l; 48 h (External MSDS)

Toxicity to algae

IC50 Desmodesmus subspicatus (green algae): 0.61 mg/l; 72 h (IUCLID)

Persistence and degradability

Biodegradability

83 %; 28 d

OECD Test Guideline 301A

Readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: -0.36 (23 °C)

(experimental)

Bioaccumulation is not expected (log Pow <1). (External MSDS)

Mobility in soil

No information available.

Other adverse effects

Additional ecological information

Discharge into the environment must be avoided.

Ingredients

Glutaraldehyde

Toxicity to fish

LC50 Oncorhynchus mykiss (rainbow trout): 3.5 mg/l; 96 h (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC50 Daphnia magna (Water flea): 0.75 mg/l; 48 h (ECOTOX Database)

Biodegradability

90 - 100 %; 28 d

(IUCLID)

Readily biodegradable.

Biochemical Oxygen Demand (BOD)

235 mg/g (5 d)

(IUCLID)

Chemical Oxygen Demand (COD)

1,385 mg/g

(IUCLID)

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutardialdehyde (50% solution in water) for synthesis

Version 1.0

Partition coefficient: n-octanol/water

log Pow: -0.18

(calculated)

Bioaccumulation is not expected (log Pow <1). (Lit.)

methanol

Toxicity to fish

LC50 *Lepomis macrochirus* (Bluegill sunfish): 15,400 mg/l; 96 h (in soft water) (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC5 *E.sulcatum*: > 10,000 mg/l; 72 h (Lit.)

EC50 *Daphnia magna* (Water flea): > 10,000 mg/l; 48 h (IUCLID)

Toxicity to algae

EC50 *Pseudokirchneriella subcapitata* (green algae): ca. 22,000 mg/l; 96 h (External MSDS)

IC5 *Scenedesmus quadricauda* (Green algae): 8,000 mg/l; 8 d (IUCLID)

Toxicity to bacteria

EC5 *Pseudomonas fluorescens*: 6,600 mg/l; 16 h (IUCLID)

Toxicity to fish (Chronic toxicity)

NOEC *Oryzias latipes* (Orange-red killifish): 7,900 mg/l; 200 h
(External MSDS)

Biodegradability

99 %; 30 d

OECD Test Guideline 301D

Readily biodegradable.

Biochemical Oxygen Demand (BOD)

600 - 1,120 mg/g (5 d)

(IUCLID)

Chemical Oxygen Demand (COD)

1,420 mg/g

(IUCLID)

Theoretical oxygen demand (ThOD)

1,500 mg/g

(Lit.)

Ratio BOD/ThBOD

BOD5 76 %

Closed Bottle test

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

Stability in water

2.2 yr

reaction with hydroxyl radicals (IUCLID)

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutardialdehyde (50% solution in water) for synthesis

Version 1.0

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 2922
Proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (GLUTARDIALDEHYDE)
Class	8 (6.1)
Packing group	II
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 2922
Proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (GLUTARDIALDEHYDE SOLUTION)
Class	8 (6.1)
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 2922
Proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (GLUTARDIALDEHYDE SOLUTION)
Class	8 (6.1)
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-B

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Target organ effects
Toxic by inhalation.
Toxic by ingestion
Skin sensitizer
Respiratory sensitizer
Corrosive to skin

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

814393

Version 1.0

Product name

Glutaraldehyde (50% solution in water) for synthesis

Corrosive to eyes

Corrosive by inhalation.

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312 Hazards

Acute Health Hazard

Chronic Health Hazard

SARA 313

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

Massachusetts Right To Know

Ingredients

Glutaraldehyde

Pennsylvania Right To Know

Ingredients

Glutaraldehyde

water

New Jersey Right To Know

Ingredients

Glutaraldehyde

water

methanol

Notification status

TSCA:

On TSCA Inventory

DSL:

All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 814393
Product name Glutardialdehyde (50% solution in water) for synthesis

Version 1.0

Full text of H-Statements referred to under sections 2 and 3.

H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H331	Toxic if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Date of issue:02/05/2013

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

All rights reserved. Millipore and the "M" Mark are registered trademarks of Merck KGaA, Darmstadt, Germany.