



# 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	820603
Product name	Glutardialdehyde (25% solution in water) for synthesis

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

Identified uses	Chemical for synthesis
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### 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
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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## SECTION 2. Hazards identification

### GHS Classification

Acute toxicity, Category 4, Oral, H302  
Acute toxicity, Category 4, Inhalation, H332  
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

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### *Hazard Statements*

H302 + H332 Harmful 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*

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

P273 Avoid release to the environment.

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.

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## **SECTION 3. Composition/information on ingredients**

Chemical nature

Aqueous solution

### **Hazardous ingredients**

*Chemical Name ( Concentration)*

CAS-No.

*Glutaraldehyde (  $\geq 10\%$  -  $< 30\%$  )*

111-30-8

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## **SECTION 4. First aid measures**

### **Description of first-aid measures**

*General advice*

First aider needs to protect himself.

*Inhalation*

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration.

Oxygen if necessary. 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.

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## *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.

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## **SECTION 5. Fire-fighting measures**

### **Extinguishing media**

#### *Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### *Unsuitable extinguishing media*

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

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

Not combustible.

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.

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## **SECTION 6. Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. 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).

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Take up with liquid-absorbent material (e.g. Chemizorb®). 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 111-30-8</i>			
ACGIH	Ceiling Limit Value:	0.05 ppm	
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified):	0.2 ppm 0.8 mg/m³	
Z1A	Ceiling Limit Value:	0.2 ppm 0.8 mg/m³	

### 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

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## *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.

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## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	characteristic
Odor Threshold	No information available.
pH	> 3.0 at 68 °F ( 20 °C)
Melting point	-6 °C
Boiling point/boiling range	212.9 °F ( 100.5 °C) at 1,013 hPa
Flash point	not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Vapor pressure	0.27 hPa at 68 °F ( 20 °C)
Relative vapor density	0.8
Relative density	1.06 g/cm <sup>3</sup> at 68 °F ( 20 °C)
Water solubility	at 68 °F ( 20 °C) soluble
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	No information available.

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Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.

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### SECTION 10. Stability and reactivity

#### Reactivity

See below

#### Chemical stability

heat-sensitive

#### Possibility of hazardous reactions

Violent reactions possible with:

Amines, Strong oxidizing agents, Strong acids, Strong bases

#### Conditions to avoid

Strong heating.

#### Incompatible materials

Aluminum, various metals

#### Hazardous decomposition products

no information available

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### SECTION 11. Toxicological information

#### Information on toxicological effects

##### *Likely route of exposure*

Inhalation, Eye contact, Skin contact

##### *Target Organs*

Eyes

Skin

Respiratory system

##### *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., Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

Acute toxicity estimate: 529.2 mg/kg

Calculation method

##### *Acute inhalation toxicity*

absorption

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

Acute toxicity estimate: 11.89 mg/l

Calculation method

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*Acute dermal toxicity*  
absorption

Acute toxicity estimate : > 2,000 mg/kg  
Calculation method

*Skin irritation*  
Mixture causes burns.

*Eye irritation*  
Mixture causes serious eye damage. Risk of blindness! Risk of corneal clouding. conjunctivitis  
Lacrimal irritation due to vapors.

*Sensitization*  
Mixture may cause an allergic skin reaction.

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

*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 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.

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### 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)

##### *Genotoxicity in vitro*

Ames test

Result: negative

(IUCLID)

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## SECTION 12. Ecological information

### Ecotoxicity

No information available.

### Persistence and degradability

#### *Biodegradability*

Readily biodegradable.

### Bioaccumulative potential

No information available.

### Mobility in soil

No information available.



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## Other adverse effects

### *Additional ecological information*

#### Biological effects:

Bactericidal effect. Forms toxic mixtures in water, dilution measures notwithstanding. When discharged properly, no impairments in the function of adapted biological wastewater treatment plants are to be expected.

#### Further information on ecology

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)

#### *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)

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## *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)

## 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 --

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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

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### 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  
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

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## *Ingredients*

water  
Glutaraldehyde

## **New Jersey Right To Know**

### *Ingredients*

water  
Glutaraldehyde  
methanol

## **Notification status**

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

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## **SECTION 16. Other information**

### **Training advice**

Provide adequate information, instruction and training for operators.

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

H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H332	Harmful 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](http://www.wikipedia.org).

Date of issue:02/05/2013

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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.

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