

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

## 1 Identification

- **Product identifier**
- **Trade name:** Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer
- **Article number:** 15949-70, 15949-80, 15949-70-SP, 15949-80-1L
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkcck@aol.com  
www.emsdiasum.com
- **Information department:** Product safety department
- **Emergency telephone number:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Sensitization - Respiratory 1

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

Germ Cell Mutagenicity 2

H341 Suspected of causing genetic defects.

Carcinogenicity 1B

H350 May cause cancer.



GHS07

Skin Irritation 2

H315 Causes skin irritation.

Eye Irritation 2A

H319 Causes serious eye irritation.

Sensitization - Skin 1

H317 May cause an allergic skin reaction.

Specific Target Organ Toxicity - Single Exposure 3 H335 May cause respiratory irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS07



GHS08

- **Signal word** *Danger*
- **Hazard-determining components of labeling:**  
formaldehyde  
Glutaraldehyde

(Contd. on page 2)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 1)

- **Hazard statements**

Causes skin irritation.  
 Causes serious eye irritation.  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 May cause an allergic skin reaction.  
 Suspected of causing genetic defects.  
 May cause cancer.  
 May cause respiratory irritation.

- **Precautionary statements**

Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Avoid breathing dust/fume/gas/mist/vapors/spray  
 Wash thoroughly after handling.  
 Use only outdoors or in a well-ventilated area.  
 Contaminated work clothing must not be allowed out of the workplace.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 [In case of inadequate ventilation] wear respiratory protection.  
 If on skin: Wash with plenty of water.  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
 Continue rinsing.  
 IF exposed or concerned: Get medical advice/attention.  
 Call a poison center/doctor if you feel unwell.  
 Specific treatment (see on this label).  
 Take off contaminated clothing and wash it before reuse.  
 If skin irritation or rash occurs: Get medical advice/attention.  
 If eye irritation persists: Get medical advice/attention.  
 If experiencing respiratory symptoms: Call a poison center/doctor.  
 Wash contaminated clothing before reuse.  
 Store in a well-ventilated place. Keep container tightly closed.  
 Store locked up.  
 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



- **Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

## 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**

- **Description:** Mixture of the substances listed below with nonhazardous additions.

(Contd. on page 3)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 2)

**· Dangerous components:**

50-00-0	formaldehyde	>2.5-≤10%
111-30-8	Glutaraldehyde	≤2.5%

## 4 First-aid measures

**· Description of first aid measures**

**· General information:**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

**· After inhalation:**

Supply fresh air and to be sure call for a doctor.

In case of unconsciousness place patient stably in side position for transportation.

**· After skin contact:** Immediately wash with water and soap and rinse thoroughly.

**· After eye contact:**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

**· After swallowing:** Immediately call a doctor.

**· Information for doctor:**

**· Most important symptoms and effects, both acute and delayed** No further relevant information available.

**· Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

## 5 Fire-fighting measures

**· Extinguishing media**

**· Suitable extinguishing agents:** Use fire fighting measures that suit the environment.

**· Special hazards arising from the substance or mixture** No further relevant information available.

**· Advice for firefighters**

**· Protective equipment:** Mouth respiratory protective device.

## 6 Accidental release measures

**· Personal precautions, protective equipment and emergency procedures** Not required.

**· Environmental precautions:**

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/ surface or ground water.

**· Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**· Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**· Protective Action Criteria for Chemicals**

<b>· PAC-1:</b>		
50-00-0	formaldehyde	0.90 ppm
111-30-8	Glutaraldehyde	0.2 ppm

(Contd. on page 4)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 3)

<b>· PAC-2:</b>		
50-00-0	formaldehyde	14 ppm
111-30-8	Glutaraldehyde	1 ppm
<b>· PAC-3:</b>		
50-00-0	formaldehyde	56 ppm
111-30-8	Glutaraldehyde	5 ppm

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
*Ensure good ventilation/exhaustion at the workplace.  
 Open and handle receptacle with care.  
 Prevent formation of aerosols.*
- **Information about protection against explosions and fires:** *Keep respiratory protective device available.*
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** *No special requirements.*
- **Information about storage in one common storage facility:** *Not required.*
- **Further information about storage conditions:** *Keep receptacle tightly sealed.*
- **Specific end use(s)** *No further relevant information available.*

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** *No further data; see item 7.*
- **Control parameters**

<b>· Components with limit values that require monitoring at the workplace:</b>	
<b>50-00-0 formaldehyde</b>	
PEL	Short-term value: 2 ppm Long-term value: 0.75 ppm <i>see 29 CFR 1910.1048(c)</i>
REL	Long-term value: 0.016 ppm Ceiling limit value: 0.1* ppm <i>*15-min; See Pocket Guide App. A</i>
TLV	Short-term value: 0.3 ppm Long-term value: 0.1 ppm <i>DSEN; RSEN, A1</i>
<b>111-30-8 Glutaraldehyde</b>	
REL	Ceiling limit value: 0.8 mg/m <sup>3</sup> , 0.2 ppm <i>See Pocket Guide App. C</i>
TLV	Ceiling limit value: 0.05 ppm <i>DSEN; RSEN ;activated or inactivated, A4</i>

- **Additional information:** *The lists that were valid during the creation were used as basis.*
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
*Keep away from foodstuffs, beverages and feed.*

(Contd. on page 5)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 4)

*Immediately remove all soiled and contaminated clothing.*

*Wash hands before breaks and at the end of work.*

*Store protective clothing separately.*

*Avoid contact with the eyes and skin.*

· **Breathing equipment:**

*In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.*

· **Protection of hands:**



Protective gloves

*The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.*

*Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.*

*Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation*

· **Material of gloves**

*The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.*

· **Penetration time of glove material**

*The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.*

· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

<b>Form:</b>	Liquid
<b>Color:</b>	Clear
<b>Odor:</b>	Fruit-like
<b>Odor threshold:</b>	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not flammable.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

(Contd. on page 6)

US

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 5)

· <b>Explosion limits:</b>	
<b>Lower:</b>	Not determined.
<b>Upper:</b>	Not determined.
· <b>Vapor pressure at 20 °C (68 °F):</b>	23 hPa (17.3 mm Hg)
· <b>Density:</b>	Not determined.
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with Water:</b>	Not miscible or difficult to mix.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	4.0 %
<b>Water:</b>	95.0 %
<b>VOC content:</b>	4.00 %
	799.3 g/l / 6.67 lb/gal
<b>Solids content:</b>	0.0 %
· <b>Other information</b>	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

### · Information on toxicological effects

#### · Acute toxicity:

#### · LD/LC50 values that are relevant for classification:

50-00-0 formaldehyde

Oral LD50 >200 mg/kg (rat)

#### · Primary irritant effect:

· **on the skin:** Irritant to skin and mucous membranes.

· **on the eye:** Irritating effect.

#### · Sensitization:

Sensitization possible through inhalation.

Sensitization possible through skin contact.

(Contd. on page 7)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 6)

· **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Harmful  
Irritant  
Carcinogenic.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

50-00-0 formaldehyde	I
----------------------	---

· **NTP (National Toxicology Program)**

50-00-0 formaldehyde	K
----------------------	---

· **OSHA-Ca (Occupational Safety Health Administration)**

50-00-0 formaldehyde	
----------------------	--

## 12 Ecological information

· **Toxicity**

· **Aquatic toxicity:** No further relevant information available.  
 · **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.  
 · **Mobility in soil** No further relevant information available.

· **Ecotoxicological effects:**

· **Remark:** Harmful to fish

· **Additional ecological information:**

· **General notes:**

Water hazard class 2 (Self-assessment): hazardous for water  
 Do not allow product to reach ground water, water course or sewage system.  
 Danger to drinking water if even small quantities leak into the ground.  
 Harmful to aquatic organisms

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.  
 · **vPvB:** Not applicable.

· **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

· **UN-Number**

· **DOT, ADR, IMDG, IATA** UN1760

(Contd. on page 8)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 7)

· **UN proper shipping name**  
 · **DOT** *Corrosive liquids, n.o.s. (Glutaraldehyde, Formaldehyde solutions)*  
 · **ADR** *1760 CORROSIVE LIQUID, N.O.S. (Glutaraldehyde, FORMALDEHYDE SOLUTION)*  
 · **IMDG, IATA** *CORROSIVE LIQUID, N.O.S. (Glutaraldehyde, FORMALDEHYDE SOLUTION)*

· **Transport hazard class(es)**· **DOT**

· **Class** *8 Corrosive substances*  
 · **Label** *8*

· **ADR, IMDG, IATA**

· **Class** *8 Corrosive substances*  
 · **Label** *8*

· **Packing group**· **DOT, ADR, IMDG, IATA** *II*· **Environmental hazards:** *Not applicable.*· **Special precautions for user** *Warning: Corrosive substances*· **Hazard identification number (Kemler code):** *80*· **EMS Number:** *F-A,S-B*· **Segregation groups** *(SGG1) Acids*· **Stowage Category** *B*· **Stowage Code** *SW2 Clear of living quarters.*

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** *Not applicable.*

· **Transport/Additional information:**· **DOT**

· **Quantity limitations** *On passenger aircraft/rail: 1 L*  
*On cargo aircraft only: 30 L*

· **ADR**

· **Excepted quantities (EQ)** *Code: E2*  
*Maximum net quantity per inner packaging: 30 ml*  
*Maximum net quantity per outer packaging: 500 ml*

· **IMDG**· **Limited quantities (LQ)** *1L*

(Contd. on page 9)



# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 8)

· <b>Excepted quantities (EQ)</b>	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· <b>UN "Model Regulation":</b>	UN 1760 CORROSIVE LIQUID, N.O.S. (GLUTARALDEHYDE, FORMALDEHYDE SOLUTION), 8, II

## 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

- **Section 355 (extremely hazardous substances):**

50-00-0	formaldehyde
---------	--------------

- **Section 313 (Specific toxic chemical listings):**

50-00-0	formaldehyde
---------	--------------

- **TSCA (Toxic Substances Control Act):**

7732-18-5	Deionized Water, Reagent Grade A.C.S.	ACTIVE
50-00-0	formaldehyde	ACTIVE
111-30-8	Glutaraldehyde	ACTIVE

- **Hazardous Air Pollutants**

50-00-0	formaldehyde
---------	--------------

- **Proposition 65**

- **Chemicals known to cause cancer:**

50-00-0	formaldehyde
---------	--------------

- **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

- **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

- **Carcinogenic categories**

- **EPA (Environmental Protection Agency)**

50-00-0	formaldehyde	B1
---------	--------------	----

- **TLV (Threshold Limit Value)**

50-00-0	formaldehyde	A2
111-30-8	Glutaraldehyde	A4

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**

50-00-0	formaldehyde
---------	--------------

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 10)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 9)

· **Hazard pictograms**



GHS07 GHS08

· **Signal word** *Danger*

· **Hazard-determining components of labeling:**

formaldehyde  
Glutaraldehyde

· **Hazard statements**

Causes skin irritation.  
Causes serious eye irritation.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.  
Suspected of causing genetic defects.  
May cause cancer.  
May cause respiratory irritation.

· **Precautionary statements**

Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Avoid breathing dust/fume/gas/mist/vapors/spray  
Wash thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Contaminated work clothing must not be allowed out of the workplace.  
Wear protective gloves/protective clothing/eye protection/face protection.  
[In case of inadequate ventilation] wear respiratory protection.  
If on skin: Wash with plenty of water.  
**IF INHALED:** Remove person to fresh air and keep comfortable for breathing.  
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing.  
**IF exposed or concerned:** Get medical advice/attention.  
Call a poison center/doctor if you feel unwell.  
Specific treatment (see on this label).  
Take off contaminated clothing and wash it before reuse.  
If skin irritation or rash occurs: Get medical advice/attention.  
If eye irritation persists: Get medical advice/attention.  
If experiencing respiratory symptoms: Call a poison center/doctor.  
Wash contaminated clothing before reuse.  
Store in a well-ventilated place. Keep container tightly closed.  
Store locked up.  
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations:**

· **Information about limitation of use:**

Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.  
Exceptions can be made by the authorities in certain cases.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

US

(Contd. on page 11)

# Safety Data Sheet

## acc. to OSHA HCS

Printing date 02/24/2023

Reviewed on 02/24/2023

**Trade name: Paraformaldehyde 4% Glutaraldehyde 1% in 0.1M Phosphate Buffer**

(Contd. of page 10)

### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Contact:**

· **Date of preparation / last revision** 02/24/2023

· **Abbreviations and acronyms:**

*ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*DOT: US Department of Transportation*

*IATA: International Air Transport Association*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*VOC: Volatile Organic Compounds (USA, EU)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*

*PBT: Persistent, Bioaccumulative and Toxic*

*vPvB: very Persistent and very Bioaccumulative*

*NIOSH: National Institute for Occupational Safety*

*OSHA: Occupational Safety **Health***

**TLV: Threshold Limit Value**

**PEL: Permissible Exposure Limit**

**REL: Recommended Exposure Limit**

**Skin Irritation 2: Skin corrosion/irritation – Category 2**

**Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A**

**Sensitization - Respiratory 1: Respiratory sensitisation – Category 1**

**Sensitization - Skin 1: Skin sensitisation – Category 1**

**Germ Cell Mutagenicity 2: Germ cell mutagenicity – Category 2**

**Carcinogenicity 1B: Carcinogenicity – Category 1B**

**Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3**