1. Identification

Product identifier used on the label

Glutaraldehyde 50% solution low methanol

Recommended use of the chemical and restriction on use

Recommended use*: for industrial use only

* The “Recommended use” identified for this product is provided solely to comply with a US Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Molecular formula: CHO(CH2)3CHO
Chemical family: dialdehydes, aqueous solution
Synonyms: Glutaral
Use: Chemical used in synthesis and/or formulation of industrial products.

2. Hazards Identification


Classification of the product

| Met. Corr. | 1 | Corrosive to metals |
| Acute Tox. | 3 (oral) | Acute toxicity |
| Acute Tox. | 3 (Inhalation - mist) | Acute toxicity |
| Skin Corr./Irrit. | 1B | Skin corrosion/irritation |
| Eye Dam./Irrit. | 1 | Serious eye damage/eye irritation |
| Resp. Sens. | 1 | Respiratory sensitization |
Safety Data Sheet
Glutaraldehyde 50% solution low methanol
Revision date: 2014/12/04
Version: 8.0

Skin Sens. 1

Skin sensitization

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:
H290 May be corrosive to metals.
H331 Toxic if inhaled.
H301 Toxic if swallowed.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H314 Causes severe skin burns and eye damage.

Precautionary Statements (Prevention):
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P260 Do not breathe dust or mist.
P260 Do not breathe mist or vapour.
P284 [In case of inadequate ventilation] wear respiratory protection.
P270 Do not eat, drink or smoke when using this product.
P264 Wash with plenty of water and soap thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P234 Keep only in original container.

Precautionary Statements (Response):
P310 Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P341 + P311 IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P352 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water.
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P362 + P364 Take off contaminated clothing and wash before reuse.
P390 Absorb spillage to prevent material damage.

Precautionary Statements (Storage):
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P406 Store in corrosive resistant/... container with a resistant inner liner.

Precautionary Statements (Disposal):
P501 Dispose of contents/container to hazardous or special waste collection point.
Hazards not otherwise classified

The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).


Emergency overview

DANGER:
CORROSIVE TO SKIN.
Causes serious eye damage.
Toxic if swallowed.
Toxic by inhalation.
HARMFUL IF ABSORBED THROUGH SKIN.
CAUSES ASTHMATIC SIGNS AND SYMPTOMS IN HYPER-REACTIVE INDIVIDUALS.
MAY CAUSE ALLERGIC SKIN REACTION.
Use NIOSH approved respirator as needed to mitigate exposure.
Provide local exhaust ventilation to control vapours/mists.
Wear NIOSH-certified chemical goggles.
Wear full face shield if splashing hazard exists.
Eye wash fountains and safety showers must be easily accessible.
Wear chemical resistant protective gloves.
Wear protective clothing.
Do not get in eyes, on skin, or on clothing.
Avoid inhalation of mists/vapours.

3. Composition / Information on Ingredients


<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content (W/W)</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>111-30-8</td>
<td>&gt;= 50.3 - &lt;= 51.0 %</td>
<td>glutaral</td>
</tr>
<tr>
<td>111-30-8</td>
<td>&gt;= 50.3 - &lt;= 51.0 %</td>
<td>glutaral</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content (W/W)</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>111-30-8</td>
<td>50.0 %</td>
<td>glutaral</td>
</tr>
</tbody>
</table>

4. First-Aid Measures

Description of first aid measures

General advice:
Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:
Wash affected areas with water while removing contaminated clothing. Seek medical attention.
If in eyes:
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If swallowed:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further symptoms are possible

Indication of any immediate medical attention and special treatment needed

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote. Pulmonary edema prophylaxis. Medical monitoring for at least 24 hours.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, carbon dioxide, foam

Special hazards arising from the substance or mixture
Hazards during fire-fighting:
No particular hazards known.

Advice for fire-fighters
Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Impact Sensitivity:
Impact Weight: 10 kg
Height of Fall: 0.4 m
Method: Explosive properties

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear appropriate respiratory protection. Use personal protective clothing. Ensure adequate ventilation.

Environmental precautions
Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up
7. Handling and Storage

**Precautions for safe handling**
Ensure thorough ventilation of stores and work areas. Avoid aerosol formation.

Protection against fire and explosion:
Avoid all sources of ignition: heat, sparks, open flame.

**Conditions for safe storage, including any incompatibilities**
No applicable information available.

Further information on storage conditions: Keep container tightly closed and dry; store in a cool place. Store protected against freezing.

Storage stability:
Storage temperature: <= 25 °C
Storage duration: 12 Months

From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

8. Exposure Controls/Personal Protection

**Advice on system design:**
Provide local exhaust ventilation to control vapours/mists.

**Personal protective equipment**

**Respiratory protection:**
Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator. Do not exceed the maximum use concentration for the respirator facepiece/cartridge combination. For emergency or non-routine, high exposure situations, use a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

**Hand protection:**
Chemical resistant protective gloves

**Eye protection:**
Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

**Body protection:**
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

**General safety and hygiene measures:**
Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact. Employees should shower at the end of the shift. Wash soiled clothing immediately.
9. Physical and Chemical Properties

Form: liquid
Odour: pungent odour
Odour threshold: Not determined due to potential health hazard by inhalation.
Colour: colourless to yellow
pH value: 3.7 (50 % (m), 23 °C)
5.9 (0.5 % (m), 23 °C)
Melting point: approx. -33 °C (Directive 92/69/EEC, A.1)
Boiling point: 101.5 °C (987.1 hPa)
Sublimation temperature: not applicable
Flash point: > 95 °C (50 % (m)) (closed cup) No flash point - Measurement made up to the indicated temperature, pilot light extinguishes.
Flammability: not flammable
Lower explosion limit: 1.5 %(V) Product not examined: Value is calculated from the data of the components.
Upper explosion limit: 50 %(V) Product not examined: Value is calculated from the data of the components.
Autoignition: 395 °C (50 % (m)) (Directive 92/69/EEC, A.15)
Vapour pressure: 104.68 hPa (50 °C)
Density: 1.13 g/cm³ (20 °C) (DIN 51757)
Relative density: 1.13 (20 °C) (pyknometer)
Partitioning coefficient n-octanol/water (log Pow): -0.36 (23 °C) (Directive 92/69/EEC, A.8)
Self-ignition temperature: (other) not self-igniting
Thermal decomposition: 110 °C, 520 kJ/kg (DSC (DIN 51007)) Thermal decomposition above the indicated temperature is possible.
Viscosity, dynamic: 20 mPa.s (50 °C) (DIN 53015)
Viscosity, kinematic: 12.75 mm²/s (25 °C)
Solubility in water: (20.2 °C) miscible
Solubility (quantitative): No applicable information available.
Solubility (qualitative): No applicable information available.
Molar mass: 100.12 g/mol
Evaporation rate: Value can be approximated from Henry's Law Constant or vapor pressure.

10. Stability and Reactivity

Reactivity

Corrosion to metals: Corrosive effect on metals.

Oxidizing properties: Based on its structural properties the product is not classified as oxidizing.
Formation of flammable gases: Remarks: Forms no flammable gases in the presence of water.
Chemical stability

Possibility of hazardous reactions
The product is chemically stable.

Conditions to avoid
Avoid all sources of ignition: heat, sparks, open flame. See MSDS section 7 - Handling and storage. Avoid extreme temperatures.

Incompatible materials
acids, bases
amines

Hazardous decomposition products
Decomposition products:
Thermal decomposition products: carbon monoxide, carbon dioxide
Thermal decomposition:
110 °C (DSC (DIN 51007))
Thermal decomposition above the indicated temperature is possible.

11. Toxicological information

Primary routes of exposure
Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity

Oral
Type of value: LD50
Species: rat (male/female)
Value: approx. 158 mg/kg (OECD Guideline 401)

Inhalation
Type of value: LC50
Species: rat (male/female)
Value: 0.28 - 0.39 mg/l (similar to OECD guideline 403)
Exposure time: 4 h
An aerosol was tested.

Type of value: LC100
Species: rat (male/female)
Value: 15 mg/l (IRT)
Exposure time: 7 h
The vapour was tested.

Dermal
Type of value: LD50
Species: rat (male/female)
Value: > 1,000 mg/kg (OECD Guideline 402)
The data on toxicology refer to the active ingredient. The value meets the highest applied test concentration.

Type of value: LD50
Species: rabbit (male/female)
Value: > 1,000 mg/kg (similar to OECD guideline 402)
No mortality was observed. The data on toxicology refer to the active ingredient. The value meets the highest applied test concentration.

Assessment other acute effects
Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

Irritation / corrosion
Assessment of irritating effects: Corrosive! Damages skin and eyes.

Skin
Species: rabbit
Result: Corrosive.
Method: OECD Guideline 404

Eye
Species: rabbit
Result: Risk of serious damage to eyes.
Method: Draize test

Sensitization
Assessment of sensitization: Sensitization after skin contact possible. The substance may cause sensitization of the respiratory tract.

Open epicutaneous test (OET)
Species: guinea pig
Result: sensitizing

Species: human
Result: sensitizing

Aspiration Hazard
not applicable

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: After repeated exposure the prominent effect is local irritation. The substance may cause damage to the upper respiratory tract after repeated inhalation, as shown in animal studies.

Genetic toxicity
Assessment of mutagenicity: The substance was mutagenic in various test systems with bacteria and cell cultures; however, these results could not be confirmed in tests with mammals.

Carcinogenicity
Assessment of carcinogenicity: In long-term animal studies in which the substance was given in the drinking water in high concentrations, a carcinogenic effect was not observed. In long-term animal studies in which the substance was given by inhalation, a carcinogenic effect was not observed.
Reproductive toxicity
Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Other Information
The data on toxicology refer to the active ingredient.

Symptoms of Exposure
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further symptoms are possible

Medical conditions aggravated by overexposure
Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product. See MSDS section 11 - Toxicological information.

12. Ecological Information

Toxicity
Aquatic toxicity
Assessment of aquatic toxicity:
Very toxic (acute effect) to aquatic organisms. Depending on local conditions and existing concentrations, disturbances in the biodegradation process of activated sludge are possible. The product has not been tested. The data have been deduced from values for a preparation or mixture with a lower substance concentration.

Toxicity to fish
LC50 (96 h) 39 mg/l, Cyprinodon variegatus (Fish test acute, static)
The details of the toxic effect relate to the nominal concentration.

LC50 (96 h) 9.4 mg/l, Lepomis macrochirus (Fish test acute, static)
The details of the toxic effect relate to the nominal concentration.

Aquatic invertebrates
EC50 (48 h) 5.75 mg/l, Daphnia magna (Daphnia test acute, static)
The details of the toxic effect relate to the nominal concentration.

EC50 (96 h) 0.75 mg/l, Crassatrea virginica (other, Flow through.)
The statement of the toxic effect relates to the analytically determined concentration.

LC50 (96 h) 5.5 mg/l, Mysisidopsis bahia (OPP 72-3 (EPA-Guideline), Flow through.)
The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants
EC50 (72 h) 0.6 mg/l (growth rate), Desmodesmus subspicatus (OECD Guideline 201, static)
The statement of the toxic effect relates to the analytically determined concentration.

No observed effect concentration (72 h) 0.025 mg/l, Desmodesmus subspicatus (OECD Guideline 201, static)
The statement of the toxic effect relates to the analytically determined concentration.
EC50 (72 h) 0.92 mg/l (growth rate), Skeletonema costatum (ISO/DIS 10253)
The details of the toxic effect relate to the nominal concentration.

Chronic toxicity to fish
No observed effect concentration (97 d) 1.6 mg/l, Oncorhynchus mykiss (See user defined text., Flow through.)
The details of the toxic effect relate to the nominal concentration.

Chronic toxicity to aquatic invertebrates
No observed effect concentration (21 d) 2.5 mg/l, Daphnia magna (OECD Guideline 202, part 2, semistatic)
The statement of the toxic effect relates to the analytically determined concentration.

Toxicity to terrestrial plants
EC20 (19 d) > 450 mg/kg, Vicia sativa (OECD Guideline 208)

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
OECD Guideline 209 aerobic activated sludge, domestic/EC20 (30 min): approx. 15 mg/l
The details of the toxic effect relate to the nominal concentration.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Readily biodegradable (according to OECD criteria).

Elimination information
90 - 100 % DOC reduction (28 d) (OECD 301 A (new version)) (aerobic, activated sludge, domestic)

Assessment of stability in water
In contact with water the substance will hydrolyse slowly.

Information on Stability in Water (Hydrolysis)
\( t_{1/2} > 1 \) a (50 °C), (Directive 92/69/EEC, C.7, pH7)
In contact with water the substance will hydrolyse slowly.

Bioaccumulative potential

Assessment bioaccumulation potential
No significant accumulation in organisms is expected as a result of the distribution coefficient of n-octanol/water (log Pow).

Bioaccumulation potential
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments
The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is possible.

Additional information
13. Disposal considerations

Waste disposal of substance:
Incorporate in suitable incineration plant, observing local authority regulations.
Do not discharge substance/product into sewer system. Incinerate or dispose of in a RCRA-licensed facility.

Container disposal:
Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: D002

14. Transport Information

Land transport
USDOT
Hazard class: 8
Packing group: II
ID number: UN 2922
Hazard label: 8, 6.1, EHSM
Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S. (contains GLUTARALDEHYDE)

Sea transport
IMDG
Hazard class: 8
Packing group: II
ID number: UN 2922
Hazard label: 8, 6.1, EHSM
Marine pollutant: YES
Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S. (contains GLUTARALDEHYDE)

Air transport
IATA/ICAO
Hazard class: 8
Packing group: II
15. Regulatory Information

Federal Regulations

Registration status:
Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Acute;

State regulations

<table>
<thead>
<tr>
<th>State RTK</th>
<th>CAS Number</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA, NJ, PA</td>
<td>111-30-8</td>
<td>glutaral</td>
</tr>
</tbody>
</table>

CA Prop. 65:
WARNING: THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

NFPA Hazard codes:
Health: 3 Fire: 1 Reactivity: 0 Special:

HMIS III rating
Health: 3 Flammability: 1 Physical hazard: 0

Assessment of the hazard classes according to UN GHS criteria (most recent version):

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Corr./Irrit.</td>
<td>1B</td>
</tr>
<tr>
<td>Aquatic Chronic</td>
<td>2</td>
</tr>
<tr>
<td>Aquatic Acute</td>
<td>1</td>
</tr>
<tr>
<td>Acute Tox.</td>
<td>3 (oral)</td>
</tr>
<tr>
<td>Acute Tox.</td>
<td>3 (Inhalation - mist)</td>
</tr>
<tr>
<td>Resp. Sens.</td>
<td>1</td>
</tr>
<tr>
<td>Skin Sens.</td>
<td>1</td>
</tr>
<tr>
<td>Met. Corr.</td>
<td>1</td>
</tr>
<tr>
<td>Acute Tox.</td>
<td>5 (dermal)</td>
</tr>
</tbody>
</table>

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2014/12/04

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our
operations on society and the environment during production, storage, transport, use and disposal of our products.

IMPORTANT: WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU MAKE TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY OUR COMPANY HEREUNDER ARE GIVEN GRATIS AND WE ASSUME NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK. END OF DATA SHEET