

## 1. Identification

**Name** Glycerol formal

**CAS Number** 99569-11-6

### Recommendation for the chemical and restrictions on use

**Applications** Research and development only. CAS: 99569-11-6 is being sent to you as a Research and Development product as defined by the Toxic Substances Control Act (TSCA) of 1976. Due to TSCA's R&D exemption, this product is not listed on the U.S. EPA's Toxic Substances Control Act inventory.

**Restricions** This product may not be used for commercial purposes or in formulations used for commercial purposes.

### Supplier's Details

**InKemia Green Chemicals, Inc.**

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### Emergency contact number

**InKemia Green Chemicals, Inc.**

Tel: +1 (713) 909-7717

For emergency calls only.

## 2. Hazards

### Classification of the substance or mixture

**Classification** Combustible liquid (Category 4), H227.  
Eye irritation (Category 2A), H319.

### Label elements

**Pictogram**



**Signal word**

**Warning**

**Hazard Statements**

H227 - Combustible liquid.

H319 - Causes serious eye irritation.

**Precautionary Statements**

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P264 - Wash skin thoroughly after handling.

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

# SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

protection.

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

P337 + P313 - If eye irritation persists: Get medical advice/attention.

P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P403 - Store in a well-ventilated place. Keep cool

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

## 3 - Composition/information on ingredients

### Substances

<b>Chemical Name</b>	Glycerol formal
<b>Synonyms</b>	1,3-dioxan-5-ol; 1,3-dioxolan-4-ylmethanol; 1,3-dioxan-5-ol; glycerol formal.
<b>CAS Number</b>	99569-11-6
<b>Molecular Formula</b>	C <sub>4</sub> H <sub>8</sub> O <sub>3</sub>
<b>Molecular Weight (g/mol)</b>	104.105

### Hazardous components

Component	Classification	Concentration
1,3-Dioxan-5-ol	Flam. Liq. 4; Eye Irrit. 2A; H227, H319.	50-60 %
1,3-Dioxolan-4-ylmethanol	Flam. Liq. 4; Eye Irrit. 2A; H227, H319.	40-50 %

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

**Impurities and stabilizing additives** No data available.

**Mixtures** This product is a mixture of an average composition of:

1,3-Dioxan-5-ol: 55 wt. %

1,3-Dioxolan-4-ylmethanol: 45 wt. %

## 4 - First-aid measures

### Description of first aid measures

#### **General information**

Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.

# SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

<b>Inhalation</b>	Remove from exposure, moving to fresh air. Artificial respiration and oxygen are necessary if not breathing. Consult a physician.
<b>Ingestion</b>	Wash out mouth with water if the person is conscious. Do not induce vomiting. Consult a physician.
<b>Skin contact</b>	Immediately wash skin with soap and copious amounts of water.
<b>Eye contact</b>	Immediately irrigate with copious amounts of water for 15 minutes. Remove contact lenses, if present and easy to do. Consult a physician.
<b>Protection of first-aiders</b>	First aid personnel should wear appropriate protective equipment during any rescue.

## **Most important symptoms and effects, both acute and delayed**

<b>General information</b>	The severity of the symptoms described might vary depending on the concentration and length of exposure.
<b>Inhalation</b>	Slightly dangerous.
<b>Ingestion</b>	Slightly dangerous.
<b>Skin contact</b>	May cause irritation.
<b>Eye contact</b>	May cause irritation.

## **Indication of immediate medical attention and special treatment need**

<b>Notes for the doctor</b>	Treat symptomatically.
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## **5 - Fire-fighting measure**

### **Extinguishing media**

<b>Suitable extinguisher media</b>	CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
<b>Unsuitable extinguisher media</b>	No data available.

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

<b>Specific hazards</b>	Combustible liquid. At high temperatures, vapors may accumulate in low or confined areas. Runoff to sewer may create fire or explosion hazards. Keep away from sources of ignition (heat, sparks, flames, static electricity, pilot lights, and mechanical/electrical equipment). Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.
<b>Hazardous combustion products</b>	Thermal decomposition or combustion may liberate carbon oxides

and other toxic gases or vapors.

### **Advice for firefighters**

#### **Protective actions during firefighting**

Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Avoid discharge to the aquatic environment. Control runoff water by containing and keeping it out of sewers and watercourses. If the risk of water pollution occurs, notify appropriate authorities.

#### **Special protective equipment for firefighting**

Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots, and gloves provide a basic level of protection for chemical incidents.

## **6 – Accidental release measures**

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

#### **Personal Precautions**

Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into the spilled material.

#### **Environmental precautions**

#### **Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### **Methods and materials for containment and cleanup**

#### **Methods for cleaning**

Contain and remove the spillage, soaking up the residue with non-flammable absorbent. Place in an adequate container for immediate disposal. Eliminate sources of ignition. For waste disposal see Section 13.

#### **Reference to other sections**

For personal protection see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For disposal see section 13.

## **7 – Handling and storage**

### **Precautions for safe handling**

#### **Usage precautions**

## SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

This product is for R+D only. As a TSCA-exempt R&D substance, this product must be used by or directly under the supervision of a technically qualified individual(s) as defined by TSCA. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink, and animal feeding stuff. Keep container tightly sealed when not in use. Avoid discharge to the aquatic environment. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers. For precautions see Section 2.

### Advice on general occupational hygiene

Promptly wash if in contact with skin. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

### Conditions for safe storage, including any Incompatibilities

#### Storage precautions

Store away from incompatible materials (see Section 10). Keep only in the original container. Keep container tightly closed, in a cool, well-ventilated place. Keep containers upright. Protect containers from damage. Keep in a fresh and dry place, avoiding direct sunlight. Keep container tightly sealed, in a fireproof place.

#### Storage class

Miscellaneous hazardous material storage. Preferably in a well-ventilated solvent cabinet.

#### Specific end uses

The identified uses for this product are in Section 1.

### 8 – Exposure controls/personal protection

#### Control parameters

#### Occupational exposure limits:

Contains no substances with occupational exposure limit values.

#### Protective equipment



#### Engineering control measures

# SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

## Eye/Face protection

Wear safety glasses with side-shields.

## Hand protection

Avoid skin contact. Wear protective clothes and solvent resistant gloves (nitrile).

## Other skin and body protection

Use engineering controls to reduce air contamination to permissible exposure level. Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapor contact.

## Hygiene measures

Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.

## Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with a multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

## Environmental exposure

Not available.

## 9 - Physical and chemical properties

<b>Appearance</b>	Colorless liquid.	<b>Water miscibility @ 20 °C, g/L</b>	Miscible.
<b>Odor threshold</b>	Not applicable.	<b>Solubility (other)</b>	No data available.
<b>Melting point/Freezing point, °C</b>	Lower than -50	<b>Partition coefficient, log Pow @ 25 °C</b>	-1.0
<b>Boiling point, °C</b>	193-195	<b>Autoignition temperature, °C</b>	Higher than 400
<b>Flash point</b>	93	<b>Decomposition temperature, °C</b>	No data available.
<b>Evaporation rate</b>	No evaporation.		
<b>Upper / lower</b>	No data available.		

# SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

## flammability or/and explosive limits

**Vapor pressure @ 20 °C, kPa** 0.047 (EPI Suite estimation)

**Vapor density (air=1)** No data available.

**Relative density @ 25 °C, g/cm<sup>3</sup>** 1.210

**Dynamic viscosity @ 25 °C, cP** 14

**Explosive properties** Not classified.

**Oxidizing properties** No data available.

**Flammability** Non-flammable liquid.

**Surface tension @ 20 °C, mN/m** 44.5

## 10 - Stability and reactivity

**Reactivity** No data available.

**Chemical stability** Stable under normal storage conditions. Hygroscopic.

**Possibility of hazardous reactions** Hazardous polymerization do not occur under normal conditions.

**Incompatible materials** Strong oxidizing agents. Strong bases. Strong acids.

**Conditions to avoid** Ignition sources.

**Hazardous decomposition products** No data available.

## 11 - Toxicological information

### Acute toxicity - oral

**Acute toxicity - oral (LD50,mg/kg)** >8,000

**Species** Rat

**Notes (oral LD50)** Based on available data the classification criteria are not met.

### Acute toxicity - dermal

**Acute toxicity - dermal (LD50,mg/kg)** >2,000

**Species** Rat

**Notes (Dermal LD50)** Based on available data the classification criteria are not met.

### Acute toxicity - inhalation

**Acute toxicity - inhalation (LC50,dust/mist mg/l)** > 5 mg/l, (Mist).

**Species** Rat

**Notes (Inhalation LD50)** No deaths occurred at this concentration/Based on the available data, respiratory irritation was not observed.

### Skin corrosion/irritation

**Result** Mild irritant to skin.

## SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

### Serious eye damage/irritation

#### Result

Rat - Irritating to eyes.

### Respiratory sensitization

#### Result

Based on available data the classification criteria are not met.

### Skin sensitization

#### Result

Guinea pig - Did not cause allergic skin reactions.

### Germ cell mutagenicity

#### Genotoxicity - in vitro

Based on available data the classification criteria are not met.

### Carcinogenicity

#### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as human carcinogen by IARC.

#### ACGIH

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

#### NTP

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

#### OSHA

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

### Reproductive toxicity

#### Fertility

No data available.

#### Development

No data available.

### Specific target organ toxicity

#### STOT-single exposure

No data available.

#### STOT-repeated exposure

No data available.

### Additional information

#### General information

This product is classified as hazardous.

#### Inhalation

Vapor may cause dizziness.

#### Ingestion

No data available.

#### Skin contact

May cause mild skin irritation.

#### Eye contact

Eye irritant.

#### Route of entry

Ingestion, Inhalation, skin and/or eye contact.

#### Target organs

Not specific target organ known.

## 12 - Ecological information



# SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

## Toxicity

<b>Ecotoxicity</b>	Not regarded as dangerous for the environment. However, large or frequent spills may have dangerous effects on the environment.
<b>Acute toxicity</b>	
<b>Toxicity to fish</b>	LC50 (96h.) > 10,000 mg/l (Fathead minnow, EPA-T.E.S.T. Estimation)
<b>Aquatic invertebrates</b>	EC50 (48h.) > 1,000 mg/l (Daphnia magna, EPA-T.E.S.T. Estimation)
<b>Aquatic plants</b>	IGC50 (48h.) >10,000 mg/l (T. pyroformis, EPA-T.E.S.T. Estimation)

## Persistency and biodegradability

<b>Persistency and biodegradability</b>	No data available.
Result: -	This product is readily biodegradable.
<b>Biodegradation</b>	Readily biodegradable (EPI Suite estimation).
<b>Biological oxygen demand(mg/g)</b>	No data available.
<b>Chemical oxygen demand(mg/g)</b>	No data available.
<b>BOD/COD ratio</b>	No data available.
<b>Bioaccumulative potential</b>	No data available.
<b>Mobility in soil</b>	No data available.
<b>Results of PBT and vPvB</b>	No data available.
<b>Other adverse effects</b>	No data available.

## 13 – Disposal considerations

### Waste treatment methods

#### **General information**

The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of safely. When handling waste, the safety precautions applying to the handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues.

#### **Disposal methods**

## SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration and landfill should only be considered when recycling is not feasible.

### 14 – Transport information

#### DOT (US)

UN number: NA 1993 Class: CBL Packing group: III  
Proper shipping name: Combustible liquid, n.o.s. (Glycerol formal).  
Reportable Quantity (RQ):  
Poison Inhalation Hazard:

(Remark: The combustible liquid classification only applies when shipped in single package sizes > 119 gallons).

#### IMDG

Not classified as hazardous goods.

#### IATA

Not classified as hazardous goods.

#### Transport in bulk according to

Annex II of MARPOL 73/78, and the IBC Code:  
Not applicable.

### 15 – Regulatory information

#### US Federal Regulations and state regulations

Components of the product are listed in the quoted regulations. For details, please refer to the regulations directly. This list is not exhaustive; please check for other applicable regulations.

**This product has been classified by hazard criteria of the Controlled Products Regulations, and the SDS contains all the information required by the Controlled Products Regulations.**

#### US Federal Regulations

##### **SARA 302 Section 302 (Specific toxic chemical listings)**

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

##### **SARA Section 311/312 (Specific toxic chemical listings)**

Acute Health Hazard.

##### **SARA Section 313 (Specific toxic chemical listings)**

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.

##### **RCRA (hazardous waste code)**

None of the ingredients are listed.

##### **TSCA (Toxic Substances Control Act)**

"Glycerol formal" is listed as CAS: 68441-91-1 on the TSCA inventory. CAS: 99569-11-6 is not TSCA-listed and is supplied as R+D product.

##### **CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)**

None of the ingredients are listed.

#### US State Regulations

## SDS: Glycerol formal

Ver. 2.0 Rev. 02-11-2017

Print.

### Proposition 65 (California)

#### Chemicals are known to cause cancer

None of the chemicals in this product are listed.

#### Chemicals are known to cause reproductive toxicity for females

None of the chemicals in this product are listed.

#### Chemicals are known to cause reproductive toxicity for males

None of the chemicals in this product are listed.

### Massachusetts Right to Know Components

No components are subject to the Massachusetts Right to Know Act.

### Pennsylvania Right to Know Components

No components are subject to the Pennsylvania Right to Know Act.

### New Jersey Right to Know Components

No components are subject to the New Jersey Right to Know Act.

### Canada

This product is not available in Canada.

## 16 – Other information

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

H227 Combustible liquid.

H319 Causes eye irritation.

Flam. Liq. Flammable liquids.

Eye Irrit. Eye Irritant.

### GHS Column Model 2017 Classification

Acute health hazards (single exp)	Low
Chronic health hazards (repeated exp.)	Negligible
Environmental hazards	Negligible
Physical-chemical hazards	Low

### Further Information

The information above is believed to be accurate and represents the best information available. However, we make no warranty of merchantability or any other warranty, express or implied, on such information and we assume no liability resulting from its use. Users should make their investigations to determine the suitability of the information for their purposes. In no event shall the InKemia Green Chemicals, Inc. be liable for any claims, losses or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages arising, even if the InKemia Green Chemicals, Inc. has been advised of the possibility of such damages.

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