

# MSDS

Version: 1.0

CreationDate: Dec. 6, 2018

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## 1. Identification

### 1.1 Product name

D-Glucose

### 1.2 Other means of identification

Product number F040707  
Other names D-(+)-Glucose

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses Used for research and development only. Processing Aids and Additives  
Uses advised against no data available

### 1.4 Distributor's details

Company Ecocell Co., Ltd.  
Address F226, 45, Jojeong-daero, Hanam-si, Gyeonggi-do, Korea  
Telephone +82-2-457-2236  
Fax +82-2-6442-2236

### 1.5 Emergency phone number

Emergency phone number +82-2-457-2236  
Service hours Monday to Friday, 9am-6pm (Standard time zone: UTC/GMT +9 hours).

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## 2. Hazard identification

### 2.1 Classification of the substance or mixture

Not classified.

### 2.2 GHS label elements, including precautionary statements

Pictogram(s) no data available  
Signal word No signal word  
Hazard statement(s) none  
Precautionary statement(s)

<b>Prevention</b>	none
<b>Response</b>	none
<b>Storage</b>	none
<b>Disposal</b>	none

## 2.3 Other hazards which do not result in classification

no data available

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## 3. Composition/information on ingredients

### 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Glucose	D-Glucose	50-99-7	200-075-1	≥99.8%

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## 4. First-aid measures

### 4.1 Description of necessary first-aid measures

#### General advice

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

#### If inhaled

Fresh air, rest.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

#### Following ingestion

Rinse mouth.

### 4.2 Most important symptoms/effects, acute and delayed

No toxicity (USCG, 1999)

### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

Pancreatic beta cells are highly sensitive to oxidative stress, which might play an important role in beta cell death in diabetes. The protective effect of 6,6'-bieckol, a phlorotannin polyphenol compound purified from Ecklonia cava, against high glucose-induced glucotoxicity was investigated in rat insulinoma cells. High glucose (30 mM) treatment induced the death of rat insulinoma cells, but treatment with 10 or 50 µg/mL 6,6'-bieckol significantly inhibited the high glucose-induced glucotoxicity. Furthermore, treatment with 6,6'-bieckol dose-dependently reduced the level of thiobarbituric acid reactive substances, generation of intracellular reactive oxygen species, and the level of nitric oxide, all of which were increased by high glucose concentration. In addition, 6,6'-bieckol protected rat insulinoma cells from apoptosis under high-glucose conditions. These effects were associated with increased expression of the anti-apoptotic protein Bcl-2 and reduced expression of the pro-apoptotic protein Bax. These findings indicate that 6,6'-bieckol could be used as a potential nutraceutical agent offering protection against the glucotoxicity caused by hyperglycemia-induced oxidative stress associated with diabetes.

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

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### **5.2 Specific hazards arising from the chemical**

no data available

### **5.3 Special protective actions for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

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## **6. Accidental release measures**

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

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### **6.2 Environmental precautions**

Sweep spilled substance into covered containers. Wash away remainder with plenty of water.

### **6.3 Methods and materials for containment and cleaning up**

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Avoid dust formation. Avoid breathing vapors, mist or gas; Environmental precautions: No special environmental precautions required; Methods and materials for containment and cleaning up: Sweep up and shovel. Keep in suitable, closed containers for disposal.

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## **7. Handling and storage**

### **7.1 Precautions for safe handling**

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

## 7.2 Conditions for safe storage, including any incompatibilities

Separated from strong oxidants. Well closed. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. Keep in a dry place.

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## 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limit values

no data available

### 8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### Skin protection

Wear fire/flare resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

#### Thermal hazards

no data available

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## 9. Physical and chemical properties

<b>Physical state</b>	Solid.
<b>Colour</b>	-
<b>Odour</b>	Odorless
<b>Melting point/ freezing point</b>	9°C(lit.)
<b>Boiling point or initial boiling point and boiling range</b>	73°C/25mmHg(lit.)
<b>Flammability</b>	Combustible.
<b>Lower and upper explosion limit / flammability limit</b>	no data available
<b>Flash point</b>	40°C(lit.)
<b>Auto-ignition temperature</b>	Not flammable (USCG, 1999)
<b>Decomposition temperature</b>	no data available
<b>pH</b>	pH of 0.5 molar aqueous solution = 5.9 /alpha-glucose/
<b>Kinematic viscosity</b>	no data available

<b>Solubility</b>	In water: Soluble
<b>Partition coefficient n-octanol/water</b>	no data available
<b>Vapour pressure</b>	8.0X10 <sup>-14</sup> mm Hg at 25°C /extrapolated from a higher solid-phase temperature range/
<b>Density and/or relative density</b>	1.544g/cm <sup>3</sup>
<b>Relative vapour density</b>	no data available
<b>Particle characteristics</b>	no data available

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## 10. Stability and reactivity

### 10.1 Reactivity

Reacts violently with strong oxidants.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Dust explosion possible if in powder or granular form, mixed with air. A weak reducing agent.

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Incompatible materials: Strong oxidizing agents

### 10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

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## 11. Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral 25,800 mg/kg
- Inhalation: no data available
- Dermal: no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/irritation

no data available

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

no data available

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

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## **12. Ecological information**

### **12.1 Toxicity**

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

### **12.2 Persistence and degradability**

AEROBIC: D(+)-Glucose, present at 1000 mg/L, reached >90% of its theoretical BOD in 2 days using a non-adapted activated sludge inoculum at 1 g/L (dry matter) in a Zahn-Wellens static test(1). The biodegradation half-life of D(+)-glucose in aerobic aquifer material (not heavily polluted), including Ontario loam and sand, South Carolina sand and Holland sand, is reported to range from 0.6-1.1 days(2). Using an electrolytic respirometry method with a 100 mg/L compound concentration and an activated sludge inoculum, D(+)-glucose was easily biodegraded with a 46-56% theoretical BOD in 100-110 hours(3). Using standard and seawater dilution methods, the 5-day BOD of D(+)-glucose was determined as 74.8 and 75.2% respectively(4). D(+)-Glucose was readily biodegradable in batch tests using adapted activated sludge with a biodegradation rate of 180.0 mg COD/g-hour(5). Biodegradation of D(+)-glucose in various samples of aquifer, saturated zone, and surface soils was found to occur rapidly with somewhat slower rates in till soil samples(6); based on measured rate constants(6), the biodegradation half-life ranged from 0.25 to 19 days.

### **12.3 Bioaccumulative potential**

An estimated BCF of 3 was calculated in fish for D(+)-glucose(SRC), using a log Kow of -3.00(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### **12.4 Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc of D(+)-glucose can be estimated to be 10(SRC). According to a classification scheme(2), this estimated Koc value suggests that D(+)-glucose is expected to have very high mobility in soil.

### **12.5 Other adverse effects**

no data available

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## **13. Disposal considerations**

## 13.1 Disposal methods

### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## 14. Transport information

### 14.1 UN Number

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

### 14.2 UN Proper Shipping Name

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

### 14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

### 14.4 Packing group, if applicable

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

### 14.5 Environmental hazards

ADR/RID: no

IMDG: no

IATA: no

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

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## 15. Regulatory information

### 15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Glucose	D-Glucose	50-99-7	200-075-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

<b>EC Inventory</b>	Listed.
<b>United States Toxic Substances Control Act (TSCA) Inventory</b>	Listed.
<b>China Catalog of Hazardous chemicals 2015</b>	Not Listed.
<b>New Zealand Inventory of Chemicals (NZIoC)</b>	Listed.
<b>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</b>	Listed.
<b>Vietnam National Chemical Inventory</b>	Listed.
<b>Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)</b>	Listed.

## 16. Other information

### Information on revision

**Creation Date** Feb. 6, 2018

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### Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

### References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

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*Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from*



*handling or from contact with the above product.*