

## Chemical Safety Data Sheet MSDS / SDS

## Metformin

Revision Date:2024-05-18 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## Product identifier

Product name : Metformin  
CBnumber : CB0506294  
CAS : 657-24-9  
EINECS Number : 211-517-8  
Synonyms : Metformin,dimethylbiguanide

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

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

## SECTION 2: Hazards identification

## Classification of the substance or mixture

Not classified.

## Label elements

## Pictogram(s)

Signal word : No signal word

## Hazard statement(s)

none

## Precautionary statement(s)

## Prevention

none

## Response

none

## Storage

none

## Disposal

none

#### Other hazards

no data available

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## SECTION 3: Composition/information on ingredients

### Substance

Product name	: Metformin
Synonyms	: Metformin,dimethylbiguanide
CAS	: 657-24-9
EC number	: 211-517-8
MF	: C <sub>4</sub> H <sub>11</sub> N <sub>5</sub>
MW	: 129.16

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

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

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

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

no data available

### Indication of any immediate medical attention and special treatment needed

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Poisons A and B

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## SECTION 5: Firefighting measures

## Extinguishing media

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

## Specific Hazards Arising from the Chemical

no data available

## Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

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## SECTION 6: Accidental release measures

### 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.

### Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust. Environmental precautions: Do not let product enter drains. Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. Metformin hydrochloride

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## SECTION 7: Handling and storage

### 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.

### Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature 2 - 8 deg C. Storage class (TRGS 510): Non Combustible Solids. Metformin hydrochloride

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## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

no data available

#### Biological limit values

no data available

## Exposure controls

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

## Individual protection measures

### Eye/face protection

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

### Skin protection

Wear fire/flamm 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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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Solid
Colour	White to Light Brown
Odour	no data available
Melting point/freezing point	223-226 °C
Boiling point or initial boiling point and boiling range	224.1°C at 760 mmHg
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	89.3°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Acetonitrile (Slightly), Aqueous Acid (Slightly), Dichloromethane (Slightly), DM
Partition coefficient n-octanol/water	no data available
Vapour pressure	7.58X10 <sup>-5</sup> mm Hg at 25 deg C (est)
Density and/or relative density	1.28 g/cm <sup>3</sup>
Relative vapour density	no data available
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

**Reactivity**

no data available

**Chemical stability**

Stable under recommended storage conditions. Metformin hydrochloride

**Possibility of hazardous reactions**

no data available

**Conditions to avoid**

no data available

**Incompatible materials**

Incompatible materials: Strong oxidizing agents. Metformin hydrochloride

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions - Carbon oxides, nitrogen oxides (NO<sub>x</sub>), hydrogen chloride gas. Metformin hydrochloride

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## SECTION 11: Toxicological information

**Acute toxicity**

- Oral: LD50 Rat oral 1 g/kg Metformin hydrochloride
- 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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## SECTION 12: Ecological information

### 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

### Persistence and degradability

AEROBIC: Metformin, added at 10 ug/g soil, exhibited biodegradation rates of 0.264, 0.231, and 0.118/day corresponding to half-lives of 5, 5 and 1 day, respectively, using three soil inocula - an alluvial agricultural soil (pH 6.6; 7.2% organic matter; 60.5% clay), loessy brown soil (pH 6.5; 6.5% organic matter; 47.4% clay), and a podsolic soil (pH 4.3; 3.9% organic matter; 28.2% clay), respectively, typical of Poland(1). However, the hydrochloride salt has been classified as not readily biodegradable(2). Metformin hydrochloride, present at 10 mg/L, exhibited 0.6% CO<sub>2</sub> evolution in 28 days using a non-adapted, domestic sewage inoculum. In an aerobic aquatic system, <sup>14</sup>C-labelled metformin hydrochloride dissipated from the water phase mainly through degradation and adsorption to sediment. The level of radioactivity in river water decreased over 56 days to 1.3% of applied metformin hydrochloride; 8.2% was present in the water phase after 100 days in a test pond system. The majority of radioactivity applied (81.5%) was found in the sediment(3).

### Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for metformin(SRC), using an estimated log K<sub>ow</sub> of -2.64(1) and a regression-derived equation(1). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### Mobility in soil

K<sub>oc</sub> values of 19, 16 and 12 were measured using an alluvial agricultural soil (pH 6.6; 7.2% organic matter; 60.5% clay), loessy brown soil (pH 6.5; 6.5% organic matter; 47.4% clay), and a podsolic soil (pH 4.3; 3.9% organic matter; 28.2% clay) typical of Poland(1). According to a classification scheme(2), this estimated K<sub>oc</sub> value suggests that metformin is expected to have very high mobility in soil.

### Other adverse effects

no data available

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## SECTION 13: Disposal considerations

### 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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## SECTION 14: Transport information

### **UN Number**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### **UN Proper Shipping Name**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### **Transport hazard class(es)**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### **Packing group, if applicable**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### **Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

### **Special precautions for user**

no data available

### **Transport in bulk according to IMO instruments**

no data available

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## SECTION 15: Regulatory information

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

**European Inventory of Existing Commercial Chemical Substances (EINECS)**

Listed.

**EC Inventory**

Listed.

**United States Toxic Substances Control Act (TSCA) Inventory**

Not Listed.

**China Catalog of Hazardous chemicals 2015**

Not Listed.

**New Zealand Inventory of Chemicals (NZIoC)**

Listed.

**PICCS**

Not Listed.

**Vietnam National Chemical Inventory**

Listed.

**IECSC**

Not Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

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## SECTION 16: Other information

**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?pageSize=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageSize=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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